

The Age of Knowledge Based Economy and Its Characteristics

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The great leader Comrade **Kim Jong Il** said as follows.

“Science and technology are now developing at an amazing speed, and there is hot competition between countries to lead the world in science and technology.”

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The age of today is one of science and technology, information industry and knowledge based economy at the same time. It is of great significance to get a correct understanding of the knowledge based economy in building and developing the national economy in accordance with the requirement of time.

The age of knowledge based economy is the time when economies rapidly develop by all round scientific and technological development, large scale accumulation of knowledge and its active application.

While economic growth was basically based on mechanical technology and mass consumption of natural resources during the age of mechanical industry, the economic progress in the age of knowledge based economy chiefly depends on all round development of science and technology, large scale accumulation, its spread and application.

First of all, science and technology develop in a comprehensive way in the age of knowledge based economy.

It is commonly understood that all fields of science can make progress only when they are in close interrelationships. It's because the objective world itself, which is the subject of study of science, is closely related and unified one another.

At the first stage when human being began to take a picture of the world, the level of productive forces was so low and there were no advanced measurement devices. It made it impossible for people to undergo deep analysis of objective phenomena, so that their recognition on the material world had been implemented through perception and reasoning. It led to knowledge people possessed visualized lacking in perfection.

The diversification of the field of natural science began to be made into various sub natural sciences since late 15th century, when the socio-productive forces developed and experimental science appeared. And professional studies on different sectors of societies were tried in terms of social science, going along its own independent way of development.

Keeping pace with of all round development of science and technology becoming animated in the 21st century, it took the position of a major trend in scientific and technological advance terms.

Historically, all round development of science and technology has been made in three ways.

One is the all round development of natural science which includes physical chemistry, bio-chemistry, quantum theory, material engineering, and so forth. Another development in the field of social science includes administrative management, socio-psychology, educational economics, management and so on. The last one is the all round development cross-penetrated between natural and social sciences in the form of metro-economics, hydrographical psychology, planning, strategic

study and so on.

The rapid advancement of science and technology in the late 20th century opened up a new age called knowledge based economy.

The amount of knowledge is accumulated in large scale in this age.

At the end of 20th century, remarkable progress of science and technology resulted in explosive increase and large scale accumulation of knowledge. The amount of knowledge people accumulated was so huge, and its accumulation speed accelerated at an exponential rate.

The fact that a half million sorts of books were published across the world each year after 1970s means one book was newly published per a minute. The number of academic articles globally made public reached 5 million every year, and among them, thirteen to fourteen thousands of articles were presented on average per a day, which contained new knowledge unknown to anybody yet. As for articles patented, the annually published number of patents was beyond 300 000 each year on average, which means 800 or 900 were patented per a day. When it comes to the growth rate of science and technology, it increased from the previous record, 9.5% to 10.6% in 1980s. In 1990s, its growth rate went up by 12.5% each year.

In this trend, such up-to-date technologies as IT, nanotech, bio-tech and others have been in practical use.

And then, the age of knowledge based economy is when knowledge actively applies in practice.

The active application of knowledge into economic activities including production and circulation can be represented by the fact that the time interval between the creation of knowledge and its spread or application is remarkably shortened.

It took approximately 50 years in the early 20th century, 30 years in 1950s, 20 years in 1980s, and 5~10 years in 1990s. It's said that the time interval has been much more shortened, merely a few years, now. The shortened time period between R&D and its application speeded up the process of integration of science, technology and production, so that the economic progress has taken the form of which science plays a vanguard role, technology develops and production of society expands.

R&D, that is, the creation of knowledge has become a necessary preceding process for economic activities. In result, it is commonly understood that economic growth is determined by the creation of knowledge, large scale accumulation, its spread and application.

There are some characteristics in the age of knowledge based economy.

Firstly, the age of knowledge based economy is characterized as the main resource for economic development being scientific and technical knowledge.

To conduct economic activities, it needs natural resources, labor force, knowledge and other sources. However, the role played by these resources varies age by age.

The economic activities and growth relied in large measure on labor before the age of manufacture, while natural resources occupied the most proportion of input needed to develop economy in the age of manufacture. Who exploited more resources and processed to produce more output with more capital or funds became a question of key significance so it determined the growth of economy.

Of course, it should be kept in mind that knowledge played a part in developing economy even in

the previous economical ages. By clarifying the scientific principles on which should be dependent in conducting economic activities, knowledge not only provided a scientific guarantee for economic activities but also it has been a powerful tool to improve efficiencies by providing people with more productive means and methodologies.

Knowledge, however, failed to be a fundamental resource in economic activities in the past even though it had been a necessary means for economy for some reasons. They include; low level of science and technology, limited amount of knowledge accumulation, feeble link between science, tech and production.

Today, the age of knowledge based economy, the main resource is just knowledge. It's the main source in wealth creation and widely recognized as the most productive resource whose creative character is the highest. Knowledge has no limitation in its characteristics as well as the ability to produce wealth in an unlimited way. Such characteristics knowledge has make it possible for businesses to produce a great deal of output with extremely little fund, information and knowledge in this age.

The level of economic development of a nation and its national power, in recent days, is determined by how much knowledge is available in a country and how many talented people with highly valuable knowledge a nation has rather than whether natural resources, labor or fund is rich or not.

The second point to be mentioned is that the infrastructure of economy consists of information highways, information networks, information harbors and so on in this age. In addition to it, the key performers of production in societies are the working people engaging in intellectual labor.

In the past, the infrastructure of economy included land, road networks, railway networks, harbors, aviation networks and so forth. At the time when the main sector of economy had been agriculture, infrastructure of economy was land while the basic components of infrastructure were composed of road networks, railway networks, harbors and aviation networks when industries became a major sector of economy.

On contrary, the age of knowledge based economy includes information highways, information networks and others as its infrastructure.

Economy grows, in this age, on the basis of rapid development of information facilities, building of information highways, information harbors, and in particular, global computer network.

The chief performers responsible for social production embraced laborers engaging in physical labor.

But in accordance with the trend in which the number of applications of new knowledge and techniques gradually went up and the role played by them was getting higher in streamlining and development of technologies, the number of intellectual workers began to occupy larger proportion.

In the knowledge based economy, the performers of social production are those who engage in intellectual works, so that every member of society is able to conduct productive activities for social wealth only with knowledge.

While 80% of labors worked in direct production processes in the age of manufacture, it has been less than 20% today, on contrary, the rest, 80% of laborers is in the process of knowledge production

and its application.

The other characteristic the age of knowledge based economy has is the main focus is put on R&D and training talented people in the management of economy, and there is a strong tendency of economy becoming knowledge intensive.

In the age of machine based industry, businesses concentrated their own efforts on fund and managing laborers. It's because of the position fund and the number of laborers took in economic activities.

The creation, diffusion and application of new knowledge that give a powerful stimulus to the economic growth can be implemented by none other than talented people in the age of knowledge based economy. Therefore, the focus of business management is put on knowledge management, that is, R&D, training of talented people.

With which industry as its axis economies are formed is one of key indicators to distinguish different economic ages.

The economy where farming played the leading part in production can be characterized by labor intensive structure, while resource intensive one in the age of manufacturing industries being leading sector.

Today's economy, however, is being restructured towards the direction with knowledge intensive industries as axis based on cutting-edge technologies. Such industries of 21st century as bio-industry, nano-industry and others represent knowledge intensive ones developing based on up-to-date scientific and technological knowledge. The share such industries take in economies is getting higher and higher day by day so they have been becoming the core industries, thereby leading overall economic growth.

To get a correct understanding of the age of knowledge based economy, it's necessary to make clear the interrelationship between the age of information industry and one of knowledge based economy. The reason why it is so is because now is called both the age of knowledge based economy and age of information industry.

We will have to turn out to bring up our economy to the world level at the earliest possible date with a right understanding of the age of knowledge based economy.