Technology Innovation in China: Vigorous Development During COVID-19

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Abstract. In the era of the epidemic, all walks of life have been greatly affected,except science and technology which are developing with a rapid speed,usually be considered as the dominant productive force in today's society, and many technology industries continue to innovate and flourish under the epidemic. This paper studies how newly born science and technology in an epidemic situation help fight the epidemic and improve human life through examples. Advances in science and technology have helped humans better trace the source of the epidemic. Industries such as online education and telecommuting have emerged, and the AI intelligent robots are playing an important role in fighting the epidemic.

Keywords: covid-19 · technology · innovation · digital · human society

1 Introduction

Under the impact of COVID-19, all industries have suffered a huge impact, but it also accelerates the process of scientific and technological innovation, promoting the birth of many new technologies and new application scenarios. Science and technology, as the primary productive force, is the cornerstone of the development and progress of human society. Technological innovation is booming. Technological innovation is making up for the physical distance, creating a new development model, and new technologies such as telecommuting and unmanned delivery are accelerating. So why can scientific and technological innovation flourish when all industries are hit by the epidemic era? Will scientific and technological innovation in the epidemic era only be a "flash in the pan"? What role will these new technological innovations play in future life? Therefore, this paper will study the rapid development of scientific and technological innovation behind the epidemic, which reveals the important role of scientific and technological innovation in fighting against the epidemic and promoting the progress of human society.

2 COVID-19 Forces Technological Innovation

Chinese economy experienced a huge turmoil during the COVID-19. Revenues fell sharply in the retail, dining, accommodation, tourism, cultural and entertainment industries [1] And telecommuting, online education, online healthcare and other tech companies saw their profits rise significantly [2] (Figs. 1 and 2).

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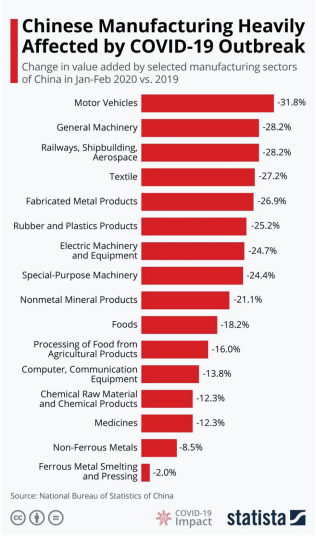

Fig. 1. Chinese Manufacturing Heavily Affected by COVID-19 Outbreak

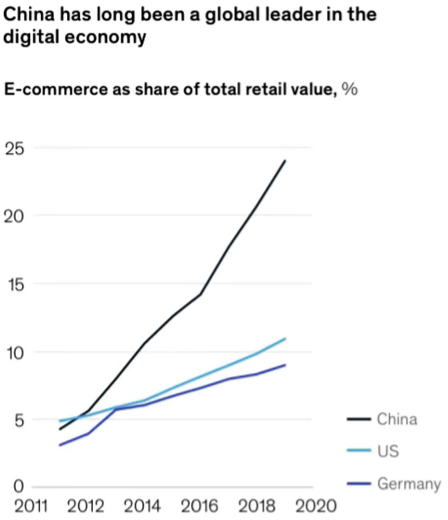

Fig. 2. China has long been a global leader in the digital economy

Zhou Lidong,who is the current executive vice president of Microsoft Research Asia,said that many enterprises are undergoing a revolution which is accelerating the pace of their digital transformation so that will bring more opportunities for people to do distant learning or office work.

Additionally,from Mark Gibbs,who is the global executive vice president of German software giant SAP SE,in the post epidemic era,there will also be many software positions

showing up in the job market as a consequence of business's recovering and enterprises' digital transformation [3].

The SARS epidemic in 2003 accelerated the process of the Internet, highlighting the advantages of the Internet not being limited by time and space. That year saw the birth of TaoBao, JD and other enterprises that had a profound impact on China's digital economy. During SARS, Ma Saw a business opportunity in time. At that time, people all over the country stayed at home for fear of being infected. On May 10, 2003, Alibaba launched Taobao, and Chinese consumers isolated at home began to turn to the Internet to order goods. By 2006, Taobao's share of China's online auction market had overtaken ebay's, and the American company decided to pull out of the U.S. market. Today, Taobao has more than 600 million users, and Alibaba is one of the largest e-commerce companies in China [4] Since the outbreak of COVID-19 in 2019, the role of technology has become even more evident, with the technology sector seeing even more growth opportunities than many affected industries. So why is the technology industry still booming in these tough times?

The WEF report showed that 10 main technology trends could be found during the COVID-19,which contains online shopping and delivery service, digital and convenient payments, online education, telecommuting and telemedicine, internet entertainment, supply chain 4.0, robots and drones, 3D printing,and 5G communication technology [5].

The sixth issue of "QiuShi" Magazine published on 16 March 2020, titled "Providing Strong Scientific and technological Support for Winning the Battle against COVID-19", mentioned that scientific development and technological innovation play an indispensable role in the victory of the novel Coronavirus.

3 Innovation Under the Pandemic

In the prevention and control of infectious diseases, it is particularly important to determine the source of infection. When the epidemic broke out in 2019, big data grasped the population flow in a timely manner, so as to further inform all regions to take precautions against the epidemic [6].

The initial PCR test was inefficient and inaccurate (70 to 80 percent accuracy), and sometimes required CT and MRI for diagnosis, but the AI model developed by the MIT team was able to accurately detect positive cases by coughing [7] It can be seen as the sustaining innovation which is based on the PCR test. And self-testing kits, including those that are becoming more widely used, also need the help of technology. These continuously improved products create a disruptive space in the future. So it is obvious that technological innovation contributes to the effective management and functioning of society (Fig. 3).

During the epidemic period, cities, communities, and schools were closed frequently due to the influence of policies, which greatly affected people's normal lives. Adults could not return to work on time, children could not go to school, and patients could not get medical treatment on the ground. As a result, the online industry flourished. It is reported that Internet services have become one of the fastest-growing industries in 2022 [8] The booming industries of telecommuting, online teaching and online medical

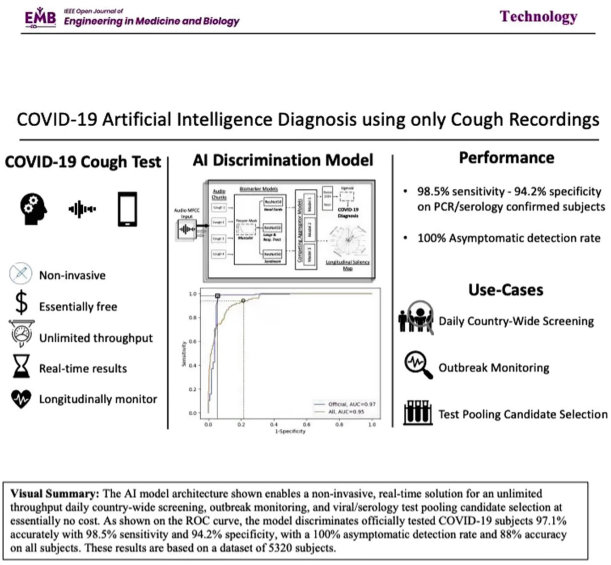

Fig. 3. COVID-19 Artificial Intelligence Diagnosis Using Only Cough Recordings

treatment not only reduce unnecessary travel and infection risks, but also minimize the impact on people's lives and restore social order.

With the outbreak of the epidemic everywhere, mobile cabin hospitals have been built. However, the number of patients keeps increasing, the number of medical staff is limited, and there is a risk of cross-infection while working at high intensity. The emergence of artificial intelligence has greatly reduced their pressure. In Shanghai mobile cabin hospital, intelligent disinfection robots and intelligent food delivery robots shuttle in various areas, reducing the pressure on medical staff and providing greater convenience for patients.

Similarly, online shopping has boomed during the pandemic, becoming a new trend as physical stores have closed due to the "lockdown". It not only allows us to choose from different products from around the world, but also provides a rich and comprehensive choice. At the same time, online payment has also developed more comprehensively, payment methods have become more diversified, and digital payment has become the mainstream.

Demand is often the driving force of production. Looking back on history, epidemics, economic turmoil and other sudden crises often contain huge opportunities for development. New forms and models of business provide new opportunities, and the epidemic forces all industries to innovate based on their needs. Businesses have had to move from offline to online, and businesses and schools have had to move to remote locations, enabling the technology industry to innovate. A new survey finds that the pace of digital technologies' adoption have been accelerated due to the responses to COVID-19 which coud bring many compulsory changes here [9] Global scientific and technological innovation is at an all-time high, providing a powerful impetus to economic and social development. Thanks to the epidemic, we can see new developments and changes in our

lives. The epidemic has made us realize that we are closely related to technology. When the epidemic shapes technology, it also shapes our future. For example, the development of online education, which eliminates the limitations of distance and time, allows users to enjoy the fun of learning anytime and anywhere, and people gradually adapt to online education. So not only will it flourish during the pandemic, but it will become a norm even after the pandemic is over. The epidemic has brought more people into contact with the online education industry, thus making them realize its convenience and efficiency and making it more mature in the future.

4 Digital Development Has Become a Trend

No matter of how long the COVID-19 would be existed in this world,eventually,our society will return to normal.Meanwhile,there will be some new trends of science and technology given by COVID-19 joint with us to get back to the life. Distance education and online office work are more likely to become the new normal, reducing costs while improving efficiency. Technological innovation has become a force that cannot be ignored, whether in the process of fighting the epidemic or in the development of the country. With the gradual easing of the epidemic, people firmly believe that after the epidemic, we will embrace a new life of life and health, and a new economy of upgraded consumption, all of which cannot be separated from the new mode of scientific and technological innovation. The COVID-19 pandemic has made all countries realize the importance of digital technology, and the development of science and technology has pushed human society to take a new step forward.

5 Conclusion

While all industries are affected by the epidemic, science and technology are constantly innovating and developing vigorously. The reason is that the epidemic forces innovation. Can the new technologies bring about by the epidemic sustain long-term development? The answer is yes. In the post-pandemic era, technology will continue to play a more far-reaching role, and telecommuting and online education will become the new normal. Relying on ARTIFICIAL intelligence, the business model constructed by cloud computing will also play an important role in future production. This paper only makes limited research on some of the current scientific and technological innovations, and only chooses China as the main research object. Science and technology as the primary productive force, the scope of research is not only this. In the future, science and technology innovation will be given more responsibility to face the world's major challenges. Future research can be expanded to the whole world. The research of scientific and technological innovation will be a long and endless process.

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