

Seoul Journal of Business

Volume 6, Number 1/2 (December 2000)

Time Streams, Accelerators, and Catalysts in Strategic Decisions

Suck-Chul Yoon

College of Business Administration

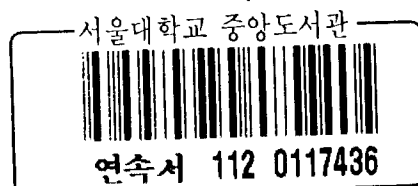
Seoul National University

Abstract

This paper assumes that pursuing long-term goals to build organizational competence and capabilities, such as developing strategic technologies, is a right thing for managers to do. However, pressures on the managers to generate short-term financial profits make it difficult to pursue the long-term goals. Hence, it is necessary for long-term oriented managers to arm themselves with an overarching philosophy to uphold their visions, goals, and projects. The first objective of this study is to develop a philosophical framework for the long-term oriented managers to explain and justify what they are doing. Managers equipped with this framework will find it easier to mobilize support from internal and external constituencies. The second objective of this study is to formulate a model for the planning managers to think in time-streams to realize their long-term goals in the shortest possible time.

The planning model to think in time streams involves three steps. The first step is to visualize a desired future in terms of new products, technologies, and trust relationships. The second step is mapping backward (from the desired future to the present) to create catalytic means to accelerate the realization of the vision. The third step is to weigh the expected long-term gains against the short-term losses coming from the means, and analyze contingencies as to when short-term concerns should be recognized or take priority.

As for research methods, this study draws on concepts and definitions developed from both natural and social sciences, and applies them to analyze historical cases in business management. This research acknowledges the 'paradigm of new science' maintaining that nature is so creative, innovative, and even intelligent, that she can intimate wisdom and intelligence to modern-day organizational managers. This study analyzes scientific facts (e.g., the Brachistochrone) that intimate nature's intelligence to minimize the time it takes to achieve its final (or long-term) goal. As a conclusion,



this study argues that current strategic planning models, mostly developed in advanced countries, lack long-term values that can inspire the managers in developing countries to keep up with advanced countries. In a developing country, managers ought to act on long-term value, and give priority to one thing over another. By doing something in the present so as to face the future in a stronger position, the managers in a developing country can build up their organizational and technological capabilities to keep up with the advanced countries.

1. Introduction

The pressures on managers to generate short-term financial profits make it difficult for the managers to set and pursue long-term goals to build organizational competence and capabilities. A recent preoccupation is time-to-market, that is, the time it takes for a product to go from conception to the customer. Others measure time-to-break-even or time taken for an investment to be repaid. Future cash flows are discounted in proportion to the time taken to realize them. A company must do its tasks in the shortest possible time. In addition many of these swiftly completed tasks need to be synchronized with each other. From these needs, various techniques for project managers to manage time properly have been developed. The critical path method (CPM) and the project evaluation and review technique (PERT) are the ones still widely used. These are planning tools with the objective of optimizing the efficiency of executing projects. Here efficiency implies effecting the utmost reduction in the time required to complete the project while accounting for the economic feasibility of using available resources. In this context, these techniques are empty of long-term values.

However, it is not hard to see that the whole Industrial Revolution and the factory systems were created by the willpower of managers taking long-term views. They were managers making decisions, acting on their long-term values, giving one thing high priority, another one low. Even in the currently most advanced countries, so were the managers when their country was in the process of development. Now, having developed their economies fully, what matter to them is what shareholders get in the near future in Wall Street or the City of London. However, in most developing countries (such as Korea, the author's homeland), managers ought to do something in the

present so as to face the future in a stronger position. Frequently they have to exchange the opportunity to profit short-term for the opportunity to develop a strategic technology with a long-term future. In view of this situational gap, this study aims to formulate a philosophical framework for long-term oriented managers and to develop a planning model with which them to accomplish their long-term goals.

2. Management Philosophy on Roundabout Methods

Intimations of Economic Wisdom from Nature

Marvin Minsky, one of the founders of artificial intelligence (AI), said that AI is the science of making machines do things that would require intelligence if done by humans (Stillings, 1987). In other words, AI designers develop computer-based information systems that exhibit characteristics of human intelligence (HI). A question arises here: where does human intelligence come from? This research assumes that HI can come from nature's intelligence (NI). There are scientists and philosophers who maintain that nature is the embodiment of indwelling reason. The Dutch scientist, W. Snell, proved that when light passes from one medium (e.g. air) to another (e.g., water), the refraction of the light takes place in such a way as to minimize the time the light takes to reach its destination (Hewitt, 1993. P. 498). Many other scientists have proved also that nature manifests its own 'intelligence' by doing nothing in vain, being even frugal or economical, employing the fewest means to achieve its ends (Adler, 1977. P. 1170). Ilya Prigogine won the Nobel Prize in chemistry for his work demonstrating the capacity of certain chemical systems to regenerate to higher levels of self-organization in response to environmental demands. These new discoveries and developments increasingly ask today's managers to pay attention to, and learn from nature.

For example, let us examine the way an eagle minimizes the time it takes to catch its prey. When an eagle spots its prey from high in the sky, the eagle, instead of dashing directly towards its prey, takes a roundabout route starting with a vertical dive at first, as depicted in Figure 1.

As the eagle nears the ground, it changes its course smoothly towards a horizontal direction and snatches up its prey. Because gravity works vertically, the vertical dive enables the eagle to increase its speed most effectively, and this speed in turn can increase the kinetic energy of the eagle. The eagle then releases the kinetic energy to accelerate its speed on the horizontal portion of the path and catch its prey, in effect, in the shortest possible time. Some zoologists report that the eagle's speed when it snatches its prey is about 200 miles per hour (Grambo, 1999). Physicists call the path of this fastest descent the Brachistochrone curve (Encyclopedia Britannica, "Brachistochrone" on CD-ROM 1998). It is what mathematicians call the cycloid curve on which a body, subjected only to the force of gravity, will slide down between two points in the least possible time. In short, the Brachistochrone is a 'roundabout' path that seems to deviate from the shortest (most direct) path in the short term, but leads to the final (long-term) goal in the shortest possible time.

Now, let us imagine a truck driver who wants to drive over a hill with a heavy load. Suppose the driver experiences a power-shortage difficulty in climbing the hill when he starts from a position at the foot of the hill, such as point A in <Figure 2>.

In this situation, a wise driver will try to drive the truck backward up to, say, point B, and accelerate from there. In this way the truck may gain speed and build up kinetic energy enough to reach the top of the hill. The wisdom here is essentially the same as in the case of the eagle's 'roundabout'

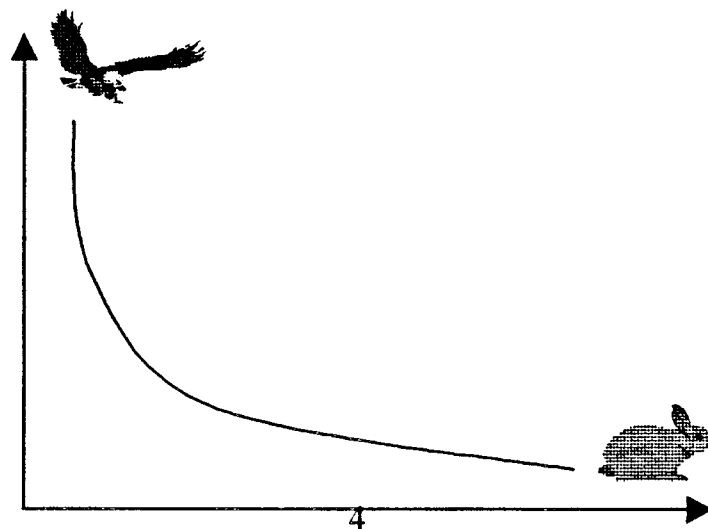


Figure 1. An Eagle Hunting a Prey

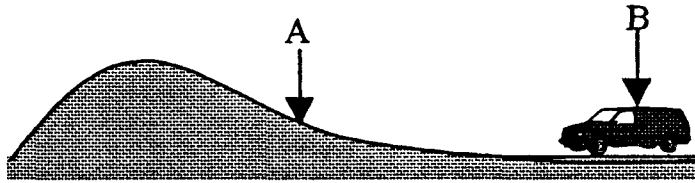


Figure 2. A Truck climbing a hill

path in that both the eagle and the driver create means by which the achievement of their goals is made faster or feasible.

Now let us examine what economists call the method of “roundabout” production. If men had to work with their bare hands on barren soil, productivity would be very low indeed. Land and labor are often called ‘primary factors of production’ for the reason that neither land nor labor is regarded as a result of the economic process, but instead exists primarily by virtue of physical and biological (rather than economic) processes. Capital, a word often used to refer to capital goods, is a different kind of production factor. A capital good differs from the primary factors in that it is an input which is itself the output of the economy. Over a long time advanced economies have amassed a vast stock of equipment, plants and housing, inventories, and drained land. The production processes using these intermediate capital goods (i.e., indirect methods) for their long-term efficiency is called ‘roundabout’ methods (Samuelson, 1998).

Catalysts (or Accelerators)

In the science of chemistry, a substance that, when added to a reacting system, facilitates the reaction without itself being consumed is called a catalyst. For example, enzymes in most animal stomachs are naturally occurring catalysts that help digestive juices do their work more efficiently (Brady, 1993). Scientists have found many catalytic substances from nature and used them in the processes to make gasoline, plastics, fertilizers, and many other products that have become everyday necessities. For example, in the process to produce solid shortening out of vegetable oil, engineers add nickel powder to the heated vegetable oil, and hydrogen gas is bubbled through to hydrogenate the oil. In this process the nickel powder functions

as a catalyst and eventually is screened out at the end of the process for reuse. Without adding the catalyst, hydrogenation of the vegetable oil will take too long to be practically feasible.

The kinetic energy created by the hunting eagle and the truck driver and the capital goods created by the production economists have one thing in common: they function like the catalysts in nature. In this study we will call catalytic means *accelerator* when the means can facilitate or accelerate the processes for which they are created. Now it has become our conviction and a *philosophy of management* that going a roundabout way is a wise way of doing things as long as an accelerator can be created to accelerate the realization of the goal.

3. A Model - to Think in Time-Streams

Clearly the whole Industrial Revolution and the factory systems were created by the conviction that we could get higher productivity (or efficiency) by using the roundabout methods. The downside of a 'roundabout' process is that it calls for the creation of a catalytic means. The process begins to be efficient when the created means begins to play its role as an accelerator. In this sense taking a roundabout method is necessarily a process seeking for a long-term optimum, and as such, it calls for planning managers to think in time streams. Thinking in time-streams is based on the belief that the past has caused the present, and the present will cause the future. The model we develop in this study for planning managers to think in time streams involves three steps. The first step is visualizing the desired future of the organization in terms of new products, technologies, or trust relationships. The second step is establishing a catalytic means to accelerate the realization of the vision. The third step is to consider the short-term problems arising from pursuing the long-term goals and analyze contingencies as to when short-term concerns should be recognized or take priority. Now let us explain these steps in turn.

Visualize Desired Future

Based on information from articles and interview with managers working in a variety of industries, this study assumes that most managers visualize the desired future of their organizational capabilities in terms of (1) new products, (2) technologies, and (3) trust relationships. New products with demand vastly exceeding the supply in the market will definitely provide positive economic benefits. New technologies capable of enhancing the quality of the products and lowering the cost of production can distinguish an organization from its competitors. Trustful relationships between both (1) the organization and its employees and (2) the organization and its customers in the market will be a powerful source of organizational competitiveness. Let us examine cases of successful organizations that visualized their desired future in terms of these three components.

(1) In Terms of New Products

In the late 1920s, when textile fibers could only be obtained from natural materials, the Du Pont Company visualized their desired future in terms of synthetic textile fibers. Natural textile fibers were expensive and in short supply since they could only be produced through a natural chemical process known as the creation of “giant” molecules. In 1928 the Du Pont Company determined to launch fundamental research in chemistry. This was a venture into a field that had been left almost wholly to the universities and other institutions of higher learning. Dr. W. H. Carothers, in charge of the research team, began to explore the possibility of imitating nature by synthesizing the “giant” molecules. Eventually, in 1938, almost eleven years after the beginning of the fundamental research, the Du Pont Company publicly announced the development of a “group of new synthetic polymers.” This new group of synthetic materials was given the generic name ‘nylon.’ During the next twelve months, about 64 million pairs of nylon hose were bought by American women, and newspapers hailed the discovery as “one of the most important in the century of chemistry (pp. 354-359, Dutton, 1942).

(2) In Terms of Technologies

In the late 1970s Chairman C. H. Shin of Nongshim Corporation, a

Korean manufacturer of ramen (instant fried noodles), visualized the desired future of his company in terms of a new innovative technology. Until the late 1970s, even though ramen was regarded as inferior to rice, its consumption had grown steadily in Korea because of its economic price. However, as the national income of Korea steadily rose, the consumption of ramen tended to stagnate. Chairman Shin determined to adopt a new process technology to improve the taste of dehydrated soup for ramen. The traditional method for producing the powdered soup for ramen had been to boil the raw materials (such as beef and vegetables) in order to extract the nutritional essence from them, and then to dehydrate the soup by blowing air in a hot chamber. This method resulted in a large loss of nutrition and taste in the reproduced soup. For several years Nongshim searched for a new technology and eventually found one that uses an enzyme to extract the nutritional essence and a vacuum chamber to dehydrate the soup. Nongshim built a new plant equipped with the machinery necessary for the new technology. The resulting products made Nongshim gain the largest market-share worldwide in ramen (Source: interview with Chairman Shin).

(3) In Terms of Trust Relationships

With respect to the trust relationship as a source of organizational competitiveness, a question can arise: Can trust be established intentionally? To answer this question, let us examine the following historical case.

During the Chunqiu period (around the 7th century BC) in China, there were scores of kings competing one against another to become the most powerful leader. In 681 BC King Huangong of Qi Kingdom defeated the neighboring kingdom Lu, and a ceremony was prepared for Huangong to take over the land Sui from Lu as spoils of the war. Huangong was sitting on a high platform, and the king of Lu was about to give his pledge to surrender Sui, the most fertile land of Lu. Suddenly, General Caomo of Lu jumped onto the platform and put a knife to Huangong's neck and shouted, "If Lu loses Sui, Lu can't sustain its people. Please promise not to take Sui." To save his life, Huangong could not but concede to Caomo's demand, and General Caomo came down from the platform as if nothing had happened. Now King Huangong, feeling ashamed and unfairly treated, considered arresting Caomo and declaring that his

promise made under the threat was no longer valid. At this moment, one of Huangong's chief aides, named Guanzhong, advised Huangong, "If your Majesty keeps the promise made under the threat, your Majesty will earn 'trust' from all other kings surrounding you." He continued, "If your Majesty earns the trust of the world, the value of the trust would be far more beneficial than the land of Sui." Taking this advice, King Huangong decided to keep his promise.

In less than two years, another kingdom named Chu, located in the southern part of Yang-tze River, grew stronger and began expanding its territories to the north. Kings in the northern lands met at Zhen and determined to make an alliance. This was the 'the Zhen Alliance of 679 BC.' There the northern kings, who had already heard that Huangong was a trustworthy man who had kept his promise that he could easily have broken, elected Huangong the leader of the alliance. As a result, Huangong realized his political dream to become a powerful leader in China.

4. Categorize the Terms and Establish Catalytic Means

Managers, having visualized the desired future of their organization in terms of products, technologies, or trust relationships, have to choose a catalytic means that can accelerate the realization of the desired future. The Du Pont Company, having defined its desired future in terms of new products, that is, synthetic textile fibers, launched fundamental research in chemistry as a means to realize its goal. Nongshim, visualizing its desired future in terms of new technologies, adopted appropriate new facilities and equipment. King Huangong, whose goal was to become a powerful leader in China, accomplished his goal by establishing his personal image as a trustworthy man, keeping his promise that he could easily have broken.

Now let us classify the terms (i.e., products, technologies, and trust relationships in which the desired future of the organization was defined) into categories. The purpose of this categorization is to make it easier for the managers to figure out the appropriate means to accelerate the realization of their goals.

(1) When the Vision is Defined in Terms of Products

The new products can be classified into two categories: (1) market-pulled and (2) technology-pushed. The market-pulled (products to appear in the future) are those that are not yet supplied in the market even though the need and demand for them are there, either apparently or latently. The synthetic textile fiber Du Pont would like to produce in 1928 falls into this category. The major reason for the market-pulled products to remain unsupplied in the markets is that no one has yet solved the two-fold problems: the product-related and the process-related. The former relates to the proper knowledge about the characteristics of the products, such as their chemical composition or physical dimensions. The latter relates to the proper knowledge about the characteristics of the process to produce the products economically. When the envisioned products can be classified into this market-pulled category, the appropriate means to accelerate the success of the products will be fundamental research for the knowledge about both the products and the process. This is virtually a venture into an unknown field, thus, it takes usually a long time, in the case of Du Pont's nylon, 11 years. Once successful, the rewards could be very strong. Turning to the second category, the technology-pushed (products to appear in the future) are those that some engineers or managers who happen to possess a certain technology plan to supply using the technology. The transistorized radios Sony produced first, after obtaining the patented right to the transistors from the Western Electric Company in 1952, belong to this category. When the envisioned products can be classified into this technology-pushed category, the appropriate means to accelerate the success of the products will be research for the market: that is, who will be the major consumers, what will be their needs, what will be the size of their consumption at certain prices, and so forth.

(2) When the Vision is Defined In Terms of Technologies

Technologies can be classified into three categories: (1) embodied in hardware, (2) embodied in software, and (3)

embodied in the human body. By 'hardware' we mean physical facilities, such as machinery, equipment, and tools. When a company visualizes its desired future in terms of a certain technology embodied in hardware, it can either construct the hardware in the house or purchase it from outside vendors. Nongshim envisioned its future in terms of enzyme technology to enhance the quality of their dehydrated soup, found out that the technology was embodied in hardware, and purchased it. By 'software' we mean the knowledge and information existing in the forms of computer programs, blue prints, patented know-how, technical manuals, etc. When a company visualizes its desired future in terms of a technology that is embodied in software, it can either develop the knowledge through its own research or purchase it through a licensing agreement.

There are technologies that are mostly embodied in the brain or muscles of technical personnel. Technologies that involve a high degree of sophisticated skills or craftsmanship belong to this category. When a company visualizes its future in terms of this category of technology, it should either employ the personnel embodying the technology or educate and train its own employees to acquire the technology.

(3) When the Vision is Defined In Terms of Trust Relationships

Trust relationships can be classified into two categories, 'internal' and 'external.' Internal trust relationships are those established between the organization and its employees. J. Pfeffer, T. Hatano, and T. Santalainen reported (in an article published 1995) that the five top performing firms in the USA in terms of the return to stockholders from 1972 to 1992 seemed to have managed their workforce so as to foster the internal trust between the company and its employees. They concluded in their article that "achieving competitive success through employees involves fundamentally altering how one thinks about the work force and the employment relationship. It means achieving success by working with people, not by replacing them or limiting the scope of their activities." According to their recommendation, practical means to foster the internal trust are: 1. employment security, 2. selectivity in recruiting, 3. high wages, 4. incentive pay, 5. employee ownership, 6. information

sharing, 7. participation and empowerment, 8. self-managed teams, 9. training and skill development, 10. cross-utilization and cross-training, 11. symbolic egalitarianism, 12. wage compression, and 13. promotion from within.

External trust relationships are those established between the organization and its business partners, customers, consumers, etc. In order to see the effectiveness of this category, let us examine the following case. In the late 1970s, former Chairman W. C. Kim of Daewoo (now defunct) visualized the desired future of his company in terms of business relationships with new markets, the East European countries. At that time it was not possible for Korean business firms to open business relationships with the socialist countries. In the late 1970s, Daewoo had about 15,000 construction workers stationed in Libya. In order to feed this large number of employees, Daewoo wanted to get beef, a favored staple for the Koreans. However, Daewoo could not buy beef in Libya, a Muslim country. Thus, Daewoo decided to buy beef from overseas. Chairman Kim decided to buy beef, through a Libyan importer, from an East-European country, Hungary. He wanted to build up "trust relationships" with the country in preparation for the time when the political confrontation between the East and the West would thaw. As he expected, when the time arrived in 1985, Daewoo was immediately able to open business with Hungary, and at the request of Daewoo, Hungary became the first East-European

Table 1. A Model to Think in Time-Streams in Terms of Products, Technologies, and Trust Relationships

Visualize the Future in Terms of:	Categorize the Terms into:	Establish Following Means to Accelerate the Process
Products/Services	Market-Pulled Technology-Pushed	Fundamental Research Marketing Research
Technologies	Embodied in Hardware Embodied in Software Embodied in Personnel	Purchase Licensing Agreement Education & Training
Trust Relationships	Internal External	Trust-Building Workforce Management Trust-Building Investment

country to establish diplomatic ties with South Korea.

Now let us organize the categories of the terms (in which the desired future is visualized) and catalytic means to accelerate the realization of the vision as in <Table 1>.

5. Consider the Short-term Concerns

In the sequential conception of time, the proposition that an investment made today will start to pay us back years later is a very doubtful one. The present value of future cash flows could be quite low when we discount them for their remoteness, for their uncertainty and for inflation. Thus, thinking in time-streams involves weighing the value of the long-term goals against the short-term concerns. Let us examine the following case to analyze this issue.

In the mid 1950s the late Chairman of Sony Corporation, Akio Morita visualized the desired future of his company in terms of a global brand for their products. In 1956 Morita was on a trip to develop an overseas market for the transistor radios Sony had just developed. When Morita visited a purchasing office of the Bulova Company in New York, he said, "We will take one hundred thousand units, but we have to put the Bulova name on the products." (Morita, 1986). Morita stopped the negotiation, and gave a thought to the issue of the brand. Eventually Morita made up his mind not to accept any orders that would not use Sony's brand name. Morita wanted to establish a global brand name as a catalytic means to build up trust relationships with the consumers. About 30 years later, Sony became a leading electronics company worldwide, and in an interview Morita said, "One of the best decisions Sony has ever made" was the decision to keep the Sony brand back in 1956" (Morita, p.93). Morita continued, "If Sony had given up its own brand and used the buyers' brand to sell its products in large quantities, Sony could have resolved its financial difficulties at that time easily. However, it would have been difficult, or at least have taken a considerably longer time, for Sony to establish its own brand in the world market." (p.93)

We know that Sony must have lost its earlier opportunities to sell in large quantities through the buyer's brand. What if Sony

had gone bankrupt due to the “best decision.”? Establishing a catalytic means to facilitate a long-term goal usually calls for the organization to forgo short-term benefits. King Huangong had to give up the Sui Region as a short-term sacrifice in order to earn trust from surrounding kings. In the case of Daewoo, the company had to forego the purchase of beef from cheaper sources such as the U.S. or South American countries. The required short-term sacrifice means that in order for an organization to pursue a long-term optimal strategy, it should be capable of absorbing the sacrifice. However, many companies, especially in developing countries, do not have enough resources to absorb the sacrifices. Thus, managers ought to analyze contingencies as to when the short-term concerns should be recognized. Preserving the organization itself should be preferred to pursuing long-term objectives.

A second condition for an organization to be able to strategize long-term comes from the willingness of its people to wait for the long-term returns to be realized. This willingness to wait, in turn, comes from the organizational culture. Geert Hofstede interpreted the Confucian values of thrift, savings, patience, and self-discipline as the long-term orientation that puts the interests of tomorrow ahead of those of today (Hofstede, 1992). He investigated cross-cultural differences in the long-term orientation among students from 23 different countries. He found that students from China, Korea and Japan, where the Confucian values were strong, demonstrated stronger long-term orientation. However, we believe that the organizational culture is something that can also be established as a catalytic means, along with institutional systems such as the company’s financing methods and performance evaluation systems.

6. Summary and Conclusions

In advanced countries most strategic management has moved away from the highly rational and synoptic planning models to more fluid and process oriented ones. However, the situation is different in developing countries; they have to keep up with the advanced countries by value-oriented management, such as establishing a long-term vision, determining a strategy, and

developing resources. Managers in most developing countries are in need of a philosophical framework to uphold their long-term objectives, to build up their organizational competence and, at the same time, a planning model to think in time streams.

This study derived its philosophical framework from nature's intelligence (NI) averring that nature manifests itself by achieving her goals most effectively. This study developed a planning model to think in time streams by creating catalytic means to accomplish the long-term goals in the shortest possible time. The model to think in time streams involves three steps: The first step is visualizing a desired future in terms of new products, technologies, and trust relationships. The second step is mapping backward to create what the desired future requires (called accelerators in this study) all the way back to the present. The third step is to weigh the expected long-term gains against the short-term losses and analyze contingencies as to when the short-term concerns should take priority.

In conclusion, this study argues that managers in advanced countries could afford to profit short-term for the sake of shareholders in Wall Street or the City of London. However, in most developing countries managers ought to do something in the present so as to face the future in a stronger position. They have to exchange the opportunity to profit short-term for the opportunity to learn long-term. This is a way for them to keep up with the advanced countries.

References

1. Adler, M. J., & Van Doren, C. 1977. *The Great Treasury of Western Thought*. London: R. R. Bowker Company, p.1170.
2. Brady, J. E., & Holum J. R. 1993. *Chemistry, The Study of Matter and Its Change*. New York: John Wiley & Sons, p.625.
3. Davies, P. 1988. *The Cosmic Blue Print*. New York: Simon & Schuster, p.2.
- Grambo, R. L., 1999. *Eagles*. Minn: Voyageur Press. p.19.
4. Goldstein, H. 1980. *Classical Mechanics* (2nd ed.) Mass: Addison Wesley. pp.42-43.
- Hewitt, P. G. *Conceptual Physics*. 1993. New York: Harper Collins. p.59.
5. Hofstede, G. 1991. *Cultures and Organizations*. London: McGraw-Hill.

pp.159-166.

6. Morita, A. 1986. *Made in Japan*. New York: Signet. pp.92-93.
7. Pfeffer, J., Hatano, T., and Satalainen, T., 1995. Producing Sustainable Competitive Advantage through the Effective Human Resource Management. *The Academy of Management Executive*: Feb. 1995.
8. Samuelson, P. A., & Nordhaus, W. D. 1998. *Economics* (16th international ed.). New York: McGrawhill. pp.256-257.
9. Wheatley, M. J. 1992. *Leadership and the New Science*. San Francisco: Berrett-Koehler Publishers. pp.1-11.