

## ***Book Reviews***

**Race Against the Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy, Erik Brynjolfsson & Andrew McAfee, Digital Frontier Press (2011), 98pages, ISBN: 978-1848440708**

### *Introduction*

First, I would like to explain why I selected this book for a book review. The core subject of this book well relates to the reality that we are currently experiencing. We are facing the contemporary dilemma of innovation and lack of jobs. Specifically, the rapid technology innovation (particularly, IT innovation) has contributed a lot to human development but as introduced in this book, it has also taken away many of the existing jobs, simultaneously producing the good and adverse effects. This book tries to solve this dilemma of technology and employment in the American context. However, this is not just an American situation but it could be an important and urgent problem in Korea, also an IT power.

Therefore, this book illustrates well the problems of Korea, which can easily join the advanced countries only when it succeeds in achieving both the acceleration of innovation and the expansion of job creation.

The subject of this book deals with what effects the IT innovation have on the economy, such as jobs, skills, and wage among others. To understand the subject, it is necessary to understand the employment situation of the United States. The employment rate in the U.S. fell into the worst situation since the financial crisis in 2008, but what's more important is that there

is no sign of employment recovery even while the economic recovery is going on after the financial crisis in 2008.

In a free labor market like the U.S. market, the employees can freely be dismissed and the employers can easily employ the workers. Accordingly, the employment was recovered in the same scale as the economic recovery. However, an exceptional situation where those phenomena are connected to long-term employment congestion has occurred. Various arguments as to these phenomena have been raised from various academic circles.

These are almost similar with the discussions explaining the employment congestion in Korea. The first argument is the explanation of the temporary employment congestion by the Theory of Business Cycle. Under the Theory of Business Cycle, the employment congestion is regarded as a symptom of business cycle and the prediction of the possibility of economic recovery and employment promotion is possible at the same time. The major contents of the Theory of Business Cycle is that the present employment congestion means that the economy has not sufficiently recovered.

Another argument sees the Post-2008 situation as a stagnation, a possibility of long-term recession. The major phenomenon of the stagnation is that the economic recession and the consumption reduction occur simultaneously but with no price increase, which only shows the optical illusion effect of economic recovery. This phenomenon is connected with the situation that does not accompany the employment recovery. But this argument has a high explanation power only about the long-term economic recession for the past decades rather than the period after the financial crisis in 2008, not having explanation power

about the decrease in employment after the financial crisis because the employment situation in the U.S. has so far rapidly recovered, even from the long-term recession.

The last argument is “eschatology of employment”, which originated from the book written by Jeremy Rifkin, who tries to explain the present situation through the observation of the process where the technological development after the industrial society replaced human labor. The famous example cited by Jeremy Rifkin is the bank clerk replaced by the ATM machine, which indicates that the technological development reduces the demand for human labor, exacerbating the decrease in employment.

No arguments are completely wrong, nor do they explain all the situations but all the discussions so far (theory of business cycle or stagnation) indicate that the recent slowness in employment recovery, despite the economic recovery, is an important problem in American context, where both economy and employment have rapidly been recovering. This situation can better apply to Korea rather than the United States.

This book focuses on how humans can develop hand-in-hand with technology and machines, in the event that the more widely the technological innovation is expanded, the more workers are replaced by the machines (technological innovation), as explained by the ‘eschatology of employment’ in dilemma puzzle of technological innovation and employment expansion. Above all, this book argues that we have good reason to agonize and discuss these overall phenomena and that it is necessary for us to think about the way how we can develop jointly with the technologies, not fighting (consequently shrinking away from them) against the technologies and machines because we cannot but think that the technological innovation (specifically, digital innovation) has the most important dynamics in current economic development and it can change the direction of labor as a core key of the productivity and growth.

### *Main Content*

This book is composed of five chapters. Chapter

1 deals with the effect of technological innovation on the economy and employment, which was previously explained in the introduction above. The issue of employment and the issue of technological innovation have been separately dealt with as independent issues by many researches so far and were deliberated with a lot of efforts. Their solutions were extracted. However, in this situation where the issue of technological innovation is closely associated with the issue of economy and employment, there were not so many serious researches on the relation between those two issues. While it is true that technological innovation reduces human labor, the new jobs are also created by technological innovation. This book stresses that it is time we should seriously think about the change of labor market by the technological innovation and the labor that leads the technologies.

Chapter 2 asks us whether technological innovation, specifically the development of computers, overpowers the humans. The computers that replace humans and beat the chess champion are frequently introduced in mass media but this book explains that we can find both the bright and dark sides in the computer that replaces humans. For example, this book explains that the distribution and development of computers brought tremendous changes in the business contents, employment, and structure in business organizations. They also brought the change in the type of knowledge delivery such as the ERP system in enterprises that share the knowledge in their organizations. Nevertheless, the author of this book says that there are still many areas where humans have the higher position than the computers. These industries can only be carried out by the persons with the competency of complicated communication and long experience, represented by experienced doctors or veteran lawyers or managers with accumulated marketing ability. The core areas where computers cannot overpower the humans are the areas in need of complicated system awareness or experiences, which are difficult to be automated or the areas in need of problem-solving ability. The author explains about the jobs, where awareness is important, through the expression of “PURE MENTAL JOB”. Of course, he also explains that it is true that the phenomenon of

job reduction occurs in some of sales and distribution areas as the sales and distribution that use the E-business become brisk. In brief, Chapter 2 stresses that the phenomenon of computer technology replacing the human skills will be more accelerated and it is very important for us to study on the expected effects of this phenomenon on the economy.

Chapter 3 explains in earnest about the catalytic role of technological innovation that determines the success or failure of economic growth and development. As an economic growth, the phenomenon of moderate real income increase can be suggested compared to rapid increase of productivity. The phenomenon of GDP PER PERSON > REAL MEDIAN HOUSEHOLD INCOME is starting to appear, which can be concluded in the difference in growth volume and intensified income gap (growth of upper 20%). The technological innovation has a great effect on the increase of productivity, which shows itself in the form of damage to middle class laborers as well as the inequality of wealth. The insufficient creation of jobs is a more serious problem in this situation of ever increasing population, which comes down to the fierce competition in middle class people, not in upper class people. All technological innovations do not increase the income of all people and even if the wealth increases, the winner and loser always exist. As for the highly skilled and low-skill workers, the routine business of low-skill workers are rapidly replaced with the machines and computers and, on the contrary, the demand for highly skilled workers outstrips the supply. About super stars (core manpower) and ordinary people, the representative markets, where the winner-takes-all phenomenon is expanded, include the music market, software market, drama/movie market, and sports market, and it is the reality that there is a tremendous difference in the annual income of ordinary participants and super stars. In brief, Chapter 3 stresses that the change in 21st century technologies is more rapidly progressing and that the creative destruction in the 21st century actively interferes with the employment decrease, organizational innovation, and the change of company operation system, which is caused by technological innovation. Chapter 3 also clearly states that there can be no doubt that the

unemployment due to technological innovation will more widely occur in the job places in the future.

Chapter 4 calls the economic and employment situation discussed so far, which is affected by technological innovation, "DIGITAL ECONOMY", and premises that the digital economy can increase the productivity and size of the whole pie but it can also produce the economic result that can cause some people to be left behind, it suggests some ways to relieve and overcome this situation First, Chapter 4 stresses the importance of investment in education. This can play the role of improving the quantity and quality of skilled work and decreasing inequality. This can simply start with the increase of the salary of the teachers. Second, this chapter argues that entrepreneurship should be promoted. The business sector should be taught in the overall process of higher education, not just in the elite graduate school of business administration. It is time we cultivate entrepreneurs in a wider class of people. Third, this chapter stresses the investment in national infrastructure that can further expand the investment. The infra improvement can promote the employment as well as the increase in productivity. Fourth, this chapter suggests the improvement of laws, regulations and tax system and the necessity to control employment and dismissal. The flexibility of the labor market will increase in the process of making the above measures endure. In short, Chapter 4 argues that we should develop human capabilities and carry out the activities that surpass the technologies by creating a situation where more people can challenge and more organizations can be compensated.

Chapter 5, where the concluding remarks can be found, stresses that it is important in the present situation to make full use of the technologies and to strengthen the lives of people that use those technologies, as hinted by the subtitle, DIGITAL FRONTIER. Case in point, this chapter explains the case of productivity increase of Indian fishers using digital technology, where the Indian fish middlemen and fishermen could increase productivity and income in the process of cross-checking the catch of fish in real-time basis using the mobile phones given to them, in a situation where the fish price was unstable

and the fish distribution market could not sufficiently develop due to the lack of communication network between them. This chapter stresses the importance of people who can derive the economic benefit that use digital technology.

### *Concluding Remarks*

This book deals with the complicated subjects of technological innovation, employment and economic development, suggesting an important insight to us. Although this book stressed the negative effect of technological innovation, it teaches us how well we can live in cooperation with them in this society where the machines and technologies lead us humans.

We can derive again some important issues from this book. As stressed in the main contents of this book, the technological innovation is not disadvantageous to all of us. People in the middle class or the unskilled workers are the most disadvantageous. Are there any alternatives for the general decrease in the number of jobs for these unskilled people in middle class? Is the great expansion of service business responsible for the lack of the number of jobs for unskilled workers caused by the technological innovation? Much of the current job training and employment policy is carried out under the premise of this problem. However, they are showing no significant effect in the creation of the jobs, employment expansion, and increase of income for that class of people. Education is helpful in the long-term perspective but the short-term solutions can include the expansion of businesses that can create many jobs even if they are simple jobs like the service business. The service industry can be considered as the only lever that can support the creation of employment. Accordingly, how we can advance this service business and what effect the service business has on the technological innovation are considered as the important subjects that we should deeply contemplate in future researches. Lastly, I think there may be the cases where we are also the digital frontiers. There is no other country that is as sensitive to technological innovation as Korea and there is also no other country where people change their mobile

phones as frequently as Koreans. I think there must be cases wherein we Koreans are digital frontrunners in as many cases as the Americans. What is important is that we should make efforts to reduce the number of neglected digital people by sharing and learning those cases. At this point in time, I think that we should seriously think about the methods and ways to prevent the jobs from being taken away by technology or to prevent income from being reduced by technology.

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**Creating Silicon Valley in Europe: Public Policy Towards New Technology Industries, Steven Casper, Oxford University Press (2007), ISBN: 978-0-19-926952-5**

### *Introduction*

Steven Casper, the author of *Creating Silicon Valley in Europe: Public Policy Towards New Technology Industries* (2007), is a Henry E. Riggs Professor of Management and Associate Dean of Faculty Development of KECK Graduate Institute of Applied Life Sciences in California, USA.

During the 1999–2000 academic year, he was invited to participate in a research group at the Netherlands Institute for Advanced Studies (NIAS). At that time and place, the author studied the National Innovation System (NIS) and investigated the interplay between public policy and national institutional frameworks to try to answer whether the “Silicon Valley model” in the U.S. is feasible to the European economy.

The main motivation of the study originated from the appearance of dominating entrepreneurial technology companies in the U.S., such as Microsoft in software, Genentech in biotechnology, and Google