BTS Skytrain Case Study – The experience of Bangkok’s first private mass-transit concession

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Presentation Topics

• BTS Skytrain Description
• Transport Planning & Award of Concession
• Construction Aspects
• Thailand Economic Crisis, Effect on Project
• Operational Start-up, Surprise & Reactions
• Interconnection Issues
• Current Status
• Lessons Learned
BTSC System Physical Description

- Elevated heavy rail mass-transit system in downtown Bangkok along major roads.
- Two intersecting lines, total of 23km and 22 stations.
- 35 three car train sets with peak frequency of 2 minutes for a capacity of up to 25,000 passengers per hour per direction.
BTS Skytrain System - Intersection
BTS Skytrain System - Viaduct
BTS Skytrain System - Station
BTS Skytrain System - Train
BTS Skytrain Concession

• Mixed BOT/BTO 30 year concession, renewable for 10 years
• Awarded by Bangkok Metropolitan Authority (BMA), under authority from Ministry of Interior
• Private company responsible for 100% of design, financing, construction and operation. Must ensure adequate levels of safety in operations and security.
• Government responsible for
  – providing right-of-way,
  – assisting in relocation of utilities along route during construction
  – approving tariff increases (formula based on CPI, interest rates, power tariffs, devaluation of Baht and any major new investment requested by BMA)
  – No assurances about competing transport modes
  – Limited regulatory role during operations phase
Transport Planning in Bangkok

- Automobile fleet had been growing at 35% p.a. on average since mid-1980s, with average speeds on the city’s roads at less than 10 kph, or 2/3 of typical urban traffic speeds. Road space in the city was only 11% of total land area.

- Seventh Plan Urban and Regional Transport (SPURT) published in 1991 considered private concessions to improve urban transport infrastructure.

- Four different government agencies leading various concessions, lack of coordination
  - Department of Highways (DOH)
  - Bangkok Metropolitan Administration (BMA)
  - Expressway and Rapid Transit Authority (ETA)
  - State Railways of Thailand (SRT)

- By 1999, only three of the seven projects in SPURT had opened or were near to opening
  - Don Muang Expressway
  - Second Stage Expressway
  - BTS Skytrain
BTS Skytrain Concession Award

• BMA announced the ToR for the submission of proposal for the BTS Skytrain on April 11, 1991.
• Bid specification asked bidders to make comprehensive proposals for a mass transit system with a design, build, operate and transfer structure, specifying their own “people moving” technology.
• Three consortia submitted proposals with different technologies – air powered, guided bus and electric train.
• The rail-based electric system was chosen and bidder was invited to negotiate the concession.
• On April 9, 1992, after approval of the full Thai Cabinet, BMA signed a 30 year Concession with a private company, BTSC.
  – Subsequently amended to take into account a change in the site of the main depot, doubled length of system.
BTS Company Description

• Bangkok Mass Transit System Company Ltd. (BTSC) established for sole purpose of constructing and operating BTS Skytrain
• Tanayong Public Co. Ltd., a large Thai real estate company, began as sole shareholder, but sold new shares to other Thai and foreign investors, including Ital-Thai Development (ITD), AIG Infrastructure Fund, and other Thai blue chip investors
• Creditor group included Thai banks (led by Siam Commercial Bank), German banks (led by KfW) and IFC.
Key Risks for Private Company

- Ridership
- Tariff
- Construction
- Financing
- Operations
BTS Construction Management

- BTSC received bids in November 1993 from four pre-qualified international consortia to design and build the project.
- BTSC selected a JV of Siemens and Ital-Thai Development (ITD) under an EPC contract
  - Siemens focused on electrical & mechanical systems and rolling stock; ITD focused on civil works
  - Contract was fixed price with penalties for delay
- Utility relocation began in March 1994.
- Overrun financing was in place in event of cost overruns
- Electrowatt was hired as the Company’s and creditor’s independent engineer
- Project was completed one month ahead of schedule and with no cost overrun. No major cost disputes or claims
- Siemens continued work after project completion under a 5-year maintenance contract with BTSC
Thailand Crisis, Effect on Project

• Planned IPO disappeared, Siemens provided additional support, certain creditors increased commitments
• Economic contraction, incomes reduced, population of Bangkok shrinks – all affect ridership expectations
• Other mass transit projects delayed/cancelled, reducing benefits to BTS Skytrain
BTS Skytrain Ridership

- Four ridership studies undertaken by international firms, all showed similar forecasts.
- BTSC’s ridership consultant projected in 1995 788,000 passengers per day for the first year of operation in 2000.
- Assumptions tended to be aggressive, such as estimate that 60% of bus users would divert from buses during peak hours.
- Authorized Fare at time of signing concession was a flat fare of Baht 15 (at 1992 prices).
- After 1997 crisis, ridership studies revised, but still projected ridership of 600,000 passengers per day in first year.
Operational Start-up

- System begins operation on December 5, 1999, on the King’s birthday, three years later than the original 1992 concession agreement envisioned, but one month earlier than the EPC schedule.
- Tariff had been adjusted to a distance-based fare system (required turning to a 7 person arbitration panel), but average tariff still only Baht 23 (compared with Baht 16-18 for air-con buses and Baht 3.5-5.0 for non air-con).
- Ridership was 150,000 per day, compared with projected 600,000 per day, although year-on-year growth high.
- BTSC couldn’t even service in full its interest expense or Siemens maintenance contract.
- Operations smooth after initial problems with coin-operated ticket machines.
- BTSC hired HK-based railroad operations expert to be COO, other senior management Thai.
Reactions to Operational Start-up

• By BTSC management & shareholders
  – Focus on increasing ridership through good service, promotion schemes, advertising, walkways to adjacent buildings, feeder buses, installing escalators, etc.
  – CSFB attempted hostile takeover just prior to operations complicates shareholder relations

• By BTSC creditors
  – Provide breathing space, don’t demand immediate payment, but do consider options to exercise security rights, take seats on board

• By Government
  – Limited reaction, BMA can’t influence competing bus routes or fares, some discussion on extensions, central government begins to discuss taking over the project
Interconnection Issues

• Park and ride facilities eventually built by BMA, some improved bus access to stations, but still competition from buses on routes and fares
• Subway system continued construction, limited dialogue with BTSC, between BMA and MRTA (Ministry of Transport)
• Subway operational in July 2004, no fare integration, physical integration awkward
• Extension discussions with government ongoing, but no agreement, questions on how to award
Status in 2006

• BTS Skytrain is a part of the fabric of life in Bangkok
• Daily ridership currently near 350,000 passengers
• BTSC covering operating costs, including interest expense
• Original creditors have all sold their debt
• Tanayong still significant shareholder, but other large shareholders have more influence
• Serious discussions by central government on taking over BTS Skytrain didn’t result in action
• Extensions of system still being discussed, no agreements
Lessons

• There is a positive role the private sector can play
  – Be more discerning of ridership forecasts
  – Efficiency of expenditures, maximize revenue/profit
  – Creative marketing (billboards, radio, fashion shows)
  – Finding common business interests with other economic actors (walkways to buildings)
  – Maintaining high service quality, distinguishing the experience (clean and comfortable)

• Some risks government is better able to manage
  – Planning and coordination
  – Integration with other modes of transport
  – Ultimately comes down to traffic/ridership risk