

## *Development of Information Technology Bring New Trend of Business*

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### **Abstract**

By development of both systems and tools of communication and handling of information, new products and systems have been developed so remarkably that these new products and service make big impact on the daily life of the modern people. Moreover, IT may have a possibility to change not only industries but also society as a whole like Industrial Revolution and Religious Reformation in the history. Also, there will be new type of business which will do something good for the society so called “socio-business” in stead of present profit oriented business.

**Keyword:** *IT (Information Technology), Industrial Revolution, Information Revolution, Socio-Business,*

### **Introduction**

From the end of previous century to the beginning of this century human being will be experienced quite big historical changes in many aspects in not only industries but also society as a whole. This change will be compared to Industrial Revolution in 18<sup>th</sup> century.

To understand the historical change three steps of analysis will be necessary. First will be the impact on present industries and society by application of IT. Second will be perspective of the wide influence on industries and society by IT in comparison between information revolutions caused by IT with industry revolution in 18<sup>th</sup> century. The third is perspective of the result of such influence and impact on society by information revolutions.

It was considered that by application of IT, many new fields of industries will be opened but also society of human being will be changed since many concepts of the people will be changed fundamentally by easy approach to information.

### **Impact of “IT” on Present Industries and Society**

The birth of the new information society due to development and application of IT in around 1980s has changed the way of business by which companies did works in many aspects. The traditional hierarchical organizational model was found to be too slow to accommodate the quickened pace and density of communication and commercial and manufacturing activities of companies made possible by the computer and telecommunications revolution.

First changes in the management of corporation begun inside the firms. Companies begun to flatten their organizational hierarchies, creating horizontal organizational models that could better accommodate the mobility, flexibility, and speed of a new commercial era. Thus layers of middle management were reduced or eliminated altogether. The new organizational chart decentralized decision making, delegating more authority directly to personnel at the point of engagement with suppliers and

clients.

In general, development of IT, information between end user to manufacture can be easily processed. This means that manufacture can produce product which meets the end-user's detailed requirement. This will change the production system from mass production to other system close to order made.

Also, as Drucker pointed out, nature of management has been changed so remarkably that domain of industries become more flexible. And also marketing has been changed by application of IT remarkably. In this situation new products were developed in other domain of industries, as pointed out by Christensen in his book of Innovator's Dilemma such as digital camera. Other new type of products was developed in devices of IT. Such as cellar phone equipped by digital camera

Actually remarkable progress can be observed in distribution and procurement of goods. Parcel delivery service system established their system firmly in daily life of people in these days. Also, value chain system not only in manufacturing but also in many businesses was used for their efficiency of operations. Many other fields such as remote medical service and e-commerce such as internet shopping system become more common.

In general as to society the continuing education system become more popular by using both parcel delivery systems and internet communication system. Thus, education system is one of the systems which will be changed most remarkably by application of IT. Some universities in U. S. A. established so-called "Global Campus" which offers the lectures by using internet system. In this case borders of the countries and nationalities of students do not have meanings any more. According to this, globalization will become reality in the world of academism. This situation provides some new opportunities for industries and people of today.

Another aspect in business which was opened by application of IT is by combination of real and virtual provided by using IT. Fundamentally IT provides some information which consists of concept. However many goods are tangible which cannot be transferred by IT. However, information of goods will be transferred by IT. Therefore combination and relationship between information and actual tangible good will cause many problems or issues to be settled.

## **Possibility of Evolution of New Business by Application of "IT"**

### **Background of Development of "IT"**

In order to analyze the possibility of evolution of new business by wide application of IT, it is not enough to discuss the impact by IT on present industries and businesses. One of the procedures to follow to know the possibility of new industries and business is to analyze the impact and influence from two different view points.

1. First view point is to analyze the progress of application of IT in comparison with that of Industrial Revolution since impacts or influences of application of IT are quite big.

2. Second view point is to analyze the progress of application of IT in comparison with the case of Religious Reformation in 14<sup>th</sup> century because both changes have nature of revolution in information in common.

To analyze the progress of IT and its influence from first view point, it is necessary to make comparison table as shown in Table 1. In the case of Industrial Revolution original technology is improvement of steam engine by James Watt at 1772. Progress brought by this improvement of steam engine is something improving supply of power in its nature. Therefore, revolution should be so-called “revolution of power supply”.

Table1. Comparison between Industrial Revolution and Information Revolution by IT

Name of revolution	Age	Technology		Progress	Result of development	
		Principle	Nature		Direct	General
Industrial Revolution	1760 □ 1830	Application of Steam Engine	Revolution of Power	Development of Transportation of goods	Manufacturing Transportation advanced	Abundant in material & goods
Revolution of IT	1995 □	Wide Application of IT	Revolution in Knowledge	Improvement in Productivity in service and knowledge industries	Knowledge & Service will advance	Rich in mind & consideration of eco/economics

However, this progress did not remain in this extend. By easy application and easy control of power to agriculture which was main industry at that time, productivity of agriculture jumped up and second “enclosure” in the history of Britain was caused to decrease the number of people working in agriculture. Then people moved to city to find out new job. These people work in primitive manufacturing and commerce businesses.

The relationship between power supply and evolution of culture was discussed by Leslie A. white. He concluded when power supply become surplus by some reason culture was evolved. According to this analysis revolution in power supply will cause new culture to change not only industries but also society as a whole. This change of society and change in consciousness of citizens will lead to revolutions by citizens.

The extraordinary technological advances of the great Industrial Revolution were not achieved overnight. And the most important invention in Industrial Revolution was the invention of machines to build machines which came in the late third of the eighteen century of a period of contagious novelty. This merging stream of innovation may have been a quite lucky harvest.

This sequence of inventions took some sixty years and dominated completely the older technology. The new technique yielded a sharp fall in costs and prices, and rapid increase in output and consumption. Therefore, it is considered that Industrial Revolution ran about a century from 1770 to 1870, the entire interval between the old order and the establishment of a fairly stable relationship of the different aspects of industry under the new order.

In comparison of the progress of IT with progress of industrial revolution, IT will widen the application of knowledge of human being more effectively and more efficiently as application of power in the case of industrial revolution. Some surplus of knowledge will used for not only evolution of new industries but also will make some changes to society. Some philosophy or new concept will be created by using these surpluses of knowledge. In other words knowledge will make completely new knowledge in the future.

Table □. Comparison between Religious Reformation and Information Revolution by IT

Technology		Age	Changes	Progress	Results	Out standing issues in the history
base	nature					
Invention of Printing Machine by Gutenberg	Wide spread of printed matters	1455	High Availability of Bible & map	Production of bible other than church	Free from medieval thought	Reformation of Religion, Discovery of new continent
Progress of Application of IT	Knowledge Revolution	1995 □	High Productivity of Process of information	High Productivity in service	Expansion and development of service and knowledge industries	Knowledge Revolution

More detailed discussion on the nature of Religious Revolution should be necessary for its comparison with the revolution. In spite of printing's manifest advantages, it was not accepted every where. The Muslim countries long remained opposed, largely on religious grounds: the idea of a printed Koran was unacceptable.

However, Drucker compared the progress of IT in comparison with invention of printing machine which bring some kind of Revolution of Information to cause Religious Reformation and Discovery of New Continent. These progresses are shown in Table 2 in comparison with progress of development of IT.

According to the result of analysis by two view points progress of application of IT will give so big impact on both industries and societies that it brings paradigm shift in the future.

### **The Herald of Changes Caused by Development of Application of IT**

Even in now a day, there are so many changes which are herald of big changes in the future. These heralds should be considered coming historical changes of paradigm shift. In this connection, the author of bestseller of book named "Hydrogen Economy" said in his book, IT will change industries to put more priority on intangible product such as contents than tangible goods. This tendency will influence on the value of the products. For instance he pointed out majority of rather wealthy people today spend more money to buy paid experience than tangible goods. This tendency is in the same direction of well-known Maslow's Pyramid diagram of desire of human being.

This present tendency caused by development of IT is making some changes in the field of economics. Today in U.S.A. there is some kind of boom of economics. This fact may be considered a kind of herald of the big changes in the future. One of the key figures of this boom, Professor Joseph E. Stiglitz said in his book "Present free market system which supports present capitalism is the system aiming efficiency to produce products at least cost and to meet the requirement of consumer effectively and continuously. The reliance of this system goes up to the well-known doctrine by book of Wealth of Nation by Adam Smith. Thus, the system has been dependent on the well-known metaphor of "unviable hands of God". However, after two centuries progress of this system in the development of modern economy some adjustment should be necessary and indispensable. The externality being considered not adaptable in this system has become important factor since environment issues and importance of public issue

becomes so big that these will be big factor to influence free market system. Consequently, adjustment on economic theory originated by Adam Smith will be necessary mainly due to development and application of IT.”

**Expansion of Availability of Information**

By development of IT availability of information have been rapidly expanded. These phenomena can be remarkable in the case of information related to both central and local government because one of important roles of the central and local government is to communicate necessary information to their people. By expansion of availability of information as shown in the figure 1 below, new business and N.P.O chance appears also as shown in figure 1.

Here, we consider two set of axes—one is profit oriented and non-profit oriented. Another is public and private. By these two axes business and public works can be illustrated as each zone formed by two axes. This business which originated from the public work are called here “Socio-business” which have been belonging to the some part of public work. On the contrary some information originally belonging to business zone can be used for public works like PFI(Private Finance Initiative).

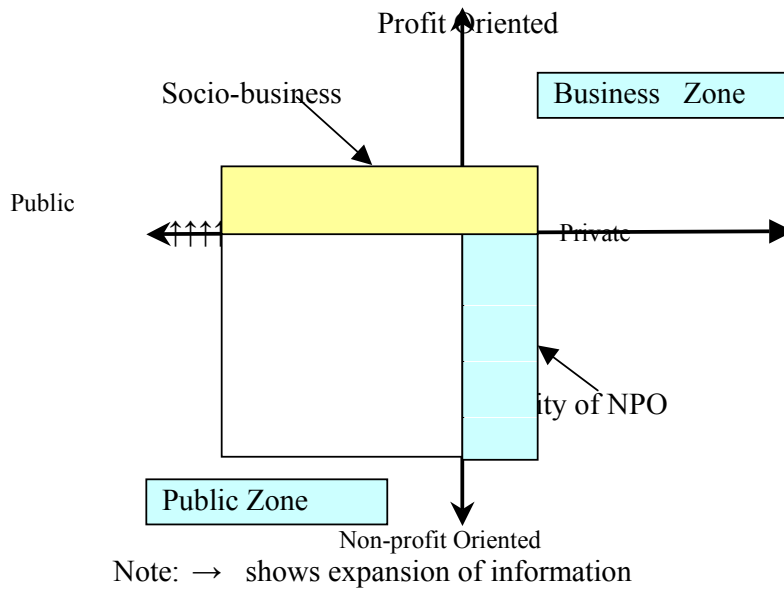


Figure 1 Availability of Information and Evolution New Business & NPO

According to these progresses of expansion of information and evolution of new business and N.P.O, roles and functions of central and local government may be changed so much that whole society will be changed. Some of heralds of this change are seen in the activities of NPO and NGO. Therefore, some part of these activities will be done as in business.

**Evolution of New Business Caused Due to Changes by “IT”**

**The Nature of New business**

As mentioned by Professor Joseph E. Stiglitz, modern business of enterprises is operated mainly for increase of capital. Of course other important factors such as social value and human value were taken into consideration as shown in Figure 2. In this figure, three major zones of value are indispensable for justification and feasibility of industries.

Since today it is the ages of capitalism, the priority is placed on the zone of capital value. In this figure

1. Value in the capital zone means possibility of increase in capital. That is profit.
2. Value in the humanity means making and doing something good for humanity and for sustaining environment including human-being itself as a part of nature.
3. Value in the society means making and doing something good for the regional and global society.

However minimum requirement is the area where three zones have in common.

On this system IT is applied. According to the effectiveness of information by IT, three zones become closer as if information acts something like binding ropes as shown in Figure 3. According to this action of information common area of three zones becomes bigger. This means effective use of information by due application of .new area of business area will be value of some area in humanity and society as shown in figure 3. The businesses newly appeared in area of humanity and society should be called "Socio-Business" here in the paper.

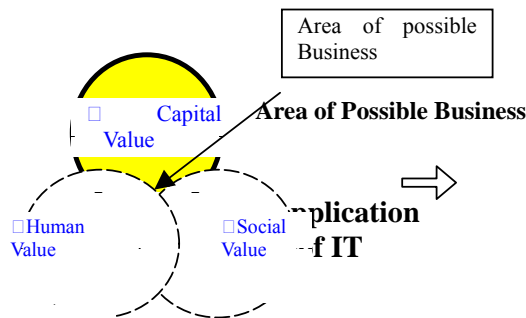


Figure2. Possible Zone for Business

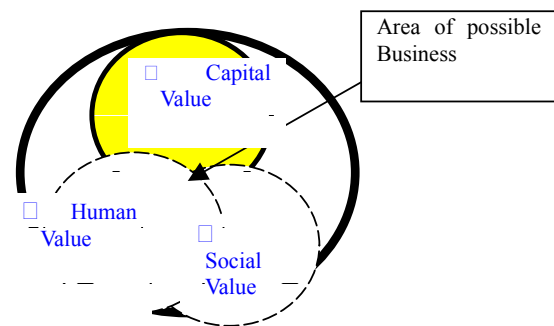
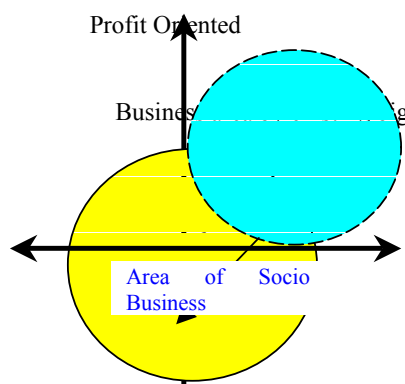


Figure 3. Expansion of Possible Zone by Application of IT

### Evolution of "Socio Business"

In order to explain "Socio Business" more clearly, it will be effective to analyze said "Socio Business" in other way as shown in Figure 4.



Market Oriented

Community Oriented

Community  
Business

Mission Oriented

Source; By adjustment and rewriting to Figure in book by Kitaya in the reference.

Figure-4 Evolution and Progress of Socio Business by Wide Application of IT

This figure shows two axes; vertical and horizontal. Both ends of axes show the direction of orientation, profit, mission in vertical axis, and community and market in horizontal axis. By using these two axes existing big business are mainly plotted in the area between profit axis and market axis as shown in Figure 3

According to the analysis in previous chapter more community oriented and mission oriented zone become business zone in the future of and the zone of center on the cross point of two axes should be Socio business zone. Some existing business will be shifted to the direction shown by arrow to Socio business and new business will be started in the zone of socio business as shown in Figure3.

At present, certain number of big business is participating in philanthropy and mécénat. Some of them have in their corporate concept, mission of virtue and welfare of the society but in passive way. However, socio business shown in figure does some business in doing something good for community and for their mission in the positive way. By doing so, some area of business in solving many problem and difficulties present people and societies are facing. This tendency makes some paradigm shift and open new page of the history of human being.

### **Regional Opportunity for Socio Business**

One of the important roles and factors of administration works of local government is to give adequate information to the people of the region promptly. For this purpose IT will improve the previous situation remarkably. Moreover, especially in Japan due to decrease of allocated grant to local government from the central government many local government are suffered from deficit of budget. To get out of this many units of local government are looking for the possibility to do some unification for effectiveness by the scale. In this case IT will do big role for effectiveness and efficiency of administrative work even larger region after unification. Also, some part of works may be done by so-called out sourcing for efficiency. These businesses will be typical socio-business.

Globalization is the trend of the century. However people of wealthy and developed countries should no forget the fact that according to the statistics by the United Nation sixty-five percent of the human population has never made a single telephone call, and one-third of the human race has no access to electricity or any other type form of commercial energy even in present age of IT. Lack of access to energy, especially electricity, is a key factor in perpetuating poverty around the world. This fact tells many things to do in the future for these regions if we develop the socio-business.

## **Conclusion---“Socio Business” Will Open the Door to the New Society of the World**

It can be said that people of today is facing the dawn of age of historical change of the age. Humanity and social interest and welfare which have been considered externality of economics of capitalism will be handled in some part of business.

Moreover, there will be some possibility that present conflict of human being by difference in religion and culture after the conflict caused by the difference in economic ideology will be settled down by the change of the concept of people of the world by information revolution brought by wide application of IT. These optimistic perceptions might be overestimation of IT. Also, Industrial Revolution make quite big advance. However, the consequence of these advances was growing gap between modern industrial countries and laggards, between rich and poor. Human being should not forget this lesson. Revolution of information in the future should be decrease these gaps and do something good for the prosperity of whole people of the world by having same information in common and by that same concept in common or simply by education given by IT.

## **For the Research Works to Be Done in The Future**

The nature of this research is some kind of preliminary research and research in progress since only short period of time has been elapsed after starting actual research work. However, taking importance of this subject into the consideration, submission of this paper may be indispensable for further advancement. Therefore, this paper may be considered some kind of proposal and interim report of research so far. Fortunately, this research will be granted and adopted as granted research by Ministry of Science and Education of Government of Japan this year and author will take some role of research. Aiming establishment of new society of more ideal nature for prosperity of human being better than present society by capitalism, research work in this field will be indispensable.

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