

**Technology Management Education  
and Economic Development  
by Mr. Anand Panyarachun  
at Dusit Laguna Hotel, Phuket  
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Optional Intro:

Let me first welcome all of you, particularly those who have traveled from overseas, to Phuket. As one looks at the beautiful scenery and inhales in clean, balmy air, I support a question about this week-long executive program must arise: Is this work or vacation?

Looking at the packed schedule ahead, I am afraid I must be the one to inform you that it really will be work. I am assured by the organizers that Phuket was chosen so that the clean air would stimulate clearer thinking and the wonderful views would encourage far-sighted vision of what lies ahead for business in the region.

I hope this is true – at least to some extent – because we do have a serious purpose; upgrading the skills and thinking of executives who will have much to say about how well Thailand and the region develop in the years ahead. With rapid technological change and worldwide competition, economic development increasingly depends on the ability to learn. The businesses that flourish are those that are best able to acquire develop and use knowledge that global markets need. So economic development and business progress is intimately and necessarily involved in the learning process. This broader understanding of education and business was the major reason that I recently accepted the chairmanship of the Kenan Institute of Asia.

The Institute is, in fact, carrying out a number of interesting and valuable tasks in this region:

- providing innovative ideas for infrastructure development, such as the Global Transpark, which is being planned for U Taphao
- arranging research opportunities for top Thai, Indonesian and Vietnamese academics through the CitiBank Fellowship Program
- carrying out business research in Southeast Asia that will help enlarge our understanding of the success of some of the best regional firms
- Building business linkages through the US-Thailand Development Partnership that can help address serious environmental and health problems in Thailand
- Bringing young MBA interns to work in the region.

At the core of each of these activities is the concern for education – improving the knowledge and skills of our people so the mistakes of the past will not be repeated and the knowledge that leads to success will not be forgotten.

That is very much the purpose of this week.

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Continuing education is our defense against being overwhelmed by the pace or rapid and puzzling change.

Nowhere has the pace of change been greater than in the role that technology plays in our lives and in our businesses.

During my lifetime, the development experience has moved from dependence on resource advantages to labor-cost advantages to technology-advantages. In fact low-cost labor was only the beginning of the “East Asian Miracle.” The major part of that continuing movement is a miracle of technologies – their acquisition, their application and their development. As a result, nations that were formerly on the periphery of the world economy are today among the most interesting players shaping the future. Technology leadership may be important to success in the world economy of today; it will be absolutely essential to success in the 21<sup>st</sup> century.

The issues of technology acquisition are of critical importance to Southeast Asia because we began to industrialize later than the West and Japan. We must use the technology of others in order to begin to develop technology of our own. Of course, we must invest more in research and development. Our companies and our economies will not prosper in the 21<sup>st</sup> century without these investments and they must begin now. To make these investments most effective, however, we must buy into the knowledge that has been built up by others.

Isaac Newton said “I have only been able to see so far because I have stood on the shoulders of giants.” So should we stand on the shoulders of the technological giants of business?

However, we must not feel that we are a supplicant seeking aid from the owners of technology. Asian companies have the market knowledge, the distribution channels and the business systems in place that are required to bring a new technology to the local market.

This knowledge is a part of the intellectual capital that is needed just as much as technological capability if an enterprise is going to succeed. The common phrase “technology transfer” misses the mutual benefits of this process, which should actually be called “technology partnering” or “technology cooperation.”

The technology holders must learn to partner, with us in Southeast Asia in order to share in the growth of our domestic markets and, ultimately, to share in the benefits of the improvements that we can bring to the technology. We must

learn how to partner with foreign firms in order to access the right technology and move up the technology scale.

This is not a zero sum game. A technology cooperation agreement that fails for the Asian partner, usually fails for the Western partner as well.

The program that we are inaugurating today addresses issues that are central to world business competition. Over the next week you will work through the issues that will characterize much of our industrial future. We will examine how foreign technologies should enter in the repertoire of our own activities and competencies. From those issues we will evolve general strategies and specific skills that will enable our companies to succeed in achieving technology leadership.

In Southeast Asia, over the past decade, we have an abundance of examples of local-foreign partnership that were built around technology; some successful and others not. The development of Thai Airways International has been a successful melding of foreign hardware with traditional Thai service. The establishment of Malaysia as the world's leading exporter of electronic components is a tribute to the effective partnership of American and Japanese technology with local worker skills and management efforts. The excellence of Singapore's high-tech port facilities was born of a far-sighted government strategy, effective management, Western technology and a capable work force drawn from many of the countries of Southeast Asia. The launch of Indonesia's Pallapa satellites more than two decades ago combined an appreciation of technology and an understanding of the peculiar needs of an expansive archipelago nation.

Those satellites have not only helped the country achieve its current rapid rate of development, but they have also helped assure the successful political integration of scattered islands with differing languages and cultures. There are many other examples.

All of this attests to the power of technology in developing our nations and our people.

It is important to recognize, however, that few of these "technological" experiences are primarily concerned with hardware. One of the defining characteristics of late-20<sup>th</sup> century technology is that it is increasingly "soft" in nature. It is the software that drives the hardware. It is the "bytes" that are increasingly more important than the "bolts." It is the management skills, such as those you possess and those you will acquire this week, that ultimately determine success or failure.

In the past, to speak of technology was to speak of engineering. Today, to speak of technology is increasingly to speak of management. A giant like IBM does not falter because of its technology, but because of mismanagement of that technology.

The management of technological change is significantly different than the management of other, more traditional activities. The management of technology is the management of ideas, of concepts, and the management of the people and processes capable of developing those ideas. It is the management of intellectual rather than real property. It is a world where the key assets of the firm are in the heads of the workers and managers; where management by authority is supplanted by management by knowledge. It is where knowing why something works the way it does is more important than knowing how it works. It is a world where knowing how to learn may be the most important knowledge of all.

It is fashionable today in management circles to talk of reinvention. The idea is a powerful one. It claims that if you are behind a well-established market leader, you will probably never catch-up by imitating them. You will only fall further behind as they continue to move ahead to new agendas, while you pursue the old ones. What you must do to leap over the leaders is to reinvent the business; change the rules of engagement; negate the traditional advantages.

The genius of the Apple computer was not in its technology. The main frames of IBM were far more technologically advanced. The genius was in reworking the technology to suit the needs of people for independence, low cost and ease of operation.

The increasing need for reinvention is of vital importance to the Newly Industrializing Economies. We are **not** doomed to forever follow in the tracks of the fore-runners. The new technologies of the future and the staggering pace of their development give us the power, if we are clever, to leap over the old, established leaders; to reinvent the basis for competition. To do that, however, we must first get into the technology game. We must access technologies from abroad that we do not already have and partner with foreign firms to acquire the competitive knowledge that we need.

We must understand the deeper workings of the technology, and perhaps more important, understand the underlying needs of the people who will use it.

Companies around the world have large inventories of innovative devices and processes. This technology, however, is worthless until it can be connected to human needs. So an adhesive invented by 3M that didn't stick very well seemed like a failure until it was converted into the yellow "Post-it" notes that are now stuck everywhere.

Clearly two kinds of knowledge are needed – the understanding of the technology and the understanding of how to make that technology serve human needs.

Despite the increasing recognition that both of these kinds of intellectual capital are essential to future financial results, companies have often failed to value it sufficiently or manage it properly. That is a problem for those companies and an opportunity for those who need to play "catch-up."

Dow Chemical for instance found that of its 29,000 patents, less than half were being utilized. Dow concluded, however, that the company owned intellectual assets that went much beyond patents – technical expertise, trade secrets, and market knowledge and distribution systems. The failure of companies to identify and value their intellectual assets properly will be exposed in any technology cooperation agreement.

Whether we work for Western companies with high technology or Asian companies with high aspirations, we cannot assume that technology in and of itself will lead to success. It is effective acquisition and proper management of all sorts of intellectual assets that provide competitive advantage.

A recent study in Thailand examined the effects of technology acquisition on 20 different companies in a variety of energy-intensive industries. The study found that the major impact of the technological cooperation did not result from the main investment, but from incremental efforts to improve production procedures and systems associated with the new technology. The study found that these associated improvements did not take place in every company. These changes took place only in those firms where there were organized structures of knowledge and resources dedicated to absorbing a wide range of inputs from the technology provider. The most successful technology cooperation had little to do with technology in and of itself, but much to do with the managerial capabilities of the firms involved.

So technology cooperation must be far more than moving machinery or gadgets to a new location. It requires investment of time and resources, not just in the technology itself, but in acquiring the necessary knowledge that goes with it. It implies a genuine partnership: combining intellectual assets, transferring managerial techniques, re-training people and possibly re-organizing our businesses. The goal should not be technology, but capability.

In the next week you will focus on negotiation as the core of a process that delivers that capability by creating new combinations of intellectual assets. Negotiation is far from all of the process, but it sets the framework and often the tone for what must follow. If it is done poorly, it will be difficult to avert failure. Clearly it is not an easy process. Not only are there difficulties in valuing the assets that each side provides, there are barriers of distance, culture and information.

In areas of new technology development and technology transfer, Asian managers often face difficulties in working out where they should focus. They often find out later to their disadvantage that issues they thought were insignificant turn out to be very expensive.

The process should begin with an understanding of the motivations of each side. The technology seeker must understand why his company needs the technology. This requires an examination of the company's current capabilities, its aspirations, its market and its competitors. This is essential to deciding on the scope, extent and costs of the technology cooperation arrangement. The

seeker must also find out as much as possible about the motivations of the provider.

There is a tendency to think the technology provider has all the cards. The seeker must count his own cards: the technology owner's need for the marketing, production and adaptation abilities that the seeker can provide.

The negotiation must specify all the elements of the technology to be acquired. It is essential that those broader intellectual assets we noted earlier be specifically included. It is usually to the advantage of both parties to have an explicit process to transfer such assets as scientific understanding of the technology, technical expertise in its manufacture, systems for maintenance and repair, ongoing training and effective marketing approaches.

All of this is actually based on people. It therefore requires such people-based mechanisms as conferences, seminars, open communication and opportunities for informal inter-action. Typically, these are overlooked or under-estimated.

Much of negotiation concentrates on the "what" to negotiate. However, it is equally important for Asian managers and their Western counterparts to understand the "how" of negotiation; that is, how culture, style and strategy influence the negotiation outcome.

The Technology Leadership Program therefore will go beyond lectures and develop a negotiation simulation that will test skills and strategies. The beauty of the simulation is that you will get not only expert guidance and review, but that you can't drive your company into bankruptcy while you learn.

Having been through some rather difficult negotiations myself, I can tell you that negotiating talent is only a small part of the formula for success. You have to work hard to develop the information needed to map out a clear strategy. You have to see the process from the point of view of your partner, but you also need the determination to stick with your own strategy and achieve your objectives.

As a senior manager you have to bring all the elements together into a cohesive strategy and then you have to build the teams and make the decisions that make things happen. Doing this in the cross-cultural context that is typical of technology cooperation adds new dimensions to the challenge. I am sure you will learn a great deal from your teachers, but you will also learn from each other.

Your tasks are genuinely important – to a great extent the future of your companies will depend on you and your ability to move towards technology leadership. The development of our economies, in turn, depends on corporate abilities to develop technology and connect it to human needs.

But don't completely forget the beauty of our surroundings. Enjoy the course – both the executive course, and perhaps even the golf course, enjoy Phuket and return home to enjoy great success.