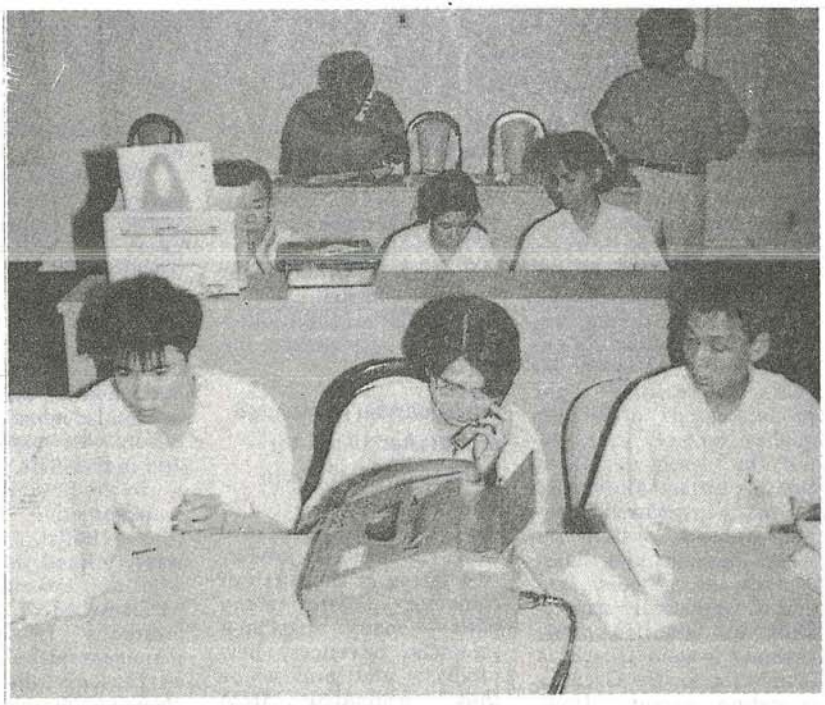

KNOWLEDGE-BASED ECONOMY
ORIENTATION AND OPPORTUNITY FOR VIETNAM

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The industrial revolution beginning since late 18th century replaced traditional civilization (agricultural civilization) with industrial one. In its turn, the present industrial civilization has given its way to a new civilization - intellectual civilization. Accordingly, the knowledge-based economy is in the transitional period of establishment. Some scientists say it will come into being in the second decade of the new millenium but the United Nations forecast its appearance in late third decade. However, others argue this process will occur during the twenty first century. In spite of different opinions, the facts and events of developed industrial countries (G7) and newly industrialized ones reveal the knowledge-based economy is being shaped and will develop fast in the first years of the 21st century. Its seeds could be seen since 1980s when the industrial revolution started its third stage. From overseas and local different references, books, newspapers and reports of scientists, I would like to contribute my opinions to the forum which remains new but promises to attract large researchers and those who are concerned in the time to come.

1. On the name of knowledge-based economy

There are so far many different names for the new economy:

- The post-industrial economy
- The new economy
- The information economy
- The network economy
- The digital economy
- The 21st century economy
- The electronic economy
- The learning economy
- The knowledge-based economy
- The knowledge-directed economy
- The knowledge economy

In his book *The Revolution of Knowledge Value - the End of the Industrial Society and the Beginning of the Knowledge Value Society* published in 1985, Kaiokutai says the knowledge-based economy is in the embryonic stage and knowledge will become the source and important condition of development.

In 1994, the Canadian Government prepared for the shift to the society of knowledge economy.

According to the Organization for Economic Cooperation and Development (OECD), the name of this economy is the knowledge-based economy and this concept has been widely used since 1995.

In the Netherlands, knowledge is used as a basis to develop the economy and the Dutch Government has planned to invest in knowledge expansion since 1997.

According to Prof. Đặng Hữu, the knowledge-based economy is an economy where the invention, dissemination, and utilization of knowledge play a decisive role in economic development and produce wealth to improve the living standard. A sector belongs to the knowledge-based economy if the high technique accounts for 70% of the total value of its products. The knowledge-based economy is an economy having two-thirds of productivity added due to contribution of knowledge and new technologies; over 70% of GDP generated by manufacturing industries and services which apply state-of-the-art technologies; and human capital represents 70% of gross investment capital and white-collar workers 70% of the laborforce. The knowledge-based economy is an economy that most of its sectors are based on knowledge and latest achievements of science and technologies. The knowledge-based economy comes into being via fast and sustainable development of four major pillars: energy technology, materials technology, biological technology, and information technology, in which the information technology implements a specially important role.

2. The establishment and properties of the knowledge-based economy

The economy in the 21st century can be recognized as the knowledge-based economy. The knowledge-based economy is the transition and development at higher level of the industrial economy depending upon the progress of thinking, intellectual

and science and technology. It also proves the evolution of human consciousness in production and life.

It can be seen that the third wave of the industrial revolution is the starting point of appearance and development of the knowledge-based economy. In the process of establishing the knowledge-based economy, human knowledge plays a crucial role during the process of development. This role will increase day after day, its value will be higher and higher and this will become a core of new development. Due to robust growth of knowledge, information becomes a major input of production. Science and technology turn into direct productive forces greatly affecting production and living as Karl Marx's forecast over 100 years ago: " As the industry develops, the production will be less dependent on the working hours and the number of workers...or rather it depends on the general level of science and technical progress or on the application of that science to production."

The primitive economy was based on natural sources via hunting and picking activities thousands of years ago. Until the 18th century, the agricultural economy grew thanks to manual labor and land (cultivation and husbandry) and handicraft. The industrial economy increased the human wealth by thousands of times as compared with the previous period. Its process of production depends mainly on minerals, capital and technologies. Goods are made serially in large scale thanks to mechanization and automation. The knowledge-based economy is in its early stage of establishment. It will be shaped and develop fast in the 21st century. Its operations are based on resources of knowledge, information, and human capital. They can be indicated in inventions and development of information technology, growth of intellectual enterprises and finally computerization.

The properties of the knowledge-based economy are as follows:

First, the techno-scientific revolution shows a boom in which the information technology is the most outstanding. The as-fast-as-lightning development of science and technology has affected and pushed the information technology to grow. The Internet and the World Wide Web took shape. Later electronic commerce and a series of on-line services (finance, banking, insurance...) are established and developed. The cyber-trade becomes a promising business whose sales have skyrocketed only for short time. Within 10 years from 1991 to 2000, via Internet, the American e-commerce may reach 3% of GDP and 6% by mid 2010. The global cyber-trade has generated booms via Internet and its turnover is estimated at US$1,600 billion by 2003.

The information technology has become a leading industry and shortcut linking industries, sectors and countries and establishing a global market. While many nations have not yet exploited the Internet benefits, the U.S. and EU are developing the second Internet with huge investments and expectations. The American specialists say the transmitting speed can increase 1,000 times as the transmission of an encyclopedia takes a second only. In a few years, a modern computer is able to handle millions of operations in a second instead of thousands of operations as at present. Regarding this field, many lessons can be drawn from overseas breaking ideas and intensive investments in science and technology as well as in high-tech parks. The American Silicon Valley earns an annual turnover of hundreds of billions of dollars and the British electronic valley reached sales of billions of dollar although it has been newly founded.

Second, the knowledge-based economy changes productive forces in terms of structure and nature.

The previous production depends mainly on manual labor, natural resources and finance in kind while at present, production is based on new knowledge, intellectual, and creative skills. Previously, in the structure of commodity value, the material value accounted for a large ratio (even over two-thirds), as a result; the role of natural resources is very crucial. Those countries, which possess large area and rich natural resources, have large advantages and effects. Today the similar analysis shows an upside-down order, human capital may exceed 70% of the total capital. The material value tends to drop to a possible minimum and the value of knowledge, science, and technology will increase to a maximum. According to a work by Wu Gui Song, science and technology contribute 80% of economic growth and therefore the techno-scientific investments worth 3% of GDP is needed and the budget for education should reach between 6% and 8% of GDP.

The boom in techno-scientific achievements and information technology leads to the restructuring of economic sectors and industries, and labor in the knowledge-based economy. The proportion of well-educated workers in OECD countries is 60%-70% of the total labor force. In the U.S. 80% of the working population or 100 million workers has moved from the manufacturing industries to services in recent years. This change does not imply that the number of jobs reduced, but more and more new careers are available. In the past 20 years since 1980, as many as 44 million traditional jobs are lost, but 73 million new jobs created. As a result, the knowledge-based economy has created a very fast increase in employment rate. Those countries, which pioneer to develop state-of-the-art technologies and carry out advanced education and training, show no concern about unemployment. In contrast, those which previously obtain advantages of cheap labor or lower level of education and training and technological develop-

ment will lose their competitiveness. They will lag farther behind developed countries. Their vicious circle of poverty will be hard to remove. The best way to escape this dilemma is to stimulate the people's creativeness, bravery, and venture. New inventions and ideas should be respected and nurtured. The country is required to remove backward industries and to venture on investments. Developed countries have ventured on techno-scientific investments to increase their human capital. In Finland, 50 years ago like our country at present, the rural population and agricultural labor accounted for more than 70% but this figure currently reduces to 6% only. American farmers represent only 3% of the population, blue-collar workers 10% while white-collar workers above 85%. As a result, its economic structure shows a rapid change. The manufacturing sector previously accounted two-thirds of GDP but now falls to less than 50%. In developed countries, the contribution from non-manufacturing sector soars to 60-70% of GDP, even above three-fourths of GDP. The economic structure has thus changed from agriculture-industry-service to industry-service-agriculture and now service-industry-agriculture.

Third, it is a venture investment and optimistic results.

In the industrial economy, investments in R & D make up between 1% and 2%; this percentage must reach more than 3%. It is backward and insufficient to earmark 2% to 3% of GDP for education. According to Mr. Wu Gui Song, this figure has to reach 6-8%. The U.S. spends 7% of GDP developing human capital and 2.8% of GDP on venture investment and R & D activities for new inventions. It also invested US$1.1 billion in 1996; US$2.1 billion in 1997; US$3.5 billion in 1998 and US$3.8 billion in the first half of 1999 to expand its Internet. As a result, the information technology and electronic industries generated 45% of the growth rate while the traditional industry - automobile manufacturing - reduced to 4%. The growth rate of the high-tech and information technology industries is estimated at 25%-40% annually. The Silicon Valley alone earned US$267 billion in 1997 and this figure may reach US$500 billion this year. To increase venture investment and develop high technologies are top concerns of the American. The U.S. has so far 300 hi-tech parks, France 35, and Japan 32 only. The U.S., EU, and Japan, on the whole, are holding dominant shares and compete with others in this field.

The marvelous evolution of information technology shows its two-side feature: one is the increase in functions and simplicity in using. Another is that product prices drop dramatically (by 25-40%) per year because the productivity soars fast. This will cause big challenges to managers and consumers.

Fourth, the appearance of goods changes. New goods - intangible ones - occur. They are both material goods and non-material goods. They can be used many times. Many people can use them at the same time. The U.S. is going ahead to produce these products. The development of high technology and information technology has contributed to the purification of the economy.

3. Opportunities for Vietnamese economy

Information technology and economic globalization is now a common trend. The integration and competition thus become inevitable and increasingly fierce. All peoples in the world will face opportunities and challenges. Although their starting points are different, but the creative ideas and the holding of new concepts may be even. However, to catch up with and integrate into new trends successfully requires sufficient capability, knowledge, bravery, and appropriate investment.

More than 200 years ago, or in late 18th century, the Nguyễn dynasty in Vietnam like the Ch'ing dynasty in China lost a big opportunity: the integration into the industrial revolution. Only the Japanese emperor Meiji seized that opportunity to modernize the country along Western lines. At present, Japan remains in the top list of developed countries although its knowledge-based economy comes later than the U.S. and the EU.

The second opportunity has happened. Malaysia, India, and China have positively faced new challenges, and what about Vietnam? In my opinion, thanks to the Party and the Government and the people's great efforts in education, Vietnamese achievements in basic sciences are significant (the country's HDI continuously increases from 121 to 116, 110 and now 108). The domestic army of scientists is growing fast and provided with advantages of the market mechanism. Millions of Vietnamese reside overseas; tens of thousands of them are involved in high tech industries, information technology. They all think of their fatherland. In the Silicon Valley alone, there are tens of thousands of Vietnamese working in high-tech industries and making large contributions to its development during the past 25 years.

To make the best use of this golden opportunity, the country is required to:

- build and implement an open and liberal system to develop knowledge and attract all people's contributions in this field;
- respect, nurture and develop new inventions and creative ideas, at the same time boldly remove outdated and low-productivity industries;
- increase investments in education representing 20%-25% of the state expenditure with a view to reaching between 5% and 6% of GDP. This percentage should be higher in the next years. The spending on R & D has to account for 2%-3% of the state budget to reach 1%-2% GDP; and
- give priority to information technology and Internet expansion in addition to construction and development of hi-tech parks.■

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