

IR 4.0 and the Preparations of the Developing Countries

Umme Salma Apanan¹, Md. Iddris Ali², Mir Shafiul Islam³

¹Instructor (English), Dept. of Non-Tech, Chattogram Mohila Polytechnic Institute, Chattogram, Bangladesh

²Instructor (Tech.), Dept. of Electronics, Jashore Polytechnic Institute, Jashore, Bangladesh

³Instructor (Tech.), Dept. of Electronics, Chattogram Mohila Polytechnic Institute, Chattogram, Bangladesh

Abstract - The Fourth Industrial Revolution represents a fundamental change in the way we live, move, work and communicates with one another. It accelerated the Human Development Index and created a new chapter, controlled by extraordinary technological advances consistent with the First, Second and Third Industrial Revolutions. This unimaginable progress has integrated the physical, digital and biological environment in a way that will enable the skilled population to survive in the struggle for survival. On the other hand, a class of people will be in danger of not being able to adapt themselves to the times. The speed, breadth and depth of this revolution are forcing us to rethink how countries evolve, how institutions create values and even how to become human beings with human qualities. The Fourth Industrial Revolution refers to technology-driven social and economic change. It is the only platform for creating an integrated, human-centered future where leaders, policy makers and people from all walks of life have the opportunity to use integrated technology. The real opportunity is to look beyond technology, and find ways to empower as many people as possible to positively impact their families, organizations and communities.

Key Words: IR 4.0, Industrial Revolution

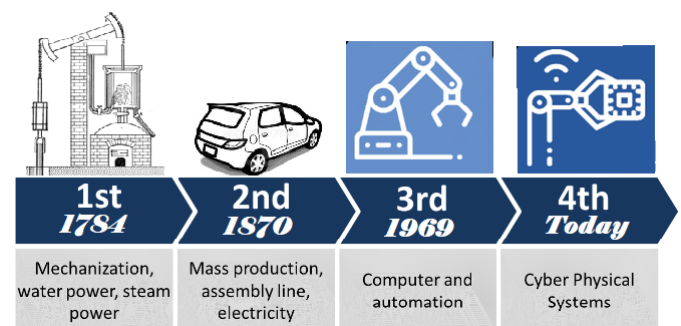
1. Introduction

Let's go back to the civic life of the beginning of the new millennium. Need a taxi? Stop at the nearest taxi stand, wait, not sure how long it will take for the taxi to arrive; Once a taxi arrives, there is no guarantee that you will be able to get to the desired destination at a fair fare, as the taxi will take the route of its choice. Want to read a very favourite book? Want to buy a book? You have to go to a bookstore in Market. There is no time to go due to work pressure, books are not being bought, and favourite books are not being read. Want to see a movie? You have to stand in line for a ticket at the cinema counter, so you haven't seen your favourite movie. The described examples are very inconsistent with today's reality. No need to wait at the stand for a taxi or bike. Using innovations like GPS and smartphones, ride sharing companies will be able to book cars or bikes for you at short notice. Call Uber, Lyft, Juno, Gett, Grab, Bolt etc and the taxi or bike will come to you, take you to your desired destination without any bargain. If you want to read a book of your choice, just order it at any online bookstore (like Amazon Books, BookDepository etc) and it will arrive on time. You don't have to go to the store to buy a book. If you want more easily, you can read online by downloading the app of your choice, such as Kindle, Internet Archive, Open

Library, Google Books etc. You can watch your favourite movie on Netflix or Amazon Prime at your convenience. Numerous more examples can be given where the activities of the economy are being performed on the basis of on-demand.

2. Meet the Three Industrial Revolutions

The basic question of the economy on the basis of demand is whether the value of owning a service or product is higher or the value of the platform on which those services or products are traded? Amazon is not a publishing house and has no books of its own, yet the largest bookstore in the world. Amazon's current market value is trillions of dollars. Similarly, Uber does not have its own car, although the world's largest car rental company. Those of us who shop online know that Alibaba is one of the largest e-commerce companies in the world. Alibaba has no stock of its own merchandise, although it is the world's largest retailer. Airbnb, for example, is the world's largest real estate provider but does not own any real estate. If you want to sell an old product, click on any one of the online platforms, such as OLX, you will get everything from mobile chargers to cars and even homes. The above examples are just some of the examples of the Fourth Industrial Revolution. The increasing digital transformation of economic activity is the main foundation of the Fourth Industrial Revolution.



It is clear to everyone that the current fourth industrial revolution is quite different from the first and second industrial revolutions. However, there are many similarities with the Fourth Industrial Revolution and the Third Industrial Revolution. The First Industrial Revolution began in the middle of the eighteenth century and lasted for about 75 years. The first industrial revolution began with the invention of the steam engine and the construction of the

railroad. The role of rail communication in transporting goods was immense. However, the use of coal and steel has played a leading role in industrial production. The use of these two marked the beginning of the Second Industrial Revolution. This revolution lasted from the last half of the nineteenth century to the first half of the twentieth century. The discovery and use of new basic materials such as light materials, plastics, new mixtures and the use of electrical energy make 'mass production' possible, which helps bring down production costs to unimaginable levels. On the other hand, the effects of the Third Industrial Revolution, which began in the mid-nineteenth century, lasted until the new millennium. The invention of the high-powered modern computer and the Internet was the mainstay of the Third Industrial Revolution.

3. The Fourth Industrial Revolution and its Influences

The beginning of the fourth industrial revolution started with the hands of the third industrial revolution. This is why many call that the Fourth Industrial Revolution is the second stage (or digital revolution) of the Third Industrial Revolution. The basic elements of the Fourth Industrial Revolution are also the invention and spread of computer and internet-enabled technology. However, the pace of innovation and expansion is so fast and variable that it is often regarded as a separate industrial revolution. Renowned author Klaus Schwab, in his book "The Fourth Industrial Revolution", divides the effects of the Fourth Industrial Revolution into three main categories.

- Physical
- Digital
- Biological

3.1 Physical Influence of IR 4.0

The first category is 'physical', such as the invention of automated vehicles powered by sensors and artificial intelligence (AI). This development of technology due to the Industrial Revolution will soon have a huge negative impact on various sectors of the economy. With the help of such drones many things will be possible without the direct participation of human beings. Again, the 3D printing device will have a big impact on the pattern and packaging of the medicine. Advanced Cobot (Collaborative Robot), whose use so far has been limited to certain industries, including the manufacture of automobiles, will play a special role in everything from agriculture to medicine. Rapid advances in robots will soon create a new reality and possibility between humans and machines, while humans will make their lives easier with the help of robots in their daily work. In addition, new materials will be discovered the main features of which will be that they are much lighter, stronger, reusable and automatically repairable.

3.2 Digital Influence of IR 4.0

The second category is 'digital' — such as creating human relationships with products, services, locations, etc through new applications. The examples given at the beginning of this article are all digital versions of the Fourth Industrial Revolution. For example, RFID technology has been used in many countries to ensure quarantine. Again, financial activities were largely technology dependent. The use of technology in the financial sector (Fintech) will greatly reduce the traditional banking services in the future. Because small sized fintech companies will be able to provide financial services more efficiently at a much lower cost. In the digital age, it will be possible to make subtle adjustments between the demand and supply of these small but effective technology products and services. As central banks begin to rely on digital currency, monetary policy will be more effective.

3.3 Biological Influence of IR 4.0

The third class industrial revolution is biological. Bangladeshi scientist Maqsudul Alam, a professor of the University of Hawaii, who earlier decoded the genome of papaya in the US and rubber plant in Malaysia, led from the forefront in sequencing the jute genome. Dr Alam, also a researcher for Bangladesh Jute Research Institute, present at the briefing, said, "No one who studies jute in any part of the world can ignore our achievements". We've tried our best and the keys to all its mysteries are in our hands. Discovering these genes will increase their immunity and increase their production manifold. Powerful computers and software will help people understand the genome. Biotechnology has now reached a stage where cell use can be affected by altering cell DNA. Undoubtedly, medicine has many positive effects.

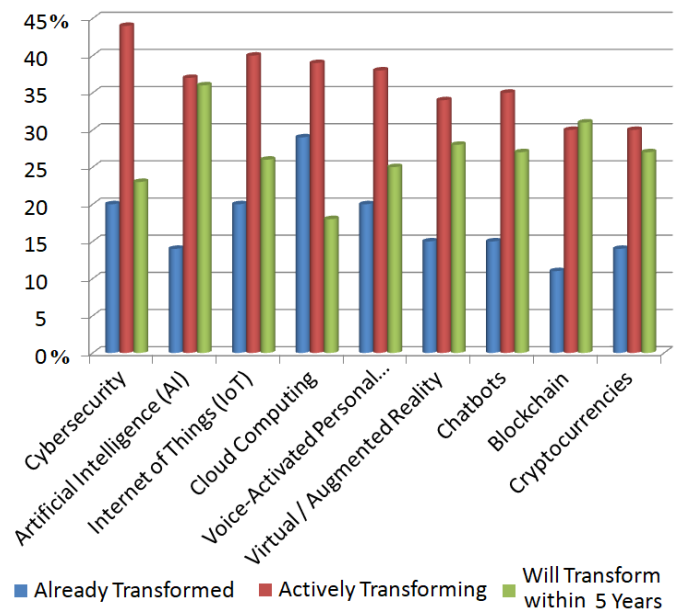
4. Technologies that are controlling the IR 4.0

These include the following:

- ❖ Artificial Intelligence (AI) describes devices that can think like humans, recognize complex patterns, process information, perform decisions and make recommendations.
- ❖ Blockchain is a secure, decentralized, and transparent way of recording and sharing data, without having to rely on third party intermediaries. The digital currency "Bitcoin" is the most well-known blockchain application. However, the technology can be used in other ways, including finding supply chains, protecting sensitive medical data anonymously and fighting voter fraud.
- ❖ New computational technology is making computers smarter. They enable computers to process large amounts of data faster than ever before, while the

advent of the "cloud" has allowed businesses to securely access and store their data anytime, anywhere with secure Internet access. Quantum computing technology is now evolving that will eventually make computers a million times more powerful. These computers will have the potential to supercharge AI, create highly complex data models in seconds, and speed up the discovery of new devices.

- ❖ Virtual Reality (VR) offers an immersive digital experience (using a VR headset) that mimics the real world, while augmented reality combines the digital and physical worlds. Examples include L'Oréal's makeup app, which allows users to digitally test makeup products before purchasing, and the Google Translate phone app, which allows users to scan street signs, menus and other texts and translate instantly.
- ❖ Biotechnology uses cellular and biomolecular processes to develop new technologies and products for a variety of uses, including new pharmaceuticals and materials, more efficient industrial manufacturing processes and cleaners, more efficient energy sources. Researchers in Stockholm, for example, are working on what is considered to be the most powerful organic material ever produced.
- ❖ Robotics involves design, construction, operation and use of robots. Robotics builds machines that can make human alternatives and create human activities. Although we do not yet see robot assistants in every home, technological advances have made robots increasingly complex and sophisticated. They are used in a wide range of fields, such as manufacturing, health and safety, and humanitarian aid.
- ❖ 3D printing allows manufacturers to print their own parts, with less tooling, lower cost, and faster than conventional processes. Also, the designs can be customized to ensure a perfect fit.
- ❖ Innovative materials, including plastics, metals and organic materials, promise to shake up sectors including manufacturing, renewable energy, construction and healthcare.
- ❖ IoT (Internet of Things) describes the concept of everyday items - medical wearable's that users' physical condition and even car and tracking devices embedded in the parcel - are connected to the Internet and characterized by other devices. A big plus for businesses is that they can consistently collect customer data from connected products, so that they can better measure how consumers use the products and tailor marketing campaigns accordingly. There are also many industrial applications, such as farmers installing IoT sensors in the field to monitor soil properties and decide when to apply fertilizer.
- ❖ Energy capture, storage and transmission represent a growing market sector driven by the declining cost of renewable energy technologies and improved battery storage capacity.



5. IR 4.0 and Economic Growth

It is undeniable that the Fourth Industrial Revolution will bring about a massive change in economic activity. The world is at a crossroads of technology and innovation, the next step being to accelerate economic growth by increasing production. With the advent of technology, the cost of producing and distributing goods and services will decrease at an unimaginable rate, as machines will help people. In developed countries where there is a shortage of working population, the advent of technology will be able to increase productivity. So many people think that the fourth industrial revolution will have a positive effect on people's lives.

6. IR 4.0 and unexpected effects on Developing Countries

However, in countries with high populations, which are largely underdeveloped and developing, the problem of unemployment may be obvious. Opportunities for traditional economic activities, where human resources are directly involved, will be greatly reduced. Demand for accountants, financial analysts, tax advisors, librarians, telephone operators, security guards, treasurers, showroom salesmen and filling station workers in particular will plummet over the next decade.

7. Increase Skilled Hand in Dealing with the Problems

To address this problem, long-term planning is needed on how to increase human performance by utilizing technology. People need to be empowered to adopt and use technology.

Remember, technology is created by humans only to accelerate the pace of human work. We need to invest in all sectors that enhance the technology infrastructure and data analysis capabilities. Training may be profitable in the short term, but long-term success requires change in education. Mainstream education needs to be structured in such a way that it enables human resources to have the flexibility, thinking ability and data analysis required for the future workplace. In addition to mainstream education, vocational and technical education needs to be strengthened.

The IR 4.0 can create inequality in society. Such 'low-skilled low-pay' versus 'high-skilled advanced-pay' structures will create economic divisions. Financial capacity will determine who will be able to adopt the technology immediately and use it effectively. Needless to say, their continued economic success will increase the rich-poor inequality, which will be an obstacle to sustainable economic development. To overcome this, developing countries need to focus on creating wealth as well as equitable distribution of resources.

8. Conclusion

The Fourth Industrial Revolution is not just about giving human work to machines. This is not a question of 'man vs. machine'. Instead, many new technology-based workplaces will be created for people. That is why developing countries will have long-term plans on how to increase the productivity of human resources through the addition of technology. At the same time, with the touch of technology, how to speed up the distribution as well as provide quality products and services as per the demand of the consumers. It is true, however, that the rate at which the first and second industrial revolutions created new fields of work for mankind cannot be expected from the fourth industrial revolution. Technology, not humans, will be the main driving force of the digital age. Moreover, as a result of globalization, the path of competition is now much more open. To survive in a competitive market, we need to focus on reducing costs by increasing innovation as well as modernizing production and distribution strategies. Many new jobs will be created if we can move out of the demand-driven economy (where the focus of economic activity is on meeting consumer needs) and create new demand through the provision of new products and services. Those who run ahead in this race will enjoy the benefits of the Fourth Industrial Revolution in the future.

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