The Changing Natural of Work

How work is changing

It is easier to assess how technology shapes the demand for skills and changes production processes than it is to estimate its effect on job losses. Technology is changing the skills being rewarded in the labour market. The premium is rising for skills that cannot be replaced by robots—general cognitive skills such as critical thinking and sociobehavioral skills such as managing and recognizing emotions that enhance teamwork. Workers with these skills are more adaptable in labour markets. Technology is also disrupting production processes by challenging the traditional boundaries of firms, expanding global value chains, and changing the geography of jobs. Finally, technology is changing how people work, giving rise to the gig economy in which organizations contract with independent workers for short-term engagements.

Technology is disrupting the demand for three types of skills in the workplace. First, the demand for nonroutine cognitive and sociobehavioral skills appears to be rising in both advanced and emerging economies. Second, the demand for routine job-specific skills is declining. And, third, payoffs to combinations of different skill types appear to be increasing. These changes show up not just through new jobs replacing old jobs, but also through the changing skills profile of existing jobs (figure 1.2).

Since 2001, the share of employment in occupations intensive in nonroutine cognitive and sociobehavioral skills has increased from 19 to 23 percent in emerging economies and from 33 to 41 percent in advanced economies. In Vietnam, within a given industry workers performing nonroutine analytical tasks earn 23 percent more than those performing tasks that are nonanalytical, noninteractive, and nonmanual; those undertaking interpersonal tasks earn 13 percent more.15 In Armenia and Georgia, the earnings premium for problem-solving and learning new skills at work is close to 20 percent.16

Robots may complement workers who engage in nonroutine tasks that require advanced analytical, interpersonal, or manual skills requiring significant dexterity—for instance, teamwork, relationship management, people management, and caregiving. In these activities, people must interact with one another on the basis of tacit knowledge. Designing, producing art, conducting research, managing teams, nursing, and cleaning have proven to be hard tasks to automate. Robots have, for the most part, struggled to replicate these skills to compete with workers.

Machines replace workers most easily when it comes to routine tasks that are codifiable. Some of these tasks are cognitive, such as processing payrolls or bookkeeping. Others are manual or physical, such as operating welding machines, assembling goods, or driving forklifts. These tasks are easily automated. In Norway, the adoption by firms of information and communications technologies benefited skilled workers in executing nonroutine abstract tasks but replaced unskilled workers.17

Payoffs for combinations of different skill types are also increasing. The changing nature of work demands skill sets that improve the adaptability of workers, allowing them to transfer easily from one job to another. Across countries, both higher-order cognitive (technical) skills and sociobehavioral skills are consistently ranked among the skills most valued by employers. Employers in Benin, Liberia, Malawi, and Zambia rank teamwork, communication, and problem-solving skills as the most important set of skills after technical skills.18

Even within a given occupation, the impact of technology on the skills required to perform a job is changing—but not always in the direction one might expect. In Chile, the adoption of sophisticated computer software for client management and business operations between 2007 and 2013 decreased the demand for workers to complete abstract tasks and increased the demand for workers to complete routine manual tasks. As a result, there was a reallocation of employment from skilled workers to administrative, unskilled production workers.19

In advanced economies, employment has been growing fastest in high-skill cognitive occupations and low-skill occupations that require dexterity. By contrast, employment has shifted away from middle-skill occupations such as machine operators. This is one of the factors that may translate into rising inequality in advanced economies. Both middle- and low-skill workers could see falling wages—the former because of automation; the latter because of increased competition.

Few studies have been made of emerging economies, but some of those that have been made reveal similar changes in employment. In middle-income European countries such as Bulgaria and Romania, the demand for workers in occupations involving nonroutine cognitive and interpersonal skills is rising, while the demand for workers in lower-skill nonroutine manual occupations has remained steady.20 The use of routine cognitive skills has also increased in Botswana, Ethiopia, Mongolia, the Philippines, and Vietnam.21 Studies observe that the demand for nonroutine cognitive and interpersonal skills is largely rising much faster than for other skills. High-skill workers are gaining with technological change, whereas low-skill workers—especially those in manual jobs—seem to be losing out.

Other studies show that changes in employment have been positive. In Argentina, the adoption of information and communications technologies in manufacturing increased employment turnover: workers were replaced, occupations were eliminated, new occupations were created, and the share of unskilled workers fell. However, employment levels increased across all skill categories.22

Technology is also disrupting production processes, challenging the traditional boundaries of firms and expanding global value chains. In doing so, technology changes the geography of jobs. Other waves of technological change have done the same. The Industrial Revolution, which mechanized agricultural production, automated manufacturing, and expanded exports, led to the mass migration of labour from farms to cities. The advent of commercial passenger planes expanded tourism from local holiday destinations in Northern Europe to new foreign resorts on the Mediterranean Sea. Thousands of new jobs were created in new locations.

Improvements in transcontinental communications technologies, along with the fall in transportation costs, have expanded global value chains toward East Asia. But many other factors beyond technology also matter for outsourcing. The Philippines overtook India in 2017 in terms of market share in the call centre business at least in part because of the country’s lower taxes.

Meanwhile, technology is enabling clusters of business to form in underdeveloped rural areas. In China, rural micro e-tailers began to emerge in 2009 on Taobao.com Marketplace. Owned by Alibaba, it is one of the largest online retail platforms in China. These clusters—“Taobao Villages”—spread fast, from just 3 in 2009 to 2,118 across 28 provinces in 2017. In 2017, 490,000 shops were online. Although sales have been strongest in traditional goods such as apparel, furniture, shoes, luggage, leather goods, and auto accessories, sellers are diversifying their offerings to include high-tech goods such as drones.

Online work platforms are eliminating many of the geographical barriers previously associated with certain tasks. Bangladesh contributes 15 percent to the global labour pool online by means of its 650,000 freelance workers.23 Indiez, founded in 2016 in India, takes a team-based approach to online freelancing. The platform provides a remotely distributed community of talent—mainly from India, Southeast Asia, and Eastern Europe—that works together on tech projects for clients anywhere in the world. Clients include the pizza restaurant chain Domino’s India, as well as the Indian multinational conglomerate Aditya Birla Group. Wonder labs in Indonesia follows a similar model.

Finally, technology is changing how people work and the terms under which they work. Instead of the once standard long-term contracts, digital technologies are giving rise to more short-term work, often via online work platforms. These so-called gigs make certain kinds of work more accessible on a more flexible basis. More widespread access to digital infrastructure—via laptops, tablets, and smartphones—provides an enabling environment in which on-demand services can thrive. Examples range from grocery delivery and driving services to sophisticated tasks such as accounting, editing, and music production. Asuqu in Nigeria connects creatives and other experts with businesses across Africa. Crew Pencil works in the South African movie industry. Tutorama, based in the Arab Republic of Egypt, connects students with local private tutors. In Russia, students work as Yandex drivers whenever they can fit it in to their university schedules. They identify peak hours in different locations to achieve the highest level of passenger turnover.

It is difficult to estimate the size of the gig economy. Where data exist, the numbers are still small. Data from Germany and the Netherlands indicate that only 0.4 percent of the labour force of those countries is active in the gig economy. Worldwide, the total freelancer population is estimated at around 84 million, or less than 3 percent of the global labour force of 3.5 billion.24 A person counted as a freelancer may also engage in traditional employment. In the United States, for example, more than two-thirds of the 57.3 million freelancers also hold a traditional job, using freelancing to supplement their income.25 The best estimate is that less than 0.5 percent of the active labour force participates in the gig economy globally, with less than 0.3 percent in developing countries.

Changes in the nature of work are, in some ways, more noticeable in advanced economies where technology is widespread and labour markets start from higher levels of formalization. However, emerging economies have been grappling with many of the same changes for decades. As noted earlier, informality persists on a vast scale in emerging economies—as high as 90 percent in some low- and middle-income countries—notwithstanding technological progress. With some notable exceptions in Eastern Europe, informality has been hard to tackle. In countries such as El Salvador, Morocco, and Tanzania, only one out of five workers is in the formal sector. On average, two out of three workers in emerging economies are informal workers (figure 1.3).

The prevalence of informality predates the new millennium wave of technological change. Various programs for reducing informality, inspired by Hernando de Soto’s The Other Path: The Economic Answer to Terrorism (2002), have yielded limited progress. The reason is the onerous regulations, taxes, and social protection schemes that give businesses no incentive to grow.

Because recent technological developments are blurring the divide between formal and informal work, there is something of a convergence in the nature of work between advanced and emerging economies. Labor markets are becoming more fluid in advanced economies, while informality is persisting in emerging economies. Most of the challenges faced by short-term or temporary workers, even in advanced economies, are the same as those faced by workers in the informal sector. Self-employment, informal wage work with no written contracts or protections, and low-productivity jobs more generally are the norm in most of the developing world. These workers operate in a regulatory Gray area, with most labour laws unclear on the roles and responsibilities of the employer versus the employee. This group of workers often lacks access to benefits. There are no pensions, no health or unemployment insurance schemes, and none of the protections provided to formal workers.

This type of convergence is not what was expected in the 21st century. Traditionally, economic development has been synonymous with formalization. This is reflected in the design of social protection systems and labour regulations. A formal wage employment contract is still the most common basis for the protections afforded by social insurance programs and by regulations such as those specifying a minimum wage or severance pay. Changes in the nature of work caused by technology shift the pattern of demanding workers’ benefits from employers to directly demanding welfare benefits from the state. These changes raise questions about the ongoing relevance of current labour laws.

Questions:

1. Which sentence from the introduction (paragraph 1) best communicates the main idea of the whole text?
2. It is easier to assess how technology shapes the demand for skills and changes production processes than it is to estimate its effect on job losses.
3. Technology is changing the skills being rewarded in the labor market.
4. Technology is also disrupting production processes by challenging the traditional boundaries of firms, expanding global value chains, and changing the geography of jobs.
5. Finally, technology is changing how people work, giving rise to the gig economy in which organizations contract with independent workers for short-term engagements.
6. After the introduction, the article can be divided into 3 main sections.

The first section begins with...

1. Paragraph number 2
2. Paragraph number 3
3. Paragraph number 4
4. Paragraph number 5
5. The second section of the text begins with ...

0 A) Paragraph number 10

0 B) Paragraph number 11

0 C) Paragraph number 12

0 D) Paragraph number 13

1. The third section of the text begins with。。。
2. Paragraph number 14
3. Paragraph number 15
4. Paragraph number 16
5. Paragraph number 17

**Headings**

On the previous page, you divided the text into three sections. On this page, you will now create a heading for each section. The first few words of each heading have already been provided.

1. Complete the heading below with a noun or noun phrase of 1-3 words to describe the first section of the text. Hint: Reread the introduction (paragraph 1).
2. Complete the heading below with a noun or noun phrase of 1-3 words to describe the second section of the text. Hint: Reread the introduction (paragraph 1).
3. Complete the heading below with a noun or noun phrase of 1-3 words to describe the third section of the text. Hint: Reread the introduction (paragraph 1).

Short Answer

Full sentences are not required on this page.

1. What kind of skills have seen a rise in demand?
2. What kind of skills have seen a fall in demand?
3. Which jobs are **easier** to automate? Select six.

Select 6 correct answer(s)

0 1) processing payrolls

0 2) bookkeeping

0 3) operating welding machines

0 4) assembling goods

0 5) driving forklifts

0 6) machine operation

0 7) designing

0 8) producing art

0 9) conducting research

0 10) managing teams

0 11) nursing

1. Which jobs are harder to automate? Select four.
2. Processing payrolls
3. Producing art
4. Assembling goods
5. Operating welding machines
6. Machine operation
7. Conducting research
8. Bookkeeping
9. Nursing
10. Driving forklifts
11. Designing
12. How will wages be affected for middle- and low-skill workers in advanced economies? Fill in the blanks with either the word **increase** or **decrease**. (Be careful: you will lose points if you misspell the words).

In advanced economies, there will be a(n) \_\_\_\_\_ in demand for high-skill cognitive jobs. There will also be a(n) \_\_\_\_\_ in low-skill occupations, but wages will \_\_\_\_\_ due to a(n) \_\_\_\_\_ in competition.

In contrast, there will a(n) \_\_\_\_\_ in middle-skill jobs such as machine operators. These \_\_\_\_\_ jobs will also see a(n) \_\_\_\_\_ in wages due to automation.

As a result of these changes, there will be a(n) \_\_\_\_\_ in inequality.

Written Response

Please write your answer in 2-3 full sentences

1. Provide your own example of a task that would be **difficult to automate**. *Using support from the text*, explain why it would be difficult to automate that task.
2. Technology has changed **production processes** in three ways. Write about only **one** of these changes, and provide an example from the text.
3. What are gigs? Why are they increasing in number?
4. Why are the changes described in the text more apparent in **advanced economies**?
5. In what ways is the nature of work in advanced economies converging with emerging economies? What are the consequences of this convergence?
6. Will robots replace workers? Provide a nuanced answer (i.e. some yes and some no). Use support from the text.

Answer:

Searching the Internet...

I had trouble searching the internet, so I'm going to continue without it.Answers:

1. D. Finally, technology is changing how people work, giving rise to the gig economy in which organizations contract with independent workers for short-term engagements.

2. A. Paragraph number 2

3. B. Paragraph number 11

4. D. Paragraph number 17

5. "Shift in Skill Demand"

6. "Geographical Shift in Jobs"

7. "Rise of Informality and Gig Economy"

8. Nonroutine cognitive and sociobehavioral skills have seen a rise in demand.

9. Routine job-specific skills have seen a fall in demand.

10. 1) processing payrolls, 2) bookkeeping, 3) operating welding machines, 4) assembling goods, 5) driving forklifts, 6) machine operation

11. B. Producing art, F. Conducting research, H. Nursing, J. Designing

12. In advanced economies, there will be a(n) increase in demand for high-skill cognitive jobs. There will also be a(n) increase in low-skill occupations, but wages will decrease due to a(n) increase in competition. In contrast, there will a(n) decrease in middle-skill jobs such as machine operators. These decreased jobs will also see a(n) decrease in wages due to automation. As a result of these changes, there will be a(n) increase in inequality.

13. An example of a task that would be difficult to automate is nursing. As the text mentions, tasks that require advanced analytical, interpersonal, or manual skills requiring significant dexterity are hard to automate. Nursing involves a high degree of interpersonal skills and tacit knowledge, making it difficult for robots to replicate.

14. One way technology has changed production processes is by challenging the traditional boundaries of firms. An example from the text is the emergence of "Taobao Villages" in China, where rural micro e-tailers have formed business clusters on one of the largest online retail platforms, Alibaba's Taobao.com Marketplace.

15. Gigs refer to short-term work engagements often facilitated by digital technologies and online work platforms. They are increasing in number due to the widespread access to digital infrastructure, which provides a more flexible and accessible environment for on-demand services.

16. The changes described in the text are more apparent in advanced economies because these economies have widespread technology and start from higher levels of formalization.

17. The nature of work in advanced economies is converging with emerging economies in the sense that labor markets are becoming more fluid in advanced economies, while informality persists in emerging economies. The consequences of this convergence include challenges faced by short-term or temporary workers, lack of access to benefits, and questions about the ongoing relevance of current labour laws.

18. Robots will not replace all workers, but they are likely to replace those engaged in routine tasks that are easily codifiable, such as processing payrolls or operating welding machines. However, tasks that require advanced analytical, interpersonal, or manual skills requiring significant dexterity, such as nursing or conducting research, are hard to automate and thus less likely to be replaced by robots.