ADDRESSING THE NEW NORMAL AND THE FUTURE OF TRANSPORT: CONCEPTUALISING THE ADOPTION OF MOBILE PAYMENT SOLUTIONS FOR PUBLIC TRANSPORT IN SOUTH AFRICA

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ABSTRACT

Mobile payments for public transportation have been implemented worldwide. The question however is if South Africa should follow suit and implement mobile payments as well. The purpose of this paper is to consider a new normal with regards to payment methods. The focus will be placed on mobile payments as a solution in the public transport sector. This paper will look at the advantages mobile payments has for the user of public transport. There will also be an emphasis on why there is an increased feasibility of mobile payments for public transport in South Africa. There are several cities in first world countries who already implemented mobile payment solutions (MPS) and who had remarkable success with it, however, these potential successes need to be investigated within the South African context. This paper investigates the factors that influences the adoption of mobile payments in a South African context.

1. INTRODUCTION

Covid-19 has been a catalyst for the global adoption of cashless payments with South Africa not being an exception to this adoption. Derek Cikes, COO of Payflex[1] argues that people already made use of cashless payments before the pandemic, but after Covid-19 they are even more motivated to use cashless payments (Accountancy South Africa, 2020). Consumers are making use of cashless payments in different sectors such as media & entertainment, energy & utilities, healthcare, retail, groceries, and others. The question is if there can also be a shift to cashless mobile payments in the public transport sector in South Africa, which is currently dominated by cash payments?

Mobile payment can be referred to as a payment where a mobile device e.g., a phone is used at least for the initiation of the payment order and potentially also for the transfer of funds (Cheng, 2017). The payments environment in South Africa has changed dramatically over the past five years. This essay seeks to provide a better understanding on whether the MPS will be feasible in South Africa, by investigating mobile payment successes in other countries, identifying the constraints and user adoption barriers for commuters and identify advantages to justify a cashless mobile payment system for South African commuters.

[1] Payflex is a South African company enabling consumers to buy online good now and pay the full amount of the goods in interest-free instalments.

2. SUCCESSES OF MOBILE PAYMENT SOLUTIONS

There are several countries who already implemented mobile payments in public transport. Cities in developed countries such as Oslo, London and Seoul invented mobile payments Rutterbillet, Apple Pay and mobile T-money respectfully (Cheng, 2017). These cities had major successes with implementing these mobile payments based on user feedback. The users said that they enjoy using these applications as it made purchasing tickets much faster for them and increased the benefit of their traveling experience. However, other users complained about the short notice notifications of their tickets expiring. They said that they would appreciate being informed a fair amount of time prior to their tickets expiring. Developing cities such as Bangalore, India developed Citi NFC (Near Field Communication) trail and the city of Kaohsiung in Malaysia introduced m-ticketing Transportation (Ferreira et al., 2014).

Literature on the user adoption and success of these MPS within these countries has identified several advantages to the use of MPS for public transport payments. These are summarised in Table 1.

Table 1: Advantages of mobile payment solutions

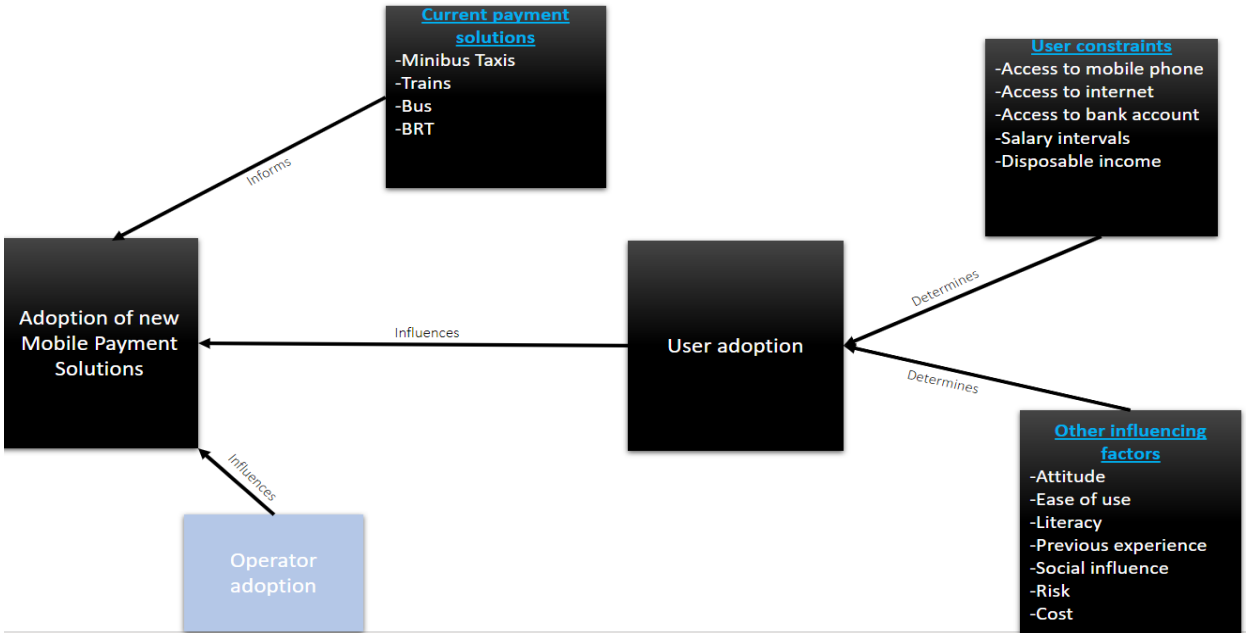
Advantages	**Reference**
Avoidance of long queues	(Tavilla,2015)
No need to carry cash	(Tavilla,2015)
Access information about maps, journeys, vehicles, and schedules / timetables	(Ferreira et al., 2014)
Time and place independence	(Cheng, 2017)

When considering the list of advantages above, it is clear that the South African public transport market will also benefit from a cashless payment system. Reason being that many travellers are faced with having to stand in long queues to upload money on their public transport payment cards, facing theft of cash when travelling on public transport and not having sufficient information on travel times and scheduling. Thus, improving on the payment solutions could attract more users to public transport options.

3. FACTORS DETERMINING ADOPTION OF MOBILE PAYMENTS IN SOUTH AFRICA

The next section seeks to understand the potential constraints and user adoption factors that would need to be considered when determining the potential user adoption of MPS for South African public transport.

Figure 1 indicates a conceptual framework linking the constraints and factors to MPS user adoption.



Source: Authors' construction

Figure 1: Conceptual framework - Adoption of mobile payment solutions for public transport

The current payment solutions for public transport in South Africa will inform the adoption to new MPS. Some public transport modes have moved to cashless systems, however the majority of payments are still made using cash due to the high minibus taxi modal share. Table 2 below summarises the different payment methods for public transport modes in South Africa and their modal share:

Table 2: South Africa's current public transport payment methods and modal share

Mode / Operator	Payment Method	Modal share[2]
Rail (i.e., Metrorail)	Daily/weekly/monthly tickets	2.9%
Conventional bus (i.e., Golden Arrow, Putco, Great North Transport, Algoa bus company)	Cash; Golden card, Daily/weekly/monthly tickets, Algoa bus card	10.1%
Metropolitan Integrated Rapid Bus (i.e., MyCiti, Rea Vaya, Areyeng, Harambee, Leeto, Yarona)	Cash (loaded on card); Daily/weekly/monthly tickets	2.2%
Minibus taxi	Cash	66%
Gautrain	Gautrain card	0.1%

The totals used to calculate percentages in the 2020 NHTS excluded unspecified cases. Source: Stats SA 2020

According to the National Household Travel Survey conducted in 2020, 3.7 million South Africans make use of minibus taxis per day (Stats SA 2020). The mini-bus taxi industry is a cash dominant industry. This means that there is a huge market that can be tapped into as well as the potential of an integrated fare system across public transport modes.

[2] The split between conventional bus and rapid transport as well as rail and Gautrain, was derived from National Treasury (2014)

The technical feasibility from the public transport operator side directly impacts on the adoption of MPS and could potentially hold several advantages in for operators to move to a cashless system. Cash collection processes could become more effective, lowering of theft and better route planning due to increase user journey information that could be collected through these MPS.

This essay does not further investigate the operator's perspective but continues to understand the factors influencing user adoption which is categorised as constraints and other influencing factors.

4. CONSTRAINTS

The predominant share of public transport users within South Africa falls within the lower quartile income groups. With a country faced with high income inequality and a substantial portion of the population having limited access to technology, opportunities, and better financial markets, it is clear that there exists large constraints by the potential market who will have to adapt to using MPS for public transport payments.

Mobile phones will be used to initiate the payment and to transfer the funds from the user to the operator and thus necessitates a high ownership of mobile phones. There has been a dramatic increase in smart phone ownership in South Africa with the number of smartphone users increasing from 9.7 million in 2014 to 24.5 in 2021 (O'Dea, 2022).

Conducting payments using a mobile device requires internet access. Many individuals in South Africa are still faced with unaffordable data cost. However, banks and other mobile companies have started to offer zero rated data costs to conduct certain essential usage of their mobile applications. Capitec and Nedbank for example allow their mobile app users to conduct zero rated data transaction which will play a significant role to incentivise users to use their mobile banking app for payments.

South African financial institutions have put emphasis on attracting the unbanked to become banked by lowering their banking costs and making registration of accounts easier. It is reported that 80 percent of the South African population owns a bank account with a substantial percentage of this population making use of mobile bank applications (Deloitte, 2019). For example, Capitec reported that they had an increase from 3.3 million users at the end of February 2020 to 5.3 million users at the end of 2021 (Capitec bank, 2021). Nedbank reported that their digital users increased by 25 % to 2.2 million in 2020 (Nedbank group, 2020). The fact that there are so many people in South Africa who already make use of banking applications, shows that it is possible for mobile payments for public transport to be viable in South Africa.

Many individuals using public transport gets paid on a monthly or weekly basis. Considering these salary intervals, it could constrain the funds available to make immediate payment for transport after receiving the daily wages (either only receive cash or the bank transfer from the employer takes more than 24 hours to clear).

The above four constraints links to the last constraint regarding disposable income. The lower income users are sensitive to increases in cost, whether it is needing to have a smart phone, a bank account asking additional banking fees, the possibility of a transaction cost for each mobile payment as well as potential data cost.

5. OTHER INFLUENCING FACTORS

Other influencing factors are factors such as the user's attitude towards using mobile payments to pay for public transport. The users' attitude plays an important part because when they have a negative attitude towards mobile payments, the possibility of them adopting it is small.

The ease of using this payment method plays a key role as a complicated and onerous payment system can influence the adoption rate. This links to the next factor of technological literacy where some users are unfamiliar with the use of mobiles and mobile banking applications.

Previous experience with mobile payment solutions could influence the adoption rate. With the rapid increase in mobile phone usage and the accelerated adoption to new technologies, positive experience with other mobile phone devices or banking systems could positively influence the user adoption. This however could also negatively influence adoption whereby people would be hesitant to use MPS due to other social influences (negative experiences from other users).

The risk and perceived cost associated with the use of MPS also determines user adoption. Users may think that there are additional costs involved when using mobile payments. This perception of them might prevent them from wanting to use mobile payments as many users do not account for the cost of cash withdrawal or the possibility of theft when handling cash. Risk such as cyber-crimes and insecure transactions or even the perception thereof, could negatively influence user adoption.

6. CONCLUSION

This essay highlighted the advantages of MPS for both users and the transport operators with success stories from cities who have already implemented mobile payments. This research conceptualises the factors influencing user adoption to a MPS for public transport and highlights the constraints and other influencing factors which should be considered when proposing MPS for public transport payments.

With the increase of smart phone usage, higher percentage of internet access and the decrease in the unbanked in South Africa, it is evident that South Africa should consider other payment methods to increase the public transport user experience and reduce the risks which coincides with cash payments for the user and operator.

Future research includes conducting user surveys to empirically analyse the degree to which these user constraints and factors will influence the adoption of MPS for public transport. Future research could also focus on the technical feasibility of such payment solutions for public transport (from a financial banking perspective) as well as factors influencing the operator adoption of MPS, specifically in the unregulated industry of the minibus taxis in South Africa.

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