

Public-Private Partnerships Case Study #6

Automatic Fare Collection System (AFCS): The Case of Manila

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This case study examines how governments may benefit from involving the private sector in integrated ticketing services for urban transport systems and how Public-Private Partnership (PPP) structure can be used to introduce modern technology

BACKGROUND

Contactless smartcards, first implemented in the late 1990s in Hong Kong and Seoul, are increasingly favoured for urban transport fare collection systems.¹ Typically the size of a credit card, smartcards hold a microchip which stores and transmits data through radio frequency identification (RFID), allowing the smartcard to communicate with a device (within 10 centimetres) without physical contact. Smartcards are also able to store enough information to process monetary transactions and profile a card holder's details for security purposes. With these systems, users no longer need coins, tokens or paper tickets.

Recognizing the benefits of these smartcards, public authorities in the Philippines decided to introduce this technology for the three Urban Rail Transit Systems in Manila: namely the Light Rail Transit Line No. 1 (LRT 1), the Light Rail Transit Line No. 2 (LRT 2), and the Mass Rail Transit Line No. 3 (MRT 3).

All three lines (including 44 stations) have been utilizing magnetic stripe card - fare collection technology. However, this system is currently at the end of its usability. Such cards are more fragile than smartcards, easily damaged and no longer readable if scratched or bent. Furthermore, the memory capacity of these cards is significantly lower than smartcards. This not only limits the complexity and range of ticket types than can be ascribed to the card, but also means that recording the identity of the card holder is not usually practicable.²

ADVANTAGES OF THE SYSTEM

In Manila, the smartcard technology brings now important benefits to the more than 1 million daily passengers who use the light rail lines, to the authorities operating these lines, as well as to the wider public.³

Benefits for the government / operator

Efficient fare collection:

Traditionally, the cost of collecting cash from multiple fare-collection points in a city has been considerable. Such a system requires security, and a lot of manpower is expended counting coins and reconciling trips with the amount collected.⁴ Smartcards can reduce these expenses while allowing ticket inspectors to spend more time in targeting areas with higher incidence of illegal or irregular card use.⁵ Accuracy of revenue collection is also greatly improved, as with automatic fare collection systems, no money needs to be counted, and inconsistencies are eradicated as there is an accurate record of every transaction.

Cases of fraud can also be greatly reduced – a UK Department for Transport study shows that since the introduction of the Oyster Card (i.e. the smartcard system used on public transport in London), the percentage of irregular travel (journeys made with either no ticket or the wrong ticket) fell by approximately 2.5% to 1.5% of total journeys made. It was estimated that this reduction in fraud represented cost savings of up to £40m per year.⁶



ESCAP supports governments in Asia-Pacific in implementing measures to efficiently involve the private sector in infrastructure development. This case study is part of this effort and promotes exchange of experience among the countries of the region

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AFCS data can help governments understand passenger travel demands, providing enhanced planning & optimum asset utilization

More informed transport planning:

Typically, the data used to inform transport policy and the planning of service provision has been gathered from sources such as annual travel surveys, which are costly and inevitably provide only a small sample of all journeys undertaken in the system.⁷ AFCS data can supersede traditional manual surveys because its collection at the time of transaction incurs essentially no marginal cost to the transport agency. AFCS data also represents a complete sample of journeys made by passengers using smartcards. For these reasons, AFCS data is hugely valuable and can support governments in understanding passenger travel demands, thus allowing for better operations and planning and for optimum asset utilization.⁸

Enhanced demand management:

Governments primarily aim to promote public transport usage by investing in the supply of new infrastructure and rolling stock. Implementing smartcard ticketing provides an opportunity for governments to considerably influence the demand for public transport and to support a move away from private cars. With open access to complete travel data on the demand side, transport operators can provide discounts on journeys to and from specific locations at certain times to stimulate the spread of demand across a network, maximizing its revenue earning potential and encouraging increased patronage in off peak periods.⁹

Benefits for the passenger

User friendly/integrated ticketing system:

Smartcards are, first and foremost, simple to use, allowing passengers seamless transfers from one line (or mode of transport) to another, which in turn, can also allow for greater flexibility in a passenger's travel plans. A single multi-purpose card can also encourage more people to use public transport as well as facilitate multimodal travel behaviour that is encouraged by operators and transport planners. Journeys no longer need to be pre-scheduled and tickets bought in advance. 'Pay as you go' (PAYG) features also ensure that passengers get exactly what they pay for, as the card is swiped at the beginning and end of every journey.

Reduced journey time:

A key advantage of smartcards for passengers is shorter journey times (through faster transaction times and reduced queueing at ticket offices and barriers). Typically, a smartcard transaction takes just 150 milliseconds to complete, and with public transport employees no longer required to collect fares and issue tickets, smartcard ticketing systems enable substantial savings in boarding times. In London for example, the Oyster Card has contributed to a significant reduction in queue times at ticket machines: the average ticket office queue time has gone down from 129 seconds pre-Oyster to 78 seconds post Oyster - a reduction of 40%; this is in spite of a reduction in the number of ticket offices in operation.¹⁰ An improved



Credit: Johan Martinez

daily passenger flow in and out of stations can also, in turn, ease congestion - particularly in densely populated urban environments such as Manila, and cases where ridership is increasing year on year. Consequently, operators are able to increase service frequency, enhancing the utility of transport assets.

PPP STRUCTURE

Where Manila's AFCS system differs from its counterparts in Singapore and Hong-Kong is that the provider of the fare system is not a subsidiary of the public operator. It is a private company contracted through a Public-Private Partnership (PPP) structure. In January 2014, the AF Consortium, led by Metro Pacific and Ayala, was awarded the P1.72 billion / USD 38.22 million Automatic Fare Collection System contract by the Department of Transportation and Communications. The AF Consortium will run the system for 10 years, inclusive of 2 years development/delivery, and will be responsible for the financing, installation, construction, refurbishment, and maintenance of the automatic gates for the existing LRT ½ and MRT 3. A central clearing house system will also be introduced by the private sector that will perform validation and clearing of all transactions. In effect, the private sector will build, operate and maintain the fare collection system throughout its duration.

Competitive tendering

In the procurement of Manila's new AFCS, the government of the Philippines was able to induce healthy competition in the bid to operate the new AFCS system, with 33 prospective bidders and 5 prequalified bidders initially competing for the opportunity. This was perhaps a consequence of the technology being in a well-developed market and standardized, with a number of suppliers providing these services already. The high number of bidders may also have been a result of the Philippines attractive policy environment which has improved considerably in recent years. In 2014 the Economist Intelligence Unit (EIU) named the country as having the 'most improved regulatory and institutional frameworks' and 'improved investment climate and financial facilities'.¹¹ Many bidders, including the winning AF Consortium, also saw the potential to expand the AFCS system into other transport areas as well as the retail sector. As a result of the number of bidders, operation costs were, therefore, driven down within such a highly competitive environment.

Revenue streams

Importantly, the Philippine's new AFCS system will come at no extra cost to the passenger, as well as to the government. The government support for this project in this respect is very limited, with the government only providing a 5-year exclusivity right on the ticketing services for the light rail systems. The private operator will be installing the new ticket gates as well as operating the system and is not expected to make any profit on fare transactions. In effect, the winning bidder pays the government a premium of Php1,088,103,900 (roughly \$23.4 million) on top of the project cost of installing and operating the AFCS; probably a first in the history of this type of system.¹²

In return, the private consortium expects to make an appropriate return on capital invested out of areas it will expand into such as commercial payment in shopping malls, customer loyalty schemes, etc. Indeed, the AFCS system has been designed to accommodate a roll out into other modes of transport and/or micro-payment services outside of public transport.¹³ In this respect, the large and widespread user base of the card system will make its expansion a highly viable option - as in the case of the Octopus Card in Hong Kong, which was initially launched in 1997 for use on buses and MTR. Currently the Octopus Card is used by 99 per cent of people in Hong Kong aged between 16 and 64 and for over 13 million transactions a day, valued at over HK\$160 million.¹⁴ A large share of revenues for the Octopus Card are coming from outside transport, with the card system currently involving over 7,000 service providers. For example, the Octopus card is used for payment in outlets such as supermarkets and convenient stores, for controlling access to buildings and as a platform for loyalty reward schemes.¹⁵

System Implementation

The first year of implementation, post-signing, is crucial, as it is during this time where there is a real risk for PPPs. Public authorities (particularly those new to PPPs) have a tendency to focus on the transaction only, whilst losing focus on later managing the contract once signed. Proper implementation of the project, however, depends on the quality of the post-signing management so that governments do not take on any unnecessary risks. Once the contract is signed, senior government officials and policy makers (in the executive office, ministry of finance, ministry of planning,

The Philippine's new AFCS system will come at no extra cost to the passenger as well as to the Government

transport ministries, etc.) have an important role to play in reviewing plans, protecting consumer rights, providing information, and so forth. There must be a shared vision on implementation, a strong project management plan, clear defined roles and responsibilities for all involved parties, and close collaboration between public and private bodies for a PPP project to be successful. With a PPP structure there is however a strong incentive for the private sector to speed up the implementation as revenues can only be generated once the system is in operation.

System expansion

Large cities such as Manila are particularly well suited to AFCS implementation, owing to their high volume of people and large customer base. Such elements offer huge incentives for expansion and the new Manila AFCS system is planned to service other transport modes (i.e., buses, taxis, etc.) and become the preferred payment method for each of them. After this, the new smartcard ticketing system may also be rolled out to parking, small merchants, vending machines, etc. serving as an electronic micropayment solution in convenience stores and bringing multiple economic benefits with it. In doing so, the contactless smart card will offer a single integrated card that meets the requirements of both transit and retail-financial payment applications: ease of use, fast and accurate transactions, ability to replace cash, security and data collection for improved customer identification and service. In order to be effective across multiple markets, decision makers from both the public and private sector in this PPP project will need to work closely together. For future extension work to be done easily with other suppliers, it is essential that the system is kept open by requesting the private operator to publicize the exact technical specifications of the system. However, the private companies concerned, may wish to keep it a closed system to ensure a monopoly position.

CONCLUSION AND OUTLOOK:

For the Philippine government, the introduction of a private partner to implement and run a new AFCS system was an ideal scenario in a number of respects:

- Primarily, the PPP mechanism was a way of investing in much needed public infrastructure, achieving efficiency improvements, whilst limiting the impact on public budget.

- Through accessing the efficiency of the private sector, the new AFCS system brings a range of benefits for the government including risk transfer (to the private sector), enhanced demand management, more informed transport planning and efficient fare collection.
- It will also provide a secure and reliable form of ticketing for passengers, both easier to use and reducing journey times, thereby improving the overall passenger experience.
- Fundamentally, such benefits are coming at no extra cost to either the government or passenger, as the investment in this new system has come entirely from the private sector.

Manila is, therefore, an excellent case study showing the positive potential of private sector investment as an alternative implementation method for governments. Learning from this experience, other countries in the region are considering a similar approach. For example, the Kyrgyz authorities hope to introduce an electronic payment system in public transportation. The estimated cost for this project will be USD 2.4 million (currently at the feasibility study stage) and the project is also designed to apply contactless payment for taxi fares, public parking, etc.

End Notes

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- ¹³ **Project Information Memorandum, 2012**, Department of Transportation and Communications & Light Rail Transit Authority - [http://www.dotc.gov.ph/images/PPP/2012/1.7BContactlessAFCS/Project%20Information%20Memorandum%20\(DP%2012-21-12\).pdf](http://www.dotc.gov.ph/images/PPP/2012/1.7BContactlessAFCS/Project%20Information%20Memorandum%20(DP%2012-21-12).pdf)
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