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Railways: The World Experience*

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Like most of the world's great railways, the State Railway of Thailand (SRT) has entered its second century of operation. Throughout its history, SRT has served the people of Thailand well. That it has made a significant contribution to Thai society is unquestionable. But in current times of rapid economic expansion and increased transportation competition, does SRT continue to make such a contribution? If it does not, should it be discontinued, or is there a different role it should play?

By world standards, SRT productivity remains high, even today. In traffic units per employee, for example, SRT ranks second of the 10 Asian railways reported (see Figure 1), and eighteenth in 78 railways reporting worldwide. Yet SRT is entering a state of crisis. Its financial position is poor and continues to deteriorate. Its infrastructure is also deteriorating and, in some cases, is below normal safety standards. Public confidence in SRT's abilities is low, as is employee morale. The government is becoming increasingly concerned with SRT's net annual operating loss, which it must subsidize if SRT is to remain operational.

To understand how SRT reached this crisis, we should recognize that this railway problem is by no means unique to Thailand. Over the past 15-20 years, railways throughout the world have experienced, or are experiencing, similar problems and challenges. This includes railways in both developed and underdeveloped countries. A brief look at these problems on a world scale will assist in understanding the Thai dilemma, and indeed will indicate what some of the solutions might be.

THE HISTORIC RAILWAY PROBLEM

During the nineteenth and early part of the twentieth centuries, railways throughout the world represented the vanguard of technology. They virtually had a monopoly on medium- to long-range overland transportation, both of passengers and goods. In this type of environment, it was a "sellers' market." The railways' monopolistic position allowed them to pick and choose the services they wanted to offer, based on their own preferences rather than those of their customers. In the absence of any real competition, they had a free hand to charge whatever tariffs necessary to offset costs and realize profit.

This monopoly status prompted most governments to create regulations to control railway rates and, in the case of government-owned railways, to ensure the general public had access to the railways' services. With the advent of viable trucking and bus operations, the railways' monopoly vanished. Governments invested massive amounts of capital into road systems, with little or no regard for direct investment returns. As the road networks grew, and automotive technology improved, the truck and bus operators made ever-increasing gains in the transportation market. They had the advantage of being smaller and had easier-to-manage units, and their high motivation toward profit made them efficient and highly responsive to the needs of their customers.

As they continued to see their share of the market being eroded, the railways tried to fight back. They were, however, now at a disadvantage. Because of their size and their history, they were not as responsive to customers' needs as were their competition. They were also at a competitive disadvantage because of the many regulations in place, and governments continued to require low tariffs. In Canada, for example, a government-imposed railway tariff for shipping grain, introduced in the early 1900s, remained in existence into the 1970s. In many other countries, including Thailand, governments required the railways to maintain artificially low fares for passenger services offered to the poorer class of society. Railways which were once large money-makers were now put at a distinct competitive disadvantage, by having to offer services at

rates less than costs.

Faced with a deteriorating financial status, the railways pondered how to reverse the trend. The task was enormous. All the factors now worked against them. Often their attempts to reduce costs by staff reductions were thwarted by government regulations disallowing such layoffs. Their management teams had been recruited from the ranks of railway operators, and had little experience in aggressive or dynamic business techniques. Although they tried to turn things around, the obstacles were too formidable and they continued in financial decline.

As railways tried to function with ever-decreasing cash, the inevitable happened. They started to defer maintenance activities and capital investments. Little or no funds were put into research and development. For a long time there were negligible advances in railway technology. These "fixes" only ensured that problems became worse with time. In their paper "Strategic Repositioning of Railways," Booz-Allen & Hamilton Inc. refer to this as the "Cycle of Doom," characterized by the following interacting features:[1]

- Insufficient capital and funds
- Poor track conditions
- Old locomotive fleet
- High out-of-service levels
- Slow train operations
- Excess equipment needs
- Excess locomotive needs
- Excess trains, crews
- Excess costs
- Slow and unreliable service
- Low fares, rates and tariffs
- Declining traffic base

One notable "victim" of this cycle, with the resultant financial fiasco, was the Japanese National Railways (JNR). Prior to its restructuring in 1987, the JNR experienced annual losses of US$10 billion. Their long-term debt was over US$210 billion which, if paid at one time, would represent 10 percent of the total Japanese GNP!

A World Bank paper, "Techniques for Railway Restructuring," summarizes the problems of the world's railways:

> *The World Bank's reviews of railway crises show very clearly that they do not come about suddenly, nor do they happen by accident. Although the points of emphasis may differ, this conclusion is just as true of railways in the developed as in the developing world. As a broad generalization, railway crises occur because railways have not been encouraged, or allowed, to respond to changes in the economies they serve. Long after major segments of railway traffic have been captured by competitors which are often privately owned and operated, railways continue to offer services which are not in demand, at prices which are often far below cost, and with a quality of service which is inferior to the customer's needs. Typically also, as the railway becomes a fiscal drain on an economy already short of resources, longer range maintenance and capital needs are neglected, further diminishing the railway's capabilities as the years pass. The longer the problem continues, the more difficult and expensive it is to resolve, and the more likely it is to be "put off until next year."*

One of the co-authors of this World Bank paper, Louis S. Thompson, has an advisory role on the current SRT study.[2]

Across all economies and cultures, this situation is the result of some or all of the following forces:

- The railway is generally one of the nation's oldest institutions, and its years of history have endowed it

with perceived roles—such as a "public service obligation"—and an associated engineering and production-oriented management culture which are uniquely resistant to change.

- The railway often has the largest single unionized work force in the nation, giving its workers a great deal of political power which is used to protect the size of the labor force, even when there is little productive work to be done.
- Over the years, various classes of passengers, typically commuters and third class inter-city passengers, and shippers (often agricultural interests and major government-owned mining or industrial enterprises) have been able to persuade the regulatory government authorities to distort the rate structure in their favor. The stated rationale for the intervention in freight rates—"the nation needs to control freight rates in order to promote exports, or to control inflation"— is as predictable as the result: nothing positive is achieved because the resulting deficits are merely shifted from one agency budget to the other, and the management incentives of both railway and shipper are badly distorted. Regional interests also believe that the existence of rail service, but not necessarily its use, is important either to maintain the local economy, or to protect the possibility of a desired future development program. Eventually the beneficiaries of the system of cross subsidies come to believe that their favored status is not only important to them, but is also important to the health of the nation, and they defend their positions tenaciously.
- The people at large may believe that a railway is "needed," whether or not it is economically justifiable, either because they believe that rail service is a basic "right," like education or health, or because they consider the presence of a railway to be one of the status symbols of nationhood.
- The ministry which owns and operates the railway may be as interested in protecting its organizational domain, budget, and political influence as it is in serving the needs of shippers or tackling the difficult task of restructuring the railway.
- Finally, many of the important actual or potential customers eventually switch to other modes because the service may have become sufficiently slow and unreliable that it is no longer economical to use rail. These former users are no longer advocates for change and improvement. Of course, the other beneficiaries of poor rail service, the competing, non-rail transport modes, are often committed advocates of the status quo as well.

THE CONCEPTUAL SOLUTIONS

It would be very helpful if we could list here proven remedies that could directly be applied to the current problems of SRT. Unfortunately that is not possible, for there is no such list. Different world railways have tried different solutions, achieving different levels of success. Each railway is serving a country with different markets, different business and social cultures, and different governmental objectives. It is, therefore, reasonable to assume that the ideal structure for one country's railway system is not necessarily valid for all countries.

Just as the problem symptoms are similar country by country, however, we might expect to find the concepts for positive change to be similar. The discussion which follows will consider, in general terms, some of the more important concepts. This discussion is in a global context, related to the experiences of railways that have successfully effected positive change, but not specifically related to the requirements of SRT.

Political Leadership

In any attempt to resolve the "ills" of a railway, it is natural to focus on financial and technical considerations only. These, of course, are important ingredients. Any comprehensive restructuring plan, however, will inevitably lead to some population groups becoming beneficiaries, while others suffer harm. These groups need to be defined. Thus, the highest levels of political leadership must fully understand and support the proposed plan. Where this has not occurred, the plan usually fails.

In turn, all government agencies involved with reforms and results must also understand and accept the plan, and exactly what their responsibilities are in effecting it. This only occurs when there is strong political leadership. Successful reform has occurred in those countries where the railway problems are perceived as national problems, requiring political leadership to resolve, rather than problems to be resolved by the

railway's management alone.

Planning

Today's railway problems are the result of many decades of inefficient policies and objectives. We might, therefore, expect that there is no simple "overnight" cure, and the experience in other countries supports this premise. In some countries, notably Britain, Japan and the United States, reform has taken many years to effect, and further reforms are still needed. Implementing the reforms is a staged process over time, with a fair degree of "trial and error" required. Because it is a process over time, it requires long-range planning. The plans must be well thought out, and must remain dynamic. The first plans will not be perfect, due in part to the long-range unpredictability of the environment in which the railway will operate over the planning time frame.

Global experiences further demonstrate that this planning process must, to the extent practical, start at "square one." The primary planning emphasis should not be on the railway of today, and how to change it, but on the basic question of what future role, if any, should the railway serve in the economy. That the railway is not adequately serving the economy today is accepted, and determination of blame for this situation inconsequential. The important planning consideration is what are tomorrow's needs. If these needs include operation with certain business goals, then the transformation of the railway must meet those goals.

Public Service Obligations

Governments have social responsibilities—railways do not. Not recognizing this simple truth has paralyzed many of the world's railways in the past. It is only when governments recognize the effectiveness of market forces in business development in general, and in railways specifically, that real solutions to railway ills can be developed.

Where the public good requires railways to offer services at less than cost, however, it is clearly the government's responsibility to shoulder these losses. These services may include providing specific train runs, track branch lines, or stations. Governments in the past have made up the railways' losses by global annual subsidies. This does not afford the government the opportunity to evaluate what good it is receiving for its money, does not lead to incentives for railway management efficiency, nor do the subsidies normally include enough funds for future railway investment.

A very successful solution to this problem, on a world scale, is implementation of a system of Public Service Obligations (PSO) for railways. As a part of this system, governments reimburse the railway for specific services it requires, but which cannot earn enough income to cover costs. It is simple for the government to delete, or add, such services, when the costs are fully known. There should be no other subsidies paid to the railway other than the PSO, which requires railway management to become more concerned with operating efficiencies and cost control. Moreover, the railway must show the government that the PSO services are being operated as efficiently as possible.

This issue of PSO is covered in detail later in this report. The Thai Cabinet has already taken the important step of adopting a PSO strategy for SRT. The working details of the strategy are currently being developed, and it is hoped that this report will aid this development.

Railway Organization (External)

An important issue is how the railway should relate to the government and its various agencies. Included in this issue is the degree of railway privatization, if any, desired. For this, there is no standard world resolution. Virtually every country that has effected railway restructuring has taken a different approach. There is no "perfect" plan, rather any number of alternatives work well if implemented effectively. It is not so important what the plan is, but simply to have one.

In drawing up such an external organization plan, it is of prime importance that the railway be treated fairly

in relation to its competition. The degree of regulation must be equal across all transport modes. Safety regulations and policy must also be equally applied to prevent, for example, over-crowding or over-loading. Direct or indirect subsidies, taxation and duty levies too must all be applied equally. Failure to create such organizational and regulatory equalities, or to use a common expression; "to create a level playing field," will surely lead to the financial collapse of the transport mode in the sector for which it is disadvantaged.

Railway Organization (Internal)

Developing an effective internal management organization is an important ingredient in the restructuring plan. The key factor to consider is that the organization be responsive to the needs of its chosen market niche. On a world scale, several approaches have been undertaken. British Rail remained a single organization subsequent to reforms effected to date, although additional reforms are being considered. Swedish Rail was split into basically two organizations; one to manage infrastructure and the other to manage a set of operating lines of business. The Japanese National Railways basically adopted both approaches. They are broken into geographical market-oriented companies, then one cross-cutting freight company, and then on an infrastructure basis for the high-speed lines, and on an operating basis for operating the Shinkansen lines.

The choice of the appropriate organizational structure for SRT will depend on the mission and objectives to be set for it. In the words of Sir Robert Reid, Board Chairman, British Railways:

> *The choice or the trade-off is between a simple, but unfocused and unresponsive monolith, or the increasing complexity in the case of a market-focused organization, and I want to make it very clear that as the complexity of the organization grows in order to deal with different markets, the cost of operating that organization grows. There is a price to be paid between the market sensitivity and focus of the railway and the cost of operating it that way. Those trade-offs are based on a number of different things, but one of them is the relative importance of the markets to be served. If a railway is carrying 99.9 percent of its traffic as freight, and 0.1 as minor traffic, or passenger traffic, it makes no sense to assign equal importance to those two kinds of traffic. If, however, it is equally poised between commuter traffic, inter-city passenger traffic, and freight traffic, a completely different balance needs to be struck.*

Railway Physical Constraints

There is a common feeling that anything that can move by truck or bus can move on the railway. This may be essentially correct technically, but experience in other countries shows that this premise is not economically sound. This experience shows that the inherent advantage of a railway lies in the mass production of transportation. This advantage cannot be fully realized, however, if there are extraordinary limits on train sizes or numbers of trains.

Train sizes may be limited by:

- drawbar strength
- maximum axle loads
- clearances
- tractive effort
- siding lengths and spacing
- yard trackage lengths
- labor agreements
- dispatching capability
- gradients and curves

The numbers of trains may be limited by:

- maximum speeds
- slow orders

- running speeds
- siding lengths and spacing
- yard times
- dispatching capability
- communications effectiveness
- signaling effectiveness

Each of these constraints needs to be considered in determining new market niches for the railway. Some constraints can be lessened in severity at relatively low cost, others at very high cost. In each case, the potential rate of investment return needs to be taken into account. This includes consideration of new technologies, such as high-speed trains, electrification, or, in the case of a single track railway, double tracking.

These considerations result in the railway of the future being oriented to those market segments for which it is best suited. In the past, railways attempted to enter all land transport markets. It is further true, based on experiences in other countries, that even when market segments are compatible with the railway's capabilities, there may be conflicts between the various segments. The best example is the conflict between fast and slow train services. Experience shows that the two big money-makers for the railways are medium- to high-speed passenger services and heavy haul freight services. Because of speed differences, however, the two are generally incompatible. This is why the successful railways in the world are normally oriented toward either freight or passenger services, but not both.

THE WORLD EXPERIENCE: CONCLUSION

All of the above factors, and many more, have to be taken into account in developing a conceptual design of a country's ideal future railway. It can readily be seen that the analysis is complex, the solutions are not simple, and the process is very lengthy. The potential dividends are high, though, in terms of the contribution the railway of the future may make to the economy. The complexity of the process should not divert us from tackling it. In the words of Louis S. Thompson, Railways Advisor to the World Bank, at the January 30, 1992, symposium which "kicked off" this current study (Thompson 1992):

> *The problem is not unsolvable. There is no reason for despair. Many other countries have attacked exactly this problem with success. British Rail has made considerable progress over the past 30 years. Rinthe in Spain has made dramatic progress in the last 10 years, as have SNCF in France, Finland, Sweden, Japan, New Zealand, Australia, South Africa, the U.S., and Canada. Deutsche Bundesbahn is now in the process of reorganization, which is every bit as thoroughgoing as anything that has been undertaken. These are developed countries. In developing countries, we have been working in Argentina, Chile, Korea, Cameroon, Senegal, Poland, Hungary. Many, many countries have decided to attack this problem. In all cases, although the outcome differed considerably, and in many cases is still developing, the process was based on several simple steps.*
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> *First, the government and the railway together stepped back and asked: "Why do we have a railway? What is the function of this railway?" It is no longer enough to say we need a railway for national pride or we need a railway because someone thinks we need a railway. What purpose, or market, or function, or social objective does it serve, and is this the most efficient way to serve that objective?*
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> *Second, the roles of the railway and the government were clearly distinguished and separate. The government took the responsibility for defining social needs. The railway assumed the posture of a paid supplier of social requirements. Except for these (PSO) the railway assumed the role of a commercial competitor to serve market needs and then, finally, the railway was reshaped or reorganized to meet the market and social functions defined in this process. It was not allowed to remain a traditional government agency.*

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