Singapore's Mass Rapid Transit: Privatisation and Re-Nationalisation

Introduction

At the official opening of the Singapore Mass Rapid Transit (MRT) system on 12 March 1988, former Prime Minister Lee Kuan Yew postulated that when the whole system was in operation, "travel and dress styles in Singapore will undergo a change… (as people get accustomed to) airconditioned MRT rides that are swift, convenient, and comfortable"[1]

And change the country it did. Starting with a 67km network, the MRT has expanded to roughly 200km today, and will almost double to be 360km by 2030. It is viewed as the backbone of the country's transport system, with millions of residents relying on it for their daily travel needs. For decades, the system maintained its reputation for being swift, convenient, and comfortable, a gleaming contrast to the crowded and dysfunctional public transport systems in the region. It was also a source of pride for the country's leaders, to whom it emblemized the victory of will and ambition over sceptics' contention that the country could just make do with a bus-centric system.

That is, until the trains came to a halt on 15 December 2011. Commuters on their way back home during the evening rush hour that day experienced the worst breakdowns yet. Certain trains along the North-South Line (NSL) suddenly lost power and halted, with one of the train's backup power system also failing, plunging thousands of its commuters in darkness with limited ventilation. In the ensuing chaos, a passenger smashed the train's window with a fire extinguisher (see Picture 1), and two others fainted. After some wait, commuters walked through the dark tunnel to the next MRT Station (see Picture 2). The disruption, lasting five hours, affected 127,000 commuters, and the incident response by the operator, Singapore Mass Rapid Transit (SMRT) was found wanting. Two days later, on 17 December 2011, a few trains stalled again. This disruption lasted seven hours, affecting 94,000 commuters.

These incidents proved to be just the start of an embarrassing series of disruptions over the next six years. Major incidents that followed include worse MRT breakdowns on 7 July 2015, when both the NSL and East-West Line (EWL) stalled for two hours and left 250,000 commuters stranded; a tunnel flooding incident near Bishan MRT in October 2017 that caused a 21-hour service disruption; and a train collision near Joo Koon MRT station in November 2017 that injured 28 people. Investigations on the flooding incident revealed that the water sump pit had overflowed due to lack of maintenance and that SMRT's technicians had falsified maintenance records.

[1] Lee, Kuan Yew, "Speech at the Official Opening of the Singapore MRT System" (speech, The Westin Stanford & Westin Plaza, Singapore, March 12, 1988).

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Picture 1: Glass broken by Fire Extinguisher

Picture 2: Commuter walking through tunnel

Credit: https://www.mrbrown.com/blog/2011/12/the-great-smrt-cockup-of-2011.html

The MRT system's reputation took a massive hit with these incidents, and only started to recuperate in 2018 with significant rail performance improvements. During this period, widespread public anger and discontent with the system led to shakeups in the leadership of both SMRT and its regulator, the Land Transport Authority (LTA).

Many also levelled criticism at the system's public-private set-up, with the government building the infrastructure, then transferring the assets and operations to a private company (SMRT) that may have prioritised profits and its shareholders' interest over public interest and effective provision of an essential public good. Since its inception, the MRT system had changed from being completely state owned and operated, to being managed and operated by a government-linked company under Temasek Holdings, and then being managed and operated by two listed companies (SMRT Corp Ltd. and ComfortDelGro's SBS Transit Ltd.). As criticisms of this model grew, Temasek Holdings privatised SMRT to better focus on operations and the government re-nationalised all rail operating assets under the LTA.

This case study explores the effects of privatisation and listing on the performance of the MRT, through the case of SMRT who struggled with multiple high-profile rail disruptions and widespread public criticism from 2011 to 2017. We study the following questions on this topic:

i. What were the factors leading to SMRT's poor performance?
ii. Did the private sector provide a conducive environment for rail service, an essential public good in Singapore?
iii. Can lessons be drawn to adjust and refine the framework of transferring ownership of public services (or part of) for a more optimal outcome?
iv. What is the best governance model moving forward considering Singapore's context?

The case study offers an evaluation of the causes and rectifying measures, and identifies some key learning points with regard to transferring the ownership of public services away from government's control. Finally, we will discuss if rail operations should continue to operate as a private entity or be nationalised moving forward.

The Foundations

The Mass Rapid Transport Corporation (MRTC) was formed on 14 October 1983 to oversee all the roles and responsibilities of an MRT network. MRTC undertook the construction of the first two MRT lines – the North-South and East-West lines, an 83km network that was completed between 1987 and 1996. SMRT was then formed as a state-owned company to operate the MRT starting from 7 November 1987. SMRT was granted an initial 10-year license to operate the first two lines.

Subsequently, MRTC merged with the Roads & Transport Division of the Public Works Department, the Registry of Vehicles, and the Land Transport division of the Ministry of Communications to form the LTA on 1 September 1995.

The LTA's first White Paper on "A World Class Land Transport System" was published in 1996 and laid out three principles for financing public transport services:

i. Fares must be realistic and revised periodically to account for justifiable cost increases;
ii. Public transport projects must cover their operating expenses by charging correct fares; and
iii. A sustainable policy is needed for replacing assets such as trains and signalling equipment

Under this framework, commuters would pay fares to cover operating costs and depreciation, while operators would channel fare revenue covering the historical cost of the first set of operating assets such as trains and signalling systems to finance the next set of operating assets, with the government co-financing the rest. The LTA posited that the "real issue is not who pays, but what system can best encourage fiscal prudence, individual financial discipline and efficient operations"[2].

The Case for Privatisation

While governments have long provided *transport infrastructure* needed for states to function, the concept of governments also owning and providing *transport services* is fairly modern. Public provision of transport services reportedly started with horse drawn omnibuses in the 1820s[3]. As states became more crowded and complex, and demands on transportation grew, an issue that many governments grapple with is deciding on the optimal public and private roles in the ownership, funding, planning, managing, and operating arrangements of public transport[4].

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[2] Land Transport Authority, "A World Class Land Transport System", (Singapore, 1996), https://www.lta.gov.sg/content/dam/ltaweb/corp/PublicationsResearch/files/ReportNewsletter/White-Paper.pdf.

[3] Leigh Glover, "Public Transport as a Common Pool Resource". *Conference paper delivered at the 34th Australasian Transport Research Forum* (September 2011) ; Parks Madeline, "The History of Public Bus Transportation", *GOGO Charters* (blog), May 6, 2019, https://gogocharters.com/blog/history-of-public-bus-transportation/.

[4] Leigh Glover, "Public Transport as a Common Pool Resource". *Conference paper delivered at the 34th Australasian Transport Research Forum* (September 2011)

In early 20th century, with the great wars and dissolution of colonial empires, both local and global markets changed, and many believed state ownership and nationalisation of industries to be the most reliable[5]. However, as the century wore on, the neoliberal idea that privatisation would improve performance and efficiency of public services caught on.

Privatisation, defined to be the transfer of ownership of public assets from the government to the private sector[6], swept through the world in late 20th century, shifting the control of traditional public utilities and services, such as prisons, hospitals and railways, to the private sector. It was believed that the profit-making focus of private companies would result in more cost-efficient and responsive service, and by 1990, over $185 billion worth of state-owned enterprises were sold worldwide[7] (Goodman and Loveman 1991).

Shirley (1992) offers three main reasons for government privatising companies. Firstly, privatisation improves use of public resources. As public enterprises tend to consume public resources, privatisation allows the government to divert these resources (e.g public money and public management skills) meant for the privatised companies toward high priority uses, such as building roads or upgrading public services such as health care, education etc.

Secondly, privatisation improves operating efficiency by improving competition. It is assumed that direct or indirect support of state-owned firms contributes to an uneven playing field, especially in developing countries. The reverse can also be true if a state-owned firm is burdened with requirements not applied onto private firms (e.g. the requirement for state-owned firms to train people). Secondly, the existence of private property rights motivates private owners of the firm to improve cost efficiency and service levels.

Lastly, privatisation improves dynamic efficiency. Freed of political constraints, privatised firms can move faster and respond to opportunities better. Research has indicated a leap in innovation and investment when firms are privatised. As opposed to public institutions, private firms are also more flexible in renumeration and are better able to reward their staff, which encourages risk taking. Finally, private firms are better able to raise funds needed for investments.

In addition, Goodman and Loveman (1991) points out that for privatisation to work effectively, three conditions must be met. Firstly, governments should ensure that regulatory conditions, incentive frameworks and operating environment are optimal to encourage the private sector to act in the public's interest. Secondly, the roles and responsibilities of all the parties involved, including the regulator, should be clearly defined so that they can be held accountable for any lapses. Finally, there must be enough competition in the market to discipline the private sector to provide public services effectively. An overlap between public

[5] Isabel Joo Lay Sim, "Does State Capitalism Work in Singapore?". (PhD Thesis. The University of Western Australia, 2011); John Goodman and Gary Loveman, "Does Privatization Serve The Public Interest?," *Harvard Business Review,* November-December 1991.

[6] Mary M Shirley, "The What, Why, And How Of Privatization: A World Bank Perspective," *Fordham Law Review* 60, no. 6 (1992): S23-S26.

[7] John Goodman and Gary Loveman, "Does Privatization Serve The Public Interest?," *Harvard Business Review,* November-December 1991.

interest and profits can only be realised when the privatised service is in a competitive market.

However, it is not easy to achieve these conditions. In his 2002 paper titled "British Rail Privatisation: What Went Wrong?", Brendan Martin explored the factors that led to the failure of the privatisation of British Rail from 1979 to 1990. He points out that while privatisation did lead to successes, such as new trains, better public information about services and some fare reductions, there were other challenges to privatisation, such as:

i. Complex Regulatory Setup: British Rail had multiple regulatory bodies set up to regulate various areas. These setups also "introduced hard-nosed commercial tensions into relationships that often needed to be co-operative". Given the complexity of rail systems, and the many stakeholders responsible for keeping rail operating properly, fault assigning during train faults led to a blame culture.

ii. Increase in Public Subsidy: Although the key objective of privatisation is to achieve cost efficiency, interpreting the numbers proved to be difficult due to the complexity of the structure. Even then, the consensus was that the government subsidies to rail approximately doubled after privatisation.

iii. Loss of Engineering Expertise: There was a loss of engineering expertise in the rail sector. Private operators, watching the bottom line, sought all means to reduce costs. This led to maintenance jobs being cut, which affected service levels, e.g. trip cancellations and unstaffed stations due to shortage of manpower. The staff exodus also caused a knowledge drain.

iv. Public Unease with Profiteering of Privatised Firms: The higher public subsidy and reduction of service levels contrasted with the huge profits of some privatised companies, which elevated middle-ranked officers to become multi-millionaires almost overnight.

There are many similarities between Singapore Rail and British Rail, which we will explore in the next sections.

SMRT becomes a Listed Company

At the point of its formation, the LTA owned the MRT network's operating assets such as trains, signalling systems and power supply equipment, and infrastructure such as viaducts, tracks and tunnels. In 1998, when the LTA renewed SMRT's initial 10-year operating license for North-South and East-West lines (NSEWL), it provided SMRT with a grant to purchase all the operating assets for these lines at net book value.[8] SMRT then became a government linked company (GLC) under Temasek Holdings, in preparation for its eventual listing on the Singapore Exchange[8].

[8] Jeremy F Plant ., Cristina E. Ciocirlan, and Van R. Johnston, *Handbook of Transportation Policy and Administration* (Boca Raton: CRC Press, 2007)

This move was in line with the Singapore government's efforts in the 1990s and 2000s to reduce its dominance in the economy, liberalise the market and encourage competition[9]. For example, in the 1996 White Paper, the LTA explained that "having the state intimately involved in every aspect of public transport [was] not satisfactory […] [as it] invariably [ended] up subsidising or operating loss-making services"[10]. Therefore, becoming a public company would impel SMRT to improve its corporate governance, increase its standards of disclosure, and improve performance and operations efficiency[11] .

Subsequently, in July 2000, with Temasek Holdings selling 33% of its shares, SMRT Corporation Ltd was listed on the Singapore Exchange, becoming the first urban rail operator in the world to do so. In August 2005, Temasek Holdings further reduced its stake in SMRT Corp to 55%.[12]

More Contestable but Oligopolistic Public Transport System

To improve contestability in the market and shield the government from over-reliance on one operator, the LTA awarded the operating license for North-East Line (NEL) to then Singapore Bus Services (SBS) in May 1999. SBS became SBS Transit in recognition of its broader responsibilities. The market for urban rail operations became largely oligopolistic, dominated by SMRT and SBS Transit mainly due to the prohibitive cost of building and running a rail system, and the dearth of rail engineers/experts that the existing two companies are already facing. Also, the operating tenure was long (30 years).

To further improve contestability in the industry, the LTA explained in its Land Transport Master Plan 2008 that the license periods for future Rapid Transit Systems (RTS) operating licenses will be shortened further, which was realised with the New Rail Financing Framework introduced in 2016.

Meanwhile, the two public transport operators also consolidated their hold and expanded their share of the market. In 2001, SMRT and TIBS holdings, a bus and taxi operator, merged and SMRT became the first multi-modal transport operator in the country[13]. Soon after, in 2003, DelGro, the parent company of Singapore Bus Service (SBS), and Comfort, a taxi operator also merged to become the next multi-modal transport operator.

Today, with the daily average ridership exceeding 3 million passengers, the MRT system is critical to the country's functioning. Disruptions cause great inconvenience to the general public and affect the nation's international reputation. In other words, rail has become too big to fail in Singapore.

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[9] Meixian Lee, "What's Driving the Privatisation?," *The Business Times,* August 4, 2016.

[10] Land Transport Authority. "A World Class Land Transport System," (Singapore, 1996), https://www.lta.gov.sg/content/dam/ltaweb/corp/PublicationsResearch/files/ReportNewsletter/White-Paper.pdf

[11] Christopher Tan, "Lessons From Past Mistakes Can Help SMRT Stay On Track," *The Straits Times*, July 27, 2017; Meixian Lee. "What's Driving the Privatisation?," *The Business Times,* August 4, 2016.

[12] Plant Jeremy F., Cristina E. Ciocirlan, and Van R. Johnston, *Handbook of Transportation Policy and Administration* (Boca Raton: CRC Press, 2007)

[13] Christopher Tan, "Lessons From Past Mistakes Can Help SMRT Stay On Track," *The Straits Times*, July 5, 2017.

Rail Regulatory Regime

The LTA would adopt a two-pronged light-touch regulatory approach comprising of outcome-based regulation and intervention in public interest. The LTA imposed Operating Performance Standards and other requirements (via codes of practice) through the Rapid Transit Systems Licence issued to SMRT for the operation of the railway lines. If the rail operators breached any of the conditions stipulated, the LTA could impose financial penalties on them.

However, there were concerns with the design of the regulatory system. The LTA designed and developed the infrastructure, then issued operating licences to private sector operators to operate and maintain the rail system. This arrangement created grey areas in the apportionment of responsibility during train disruptions. Although rail systems were complex and require all parties (especially the LTA and operators) to work closely together, the design issue laid the ground for a testy relationship between LTA and SMRT. To manage the operator, the LTA's regulatory arm would also grow in size and functions and require additional resources.

Rail operators were also not allowed to adjust fares to reflect higher costs of maintenance. This function belonged to the Public Transport Council, a statutory board under Ministry of Transport (MOT), which considered other non-cost factors during fare revision exercises.

The operators' means of increasing their cash flow via other means was also limited. For example, the operator of Hong Kong MTR could consistently deliver good operational performance and profits because they owned the land surrounding the rail stations and was able to increase their cashflow by developing it suitably. These profits from property development helped to offset rising rail operation and maintenance costs.[14] In the case of Singapore, land is considered past reserves and protected under the Constitution. The LTA and operators were not allowed to realise the value of this land to fund costs of maintenance and renewal.

SMRT's Rail Performance Issues, 2011 – 2017

In 2002, SMRT appointed Saw Phiak Hwa as its President. Previously, Saw was the regional president for DFS venture. While she was an experienced and capable business leader, her background was in retail and not engineering. Therefore, she was viewed as an odd pick to lead an engineering-heavy company in charge of providing an essential public good.

During her tenure, SMRT successfully expanded on its retail businesses within the MRT system and the company's profit swelled from $56.8 million in 2002 to $161.1 million in 2011. Shareholders enjoyed good returns as SMRT paid out 56.35 cents in net dividend from FY2003 to FY2011, and the stock had risen by about 150% to $1.82 in 2011[15]. ***Annex A*** illustrates SMRT's financial performance from 2002 to 2011 under Saw.

[14] Christopher Tan, "MRT Reliability Is At A High - Now To Keep It There," *The Straits Times, November 28, 2019*.

[15] Chan Teik Leong, "SMRT: 230% Gain In Stock Price + Dividend Under CEO Saw Phaik Hwa," *NextInsight*, December 18, 2011.

However, as profits surged, the system also began to experience major disruptions and service reliability issues, hinting that perhaps the shift of focus from engineering excellence to commercial success was burdening the system. To maintain good rail performance required close monitoring of operations and maintenance, and it seemed that SMRT was distracted by its focus on the bottom-line.

i. Coordinated Team Effort: Rail systems are complex and requires all stakeholders to work closely together as one team. Putting rail operations under government (presumably the LTA) will achieve better synergies and economies of scale as compared to three separate organisations.

ii. Reduction of Regulatory Costs: Although the goals of privatisation are to encourage operation and dynamic efficiency to achieve good rail service at lower costs, the reverse happened. Also, there is well-founded concern that a privatised operator's cost reduction initiatives will lead to loss of engineering expertise, which would affect rail operations and is hard to build back again once eroded.

Similar to the case of British Rail, there was public unease with the record profits of the company and the high renumeration of its executives. These did not sit well against the poor rail performance and subsequent hefty costs of renewal and maintenance.

Saw resigned approximately a month after the December 2011 disruptions, and Desmond Kuek was appointed as the next CEO. However, SMRT continued to experience many high-profile disruptions in the following six years, some of which are listed below.

Other reliability incidents:

Year	***Incidents***
2013	North-South Line Trackside Fire at Newton MRT Station
2016	North-South and East-West Lines Power Failure
2016	Circle Line Signalling Fault
2017	Bishan MRT Station Tunnel Flooding
2017	Train Collision at Joo Koon MRT Station

Road to Recovery

A Committee of Inquiry (COI) on the December 2011 disruptions highlighted that although commuter safety was never compromised during the train disruptions, overall incident response was "skewed towards train safety and operations considerations". This resulted in "insufficient attention to the well-being of passengers stranded in stalled trains and at stations".

The COI also scrutinised how different stakeholders, including the LTA as the regulator, lacked effective communication and clarity on each other's roles. These findings undermined public confidence in the LTA, which required significant effort, cooperation and collaboration between the government and rail operators in the ensuing years to rebuild.
The LTA and SMRT adopted the following remedial measures:

i. Adoption of COI's recommendations: On investigating the major NSEWL service disruptions in December 2011, the COI concluded that the disruptions were preventable and highlighted the importance of effective maintenance to improve rail reliability. Its recommendations – covering key areas such as improving MRT reliability, reviewing the LTA's role as regulator, instituting a stronger regulatory framework and improving incident management – were adopted.

ii. Strengthening of RTS regulatory framework: The LTA strengthened its regulatory framework in four key areas, namely, maintenance of rail assets, incident management, review of operating performance standards and review of penalty framework.

iii. Structural challenges: There were structural challenges that needed to be managed effectively for rail reliability and service levels to improve.

   a. *Limited engineering hours*: MRT passenger services run up to about 20 hours daily, while coping with increasing frequency and heavy commuter loading during peak hours. As such, engineering and track access time for maintaining MRT lines was limited to about three hours daily. This provided a small window for carrying out preventive maintenance, repairs and any asset renewal activities, particularly for the ageing NSEWL.

      To cater enough time for maintenance, train operating hours were shortened in 2014 to increase the engineering hours to facilitate maintenance, asset renewal and system tests. This became more frequent after the Joo Koon train collision incident in 2017, which highlighted the urgent need for more rigorous testing and earlier completion of re-signalling and maintenance works. The additional engineering hours also facilitated the repair of complex defects (e.g. concrete slab track) that required more time, and posed higher safety and operational risks if the repair operations could not be completed within the engineering window.

   b. *Building a competent maintenance and engineering workforce*: As the LTA and operators raced to improve rail reliability, carry out more planned renewals, and improve rail asset management outcomes, it was necessary to increase and enhance the competency of the maintenance and engineering workforce. This increase in workforce was included as a requirement in the New Rail Financing Framework (NRFF, explained below) for SMRT, which had doubled its rail engineers since 2015. Further, to raise the workforce competency for the expanding local rail industry, the Public Transport Skills Framework was developed and launched in May 2018. This Framework encompassed rail maintenance and operations and was developed together with SkillsFuture Singapore, public transport operators and union representatives.

iv. Managing public trust and expectations: The LTA and the operators have also had to contend with the negative public sentiments that followed rail service disruptions, and

work on rebuilding public trust. In recent years, the public has also been more vocal about wanting to be heard, engaged and involved in the business of the nation.

v. Increasing collaboration between the government and operators, and building their capability: An evaluation of the disruptions highlighted the need for better collaboration between the government and private sector rail operators, and for all the parties to build up their rail operation and maintenance capabilities, which were addressed as follows:

   a. *Collective team approach*: To enhance teamwork and communication across the MOT, LTA and rail operators, the Transport Ministry hosted regular meetings with the top management of these key stakeholders. The management of various parties also visited rail workers at their workplace. On the ground, officers from rail operators were also encouraged to openly share operation and maintenance (O&M) issues with the LTA so that these could be addressed collectively. As rail performance improved over the years, so did the morale of rail workers and management, which further increased collaboration.

   b. *Exchange of knowledge and best practices:* Forums were established between the LTA and rail operators to facilitate sharing of information and encourage collaboration across the parties. Through these close collaborations, officers from both organisations were able to better understand each other's engineering challenges, resource constraints, design implications to maintenance and priority maintenance areas, in order to jointly establish a way forward and collaboratively resolve issues. This reduced barriers between the operator and regulator.

   c. *Joint meetings between operators and government:* Monthly meetings between the LTA and rail operators were scheduled in 2012 to address long- and short-term rail reliability issues. These joint meetings discussed causes of disruptions and set the direction on the appropriate remedial measures to be taken by each party.

   d. *Strengthening the rail ecosystem*: The Singapore Rail Academy was launched on 23 February 2017 to strengthen civil, mechanical and electrical engineering competencies within the LTA and the industry. The academy collaborates with rail operators, educational institutions and key industry partners to skill, up-skill and re-skill rail engineers and technicians, and facilitate applied rail research and technology applications. The LTA also established other strategic partnerships to enhance its rail capabilities. For example, it established purpose-equipped teaching laboratories at SIT (in 2017), Republic Polytechnic (in 2018) and Singapore Polytechnic (in 2019) as well as Transport Research Centres at SIT and NTU to support teaching of rail engineering subjects and railway research projects.

e. *Appointing an advisor for rail transformation and the establishment of Rail Excellence Advisory Panel*: In 2015, an Advisor for Rail Transformation was appointed, followed by the establishment of the Rail Excellence Advisory Panel. This panel was chaired by a senior government official and comprised renowned and experienced international experts from London Underground Limited, Taiwan's Taipei Metro, Hong Kong's MTR Corporation and East Japan Railway Company. The panel conducted regular reviews on the performance of Singapore's MRT System and provided the rail operators with expert advice on improving reliability performance based on best international practices in the railway industry.

vi. Introduction of the New Rail Financing Framework (NRFF): In its Land Transport Master Plan 2008, the LTA introduced the NRFF to more competitively contract out rail lines. The new framework strengthened the LTA's regulatory oversight of rail operations and maintenance regimes, and subjected rail operators to outcome-based standards measured through service quality indicators. Operators also had to comply with a rigorous set of maintenance-related standards such as Maintenance Performance Standards (MPS). The NRFF also redefined the criteria for assessing financial viability from individual lines to an overall network basis, as well as ensured more timely procurement and renewal of operating assets to improve rail reliability. The first new rail line to come under the NRFF was the Downtown Line (DTL), which was tendered and awarded to SBS Transit in 2011. However, the transition of existing rail lines to NRFF was delayed due to the COI following the December 2011 disruptions, which protracted negotiations between the LTA and the operators. The full transition to the NRFF was completed in 2018.

vii. Change in Leadership: On 11 August 2015, following the largest disruption of NSEWL services in July 2015 that affected 250,000 commuters, then Minister for Transport Lui Tuck Yew resigned. He was replaced by then-Minister for National Development Khaw Boon Wan. It was widely posited that Lui resigned to take responsibility for the rail transport woes.[16] Khaw had a track record of resolving major crises such as the outbreak of the Severe Acute Respiratory Syndrome (SARS) in 2003 and reining in high public housing prices during his appointments as the Minister for Heath and later, National Development.

Confronting widespread public discontent, he infused a sense of urgency in the MOT, LTA and SMRT for resolving rail reliability issues. On 30 May 2016, in a speech at the Second Joint Forum on Infrastructure Maintenance, Khaw introduced two indicators to be tracked publicly. First was the Mean Distance in Train-km between Delays exceeding 5 minutes (MKBF); and number of days free of major delays.[17] In the same speech, he challenged rail operators to achieve 800,000 MKBF, matching the performance of the best-in-class Taipei Metro. On 27 July 2017, at the Fourth Joint Forum on Infrastructure Maintenance, Khaw raised this target to 1 million MKBF. These targets were audacious, considering that in 2016 and 2017, the MKBF were 174,000 and 181,000 respectively.

[16] Tan Christopher, "Did Lui Tuck Yew Quit To Take The Rap?," *The Straits Times,* August 20, 2015.

[17] Major delay is defined as a Service Delay exceeding 30 minutes.

viii. Bringing rail assets back under government control and ownership; and delisting SMRT: On 30 July 2016, Temasek's offer to buy back SMRT's public shares and privatise the company was accepted. Temasek explained that SMRT's privatisation would provide it with "greater flexibility to focus on its primary role of delivering safe and high-quality rail service, without the short-term pressures of being a listed company"[18] (Temasek, 2016). Shortly after, on 30 September 2016, the LTA renationalised the rail assets owned by SMRT at a cost of $1.06 billion, relieving the company of heavy renewal and replacement costs and allowed it to better focus on operations. The LTA also imposed a more stringent maintenance regime and enhanced its audit system to monitor rail operators' activities more closely.

The effects of these actions started to bear fruit in 2018. MKBF improved more than threefold from 181,000 in 2017 to 690,000 in 2018. Major delays also fell from 16 to 9 over the same period. By September 2019, the 12-month moving average MKBF of the MRT network had collectively achieved 1.083 million, meeting Khaw's challenge of 1 million MKBF a year early[19].

Figure 1 and Table 1 of ***Annex B*** show the MKBF performance and number of major incidents from 2015 to 2019 respectively. This turnaround of rail performance from 58,000 MKBF in 2011,[20] was nothing short of amazing.

Re-examining the Private Operator Model

Singapore privatised the MRT system in the belief that it would lead to operational and dynamic efficiency. While SMRT was highly profitable, the poor performance of its rail lines between 2011 and 2017 greatly inconvenienced public commuters and caused widespread frustration. Further, for a country known for its first-class institutions, such as the Changi Airport and its ports, Singapore's seeming inability to reliably run an urban rail network also affected its international standing.

While rail reliability have since recovered, SMRT increasingly face challenges to its bottom line. Firstly, there are substantial costs involved in achieving and maintaining the 1 million MKBF target set by Khaw. In August 2019, it was reported that SMRT trains suffered a loss of $155 million in the past 12 months up to end-March 2019.[21] Since its privatisation under Temasek, SMRT appears to be operating more like a nationalised company whose sole mission is to improve reliability regardless of cost.

[18] Temasek, *Temasek And SMRT Jointly Undertake To Privatise SMRT*, July 20, 2016.
[19]"Performance Of Rail Service Reliability", Land Transport Authority, accessed January 26, 2020, https://www.lta.gov.sg/content/dam/ltagov/who_we_are/statistics_and_publications/statistics/pdf/Rail_Service_Reliability_Performance_3Q2019.pdf.
[20] Tan Christopher, "MRT Reliability Is At A High - Now To Keep It There," *The Straits Times,* November 28, 2019.
[21] Toh Ting Wei, "SMRT Trains' Losses Soar To $155M On Higher Operating Costs", *The Straits Times*. August 1, 2019.

Epilogue

In the more than three decades since the launch of the MRT system, Singapore has experimented with different types of ownership models and market parameters for the provision of this service to the public. While letting SMRT become a private company (and then a listed company) helped in increasing financial prudence and profitability of the company, it eventually led to deterioration of service levels and system reliability, culminating in serious service disruptions between 2011 and 2017. This led to public discontent, reputational damage and a long and arduous (costly) road to recovery.

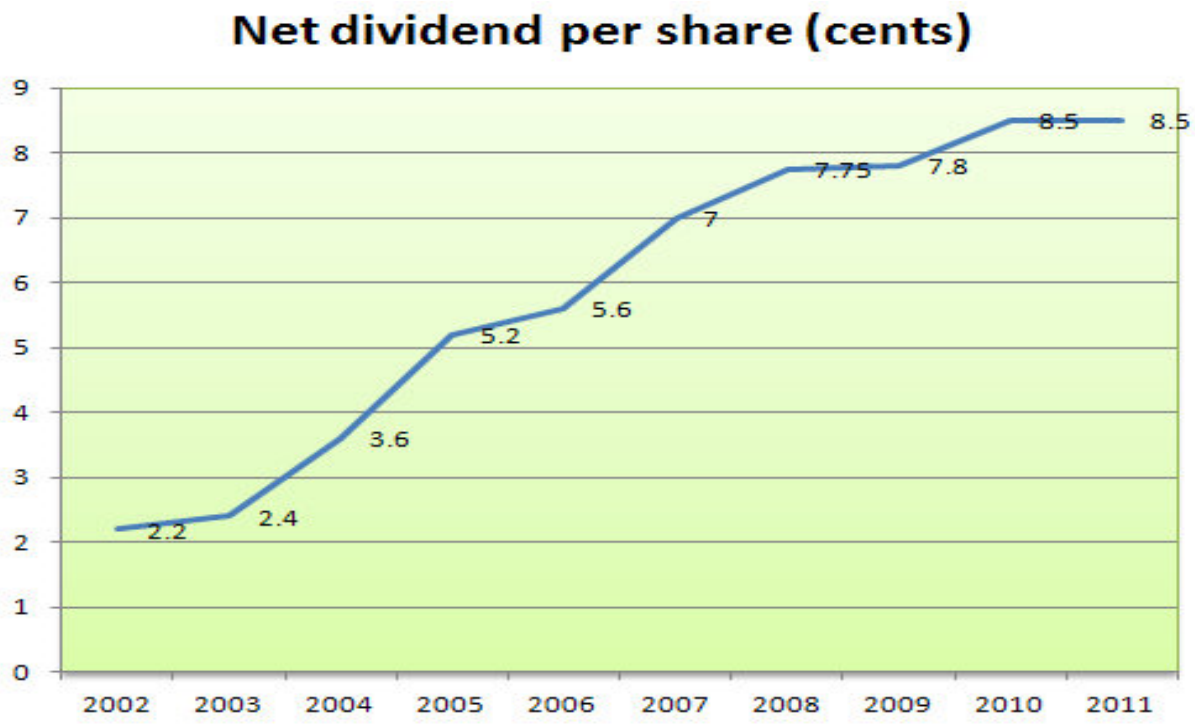
Recovery involved restructuring of the industry, at both the private sector and government levels; change of key leadership; renegotiation of the relationships and contracts among different parties and the public; and an overall increase in the capability of the regulator and operators. Further, SMRT became a private government-linked company fully owned by Temasek Holdings again, and the government renationalised rail assets.

This journey of the MRT system raises queries about what would be the optimal approach for Singapore. Whilst there are benefits to privatisation, such as operation and dynamic efficiency, Singapore's rail environment may not be conducive to achieving optimal outcomes.

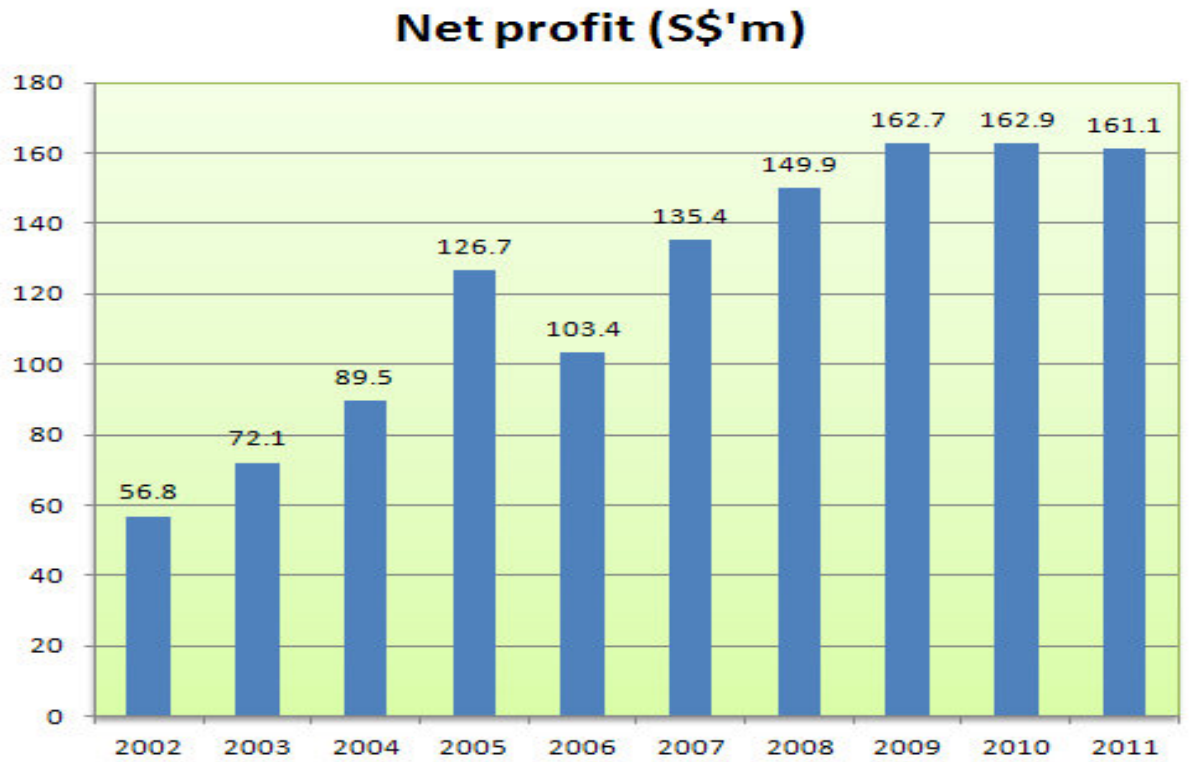
Perhaps a question that arises then is whether Singapore would prioritise a reliable rail system over achieving cost-effectiveness. For now, it appears that rail reliability remains paramount to the government and its people. Today, the new normal for Singapore's rail performance is 1 million MKBF and commuters are unlikely to accept anything less.

Annex A

SMRT's Financial Performance – 2002 - 2011



Source: https://www.nextinsight.net/story-archive-mainmenu-60/912-2011/4705-smrt-how-it-has-done-financially-under-saw-phaik-hwa



Source: https://www.nextinsight.net/story-archive-mainmenu-60/912-2011/4705-smrt-how-it-has-done-financially-under-saw-phaik-hwa

Annex A

Source: https://www.nextinsight.net/story-archive-mainmenu-60/912-2011/4705-smrt-how-it-has-done-financially-under-saw-phaik-hwa

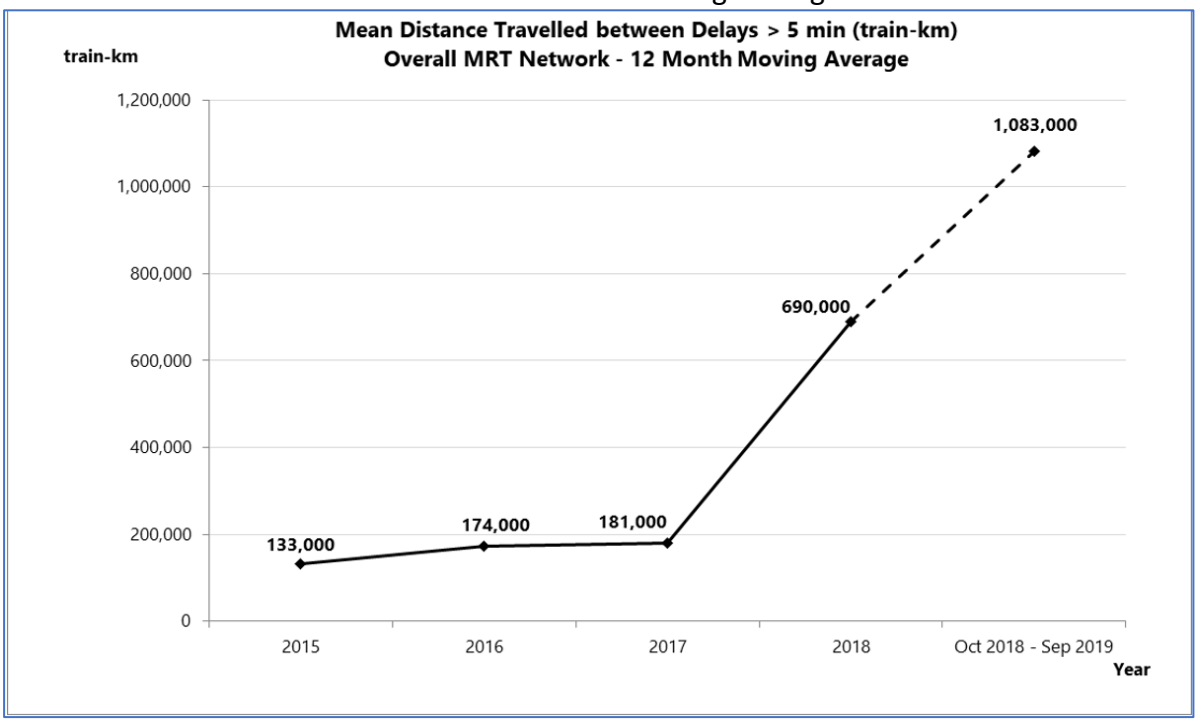
Source: https://www.nextinsight.net/story-archive-mainmenu-60/912-2011/4705-smrt-how-it-has-done-financially-under-saw-phaik-hwa

Annex B

Performance of Rail Service Reliability

(Last updated: 21 Nov 2019)

Figure 1: Mean Distance Travelled between Delays > 5 min (train-km) for Overall MRT Network – 12 Month Moving Average



Source: *"Performance Of Rail Service Reliability". 2019. Lta.Gov.Sg. https://www.lta.gov.sg/content/dam/ltagov/who_we_are/statistics_and_publications/statistics/pdf/Rail_Service_Reliability_Performance_3Q2019.pdf.*

Table 1: Number of Service Delays (> 30 min)

	Overall MRT Network	NSL	EWL	NEL	CCL	DTL
2015	15	5	3	4	2	1
2016	16	4	5	3	3	1
2017	16	6	5	3	2	0
2018	9	0	4	2	1	2
1Q-3Q 2019	3	1	1	0	1	0

Source: *"Performance Of Rail Service Reliability". 2019. Lta.Gov.Sg. https://www.lta.gov.sg/content/dam/ltagov/who_we_are/statistics_and_publications/statistics/pdf/Rail_Service_Reliability_Performance_3Q2019.pdf.*

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