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SOUTH AFRICA'S MINIBUS TAXI INDUSTRY

Resistance to Formalisation and Innovation

Ivo Vegter

FRIEDRICH NAUMANN FOUNDATION For Freedom.

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1. Introduction

One of the most enduring legacies of Apartheid in South Africa is the location of vast formal and informal settlements on the periphery of towns and cities, colloquially known as 'townships'.

This spatial planning located the primarily black[1], working class far from industrial, commercial or domestic employment. Most township residents being relatively poor, many could not afford the private motor vehicles that were ubiquitous even among working-class whites. Although there were some bus and train services, the government failed to supply adequate formal public transport that could serve to move township communities to and from home, work, shops, schools and basic amenities.

It is against this background that the minibus taxi paratransit[2] industry developed. From the beginning, it was part of the so-called 'second economy' or 'informal economy'. It was a cash business, without published fares, schedules, or routes, and it largely remains so today.

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The spatial planning legacy of Apartheid lives on. A growing black middle class moved into formerly white suburbs and acquired personal vehicles. Similar middle- and upper-middle class regions have developed within some townships. However, the majority of townships remain almost exclusively populated by the black working class where personal transport is a luxury. Against the backdrop of this socio-economic disparity, minibus taxis grew into the largest passenger transport industry in the country.

To understand the nature of the taxi industry, one must have a grasp of its history, which is deeply intertwined with the political realities in Apartheid and post-Apartheid South Africa.

This paper will elucidate this history, and examine the resistance to long-running attempts by government to formalise the industry and integrate it into broader public transport networks. It will also summarise the structure and scope of the industry, its associations, owners, operators, drivers and passengers.

Many ideas have been floated and attempts have been made to modernise the industry and introduce technology innovations. Some have been led by private sector, and some by government. The paper will conclude with some recommendations regarding potentially fruitful interventions.

2. Townships

On the outskirts of every major town and city in South Africa, one can find one or more large residential areas populated almost entirely by working-class or unemployed black Africans.

They are colloquially known as 'townships', a term whose meaning should not be confused with its neutral use in other parts of the world.

Townships are a legacy of systematic racial segregation that dates back to the colonial era of the late 19th century.[3] Under the pretence of responding to disease outbreaks such as bubonic plague in over-crowded neighbourhoods, the British colonial government resettled labourers who were not white in these townships, which were usually far away from where they worked.

A series of laws were passed under British rule that restricted the movements of black people and limited black ownership of land. The most notable of these were pass laws (a sort of internal passport system), the Natives Land Act of 1913, and the Urban Areas Act of 1923.

The racial segregation process was accelerated and formalised during the rule of the National Party from 1948 to 1994, which represented mainly Afrikaans-speaking white people. It began almost immediately with the notorious Group Areas Act of 1950, and was consolidated with an array of anti-squatting, influx-control and pass laws controlling the movement and geographic segregation of the artificially delineated races of South Africa.

These laws were designed to satisfy the need among the ruling white population for both security and labour availability, while forming a 'daunting legal complex' that established far-reaching controls over black African employment, housing, access to land and citizenship rights.

As a result of these laws, nearly 18 million black Africans were arrested and prosecuted between 1916 and 1984.[4]

The 'bantustan' system of black homelands, introduced in 1970, stripped black Africans of their South African citizenship by making them citizens of one of several small rural homelands, located far from any major cities or business hubs.

> *By 1985, of the estimated black population of 25 million, some 15 million remained in South Africa. This effectively made a great number of black workers and their families illegal aliens in South Africa.*

The stated aim was to remove the black population from South Africa entirely,[5] officially making those who continued to work in South Africa temporary foreign migrant labourers. Only a minority ever became *de facto* residents of the bantustans. By 1985, of the estimated black population of 25 million, some 15 million remained in South Africa.[6] This effectively made a great number of black workers and their families illegal aliens in South Africa.

This black labour class, over time, was 'dumped' in the townships, many through forcible relocation. Some of these townships grew extraordinarily large, such as those on the Cape Flats, an inhospitable, sandy region to the east and south-east of the Cape Town city centre. It is an amalgamation of 29 separate townships, comprising some lower-middle-class areas, large low-cost housing projects, and vast informal settlements, also known as shanty towns or squatter camps.

Likewise, South Africa's most famous township, Soweto, is actually a collection of over 25 townships near the Johannesburg mining belt. Consisting mostly of dirt-poor informal settlements and densely-packed Apartheid-era four-room 'matchbox houses', with a few newly wealthy suburbs, it is today home to over 1.5 million people.

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Public policy was to render townships as invisible as possible, by locating them on the peri-urban perimeter of towns and cities, and separating them from white residential areas, industrial areas and commercial centres by a *cordon sanitaire*, comprising open land, a river, a railway line or a major highway.[7]

Apartheid was not only directed at black South Africans. Racially exclusive townships were also reserved for the Indian and coloured (largely mixed-race) populations.

A standout feature of Apartheid townships was that it was prohibited to construct business or employment centres. In Soweto, for example, until 1976 there were only seven self-employment categories permitted within township boundaries, those being general dealerships, 'native' eating-houses, restaurants, milkshops, butcheries, greengrocers, and hawking. The number of businesses allowed in each township was controlled and very limited.[8] As a consequence, there was no economic development in townships, and the vast majority of township residents commuted long distances to work.

3. Apartheid-era transport

The spatial planning of the Apartheid government, which housed the black working class in remote areas far from business centres and work opportunities, along with the draconian restrictions on township business ownership, largely dictated the modes of transport available to township residents.

In most cities around the world, suburban sprawl is associated with wealthier residents who can afford to move away from the business centres, and often have private means of transport available to them. In South Africa, transport services were needed to move people between remote, high-density, low-income townships and their places of employment in the city.

As early as 1944, the government tried to introduce a temporary scheme to subsidise bus fares for workers residing in townships. The government's rationale at the time was clear: 'Transport charges in relation to the workers' wages, or even to the total family income, are beyond the capacity of the African workers to pay.

Indeed, it may be said that they cannot afford to pay anything. They certainly cannot afford to pay anything more in any direction except by reducing still further their hunger diet.'[9]

Resistance to bus fare increases was a popular lightning rod for unrest during the 1940s and 1950s, and led to several 'bus boycotts'. At first, the subsidies were not popular, since they depended on workers demanding and receiving transport allowances from their employers, which many workers were unwilling to risk.

> *After the National Party took power in 1948, the planning of peri-urban townships grew in scale, along with the need to provide transport services. Transport subsidies funded by levies on employers became entrenched and ubiquitous, despite strong opposition from employers. Removals of black Africans from 'white' areas to the townships were always followed by subsidies for both trains and buses.*

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By now, government provision of public transport, or the lack thereof, was a frequent focus of resistance against Apartheid.

During the 1970s and 1980s, transport subsidies were extended to black women, Indians and the coloured population.

This period coincided with the heyday of privately owned bus operators such as the Putco bus company, formerly known as the Public Utility Transport Corporation, which provided passenger services to black commuters in and around greater Johannesburg, Pretoria and Durban. Its fleet peaked in 1983 at 3 440 buses, travelling 156 million kilometres and carrying 353 million passengers per year.[11]

4. The rise of the taxi industry

Around the time of the 1976 Soweto uprising, the restrictions on self-employment and businesses in townships were lifted, although decades of severe limitations meant the normalisation of business activities in the townships would also take decades. It remains far from normal to this day.[12]

Around the same time, in 1977, government passed the Road Transportation Act. Parliamentarians warned that continued repression and regulation in the transport sector, combined with rising fares, would further politicise black Africans and lead to more bus and train boycotts.[13]

Lifting the restrictions on township business ownership gave rise to a new industry, as private taxi operators began to use minibuses to offer transport services between townships and places of work and education. These operated largely in competition with privately owned (and mainly white-owned) bus companies.

Initially, operating permits were hard to come by, and severely restricted allowable transport distances. Most taxi operators worked illegally, without permits. Some tried to use a loophole in the Road Transportation Act that allowed them to operate if they left one seat unoccupied.[14]

There was considerable demand from both commuters and employers for an inexpensive, flexible means of transport. The South African Black Taxi Association (SABTA) was established in 1981, representing some 60 000 operators and drivers.

Under significant fiscal constraints, the government appointed a commission of inquiry led by Pieter Welgemoed, a transport economist who would later become minister of transport, to investigate how the cost of transport subsidisation could be reduced. Ironically, although it in principle wanted to phase out transport subsidies altogether, the commission did not propose supporting the fledgling, unsubsidised taxi industry, but instead chose to protect the regulated, subsidised and fare-controlled bus companies from 'unfair competition'. In 1983, it proposed legislation that taxis be restricted to four-seater sedans, and that licensed minibus taxis be phased out over a period of four years.[15]

A similar proposal to keep minibus taxis off the streets of London succeeded at the time in the UK,[16] but Welgemoed's proposal was widely rejected by commuters, civic associations and taxi owners in South Africa, where minibus taxis were already a burgeoning business. A powerful business lobby pointed out that such a move would destroy faith in 'popular capitalism'.[17]

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Welgemoed's negativity about taxis was not universally shared in government. A parallel government project, the National Transport Policy Study, had been established in 1982. It recommended that bus subsidy programmes be phased out, and that taxis should be allowed to compete freely with buses. It proposed that minibus taxis carrying up to 16 passenger be licensed, and that illegal taxis be identified and granted permits.[18] In 1983, the Director General of Transport, Adriaan Eksteen, told the passenger transport industry that 'minibuses do have their place in the sun'.[19]

By 1987, the government had come round to the view that the taxi industry should be entirely deregulated, with permits subject only to vehicle roadworthies, drivers' licences and insurance cover.[20] In 1988, the Transport Deregulation Act did exactly that.

Ironically, SABTA opposed this policy on the grounds that it would permit anyone, including white capitalists, to own and operate taxi services. Although it could be (and was) argued that taxi deregulation was '[i]n line with the apartheid state's neo-conservative economic policies of furthering free enterprise, promotion of competition and deregulation,'[21] there was significant pride among the general township public that this thriving industry was entirely created, owned and operated by black Africans, and the industry wanted to keep it that way.

SABTA sought a monopoly in the taxi industry, to be protected from new entrants to the market. It warned that rapid deregulation would result in chaos, with too many taxi operators entering the market too soon.[22]

It nominally succeeded by being recognised as the authorised voice of the taxi industry and reaching a settlement with the government in 1989, but after deregulation, permits were 'issued like confetti' and permit enforcement was no longer a priority.[23]

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By 1991, the Putco bus company had reduced its fleet to 2 500 from its 1983 peak of 3 440, as passenger numbers crashed from 353 million per day in 1983 to a mere 120 million per day. By 1994, the numbers dropped further, to 2 280 buses carrying 82 million passengers per day. It would go on to consolidate and diversify its operations, as the taxi industry continued to eat its lunch.[24]

In 1992, minibus taxis accounted for 46% of all commuter transport in South Africa.[25]

5. The Taxi Wars

The rapid and complete deregulation of the industry, South Africa's fraught socio-political environment in the dying days of Apartheid, as well as the inability of police to maintain law and order, combined to create a volatile, over-traded market in which violence became an effective way of keeping prices up and competition down.[26]

While much of the recurrent violence appeared to be motivated by competition over routes, as numerous rival taxi associations sprang up after the industry's rapid deregulation, state-sponsored destabilisation of township communities prior to the end of Apartheid in 1994 also played an important role. In fact, some researchers reject single-cause explanations as inappropriate, and argue that the victims of violence in the early years of the taxi wars were more accurately casualties of the mainstream of political violence that plagued South Africa between 1990 and 1994.[27]

The lack of permit enforcement enabled masses of unlicensed operators or 'pirates' to enter the market. It was one of the first opportunities for black South Africans to participate in the free market, fuelling competitive rivalry unmediated by effective policing or the justice system.

'Rather than an advertisement for free market economics, the permit 'confetti' arising from deregulation resulted in acute competition between operators and produced the violence that is now endemic in the taxi industry. A major factor behind the violence that has come to be associated with the taxi industry has been the unchecked rise of taxi associations as informal agents of regulation,' wrote Jackie Dugard in 2001, in a seminal paper for the Centre for the Study of Violence and Reconciliation.[28]

She wrote that the violence escalated after the formation of the South African Long Distance Taxi Association (SALDTA), which operated 'on the dark side of informality':[29]

> *A classic example of a taxi war between rival local associations occurred in the informal settlement of Alexandra (Alex) (to the northeast of Johannesburg), between the SABTA-affiliated Alex Taxi Association (ATA) and the SALDTA-affiliated Alex-Randburg-Midrand-Sandton-Taxi Association (ARMSTA), and lasted from 1987 to 1994. The Alex taxi war began in the same year that the taxi industry was deregulated. Prior to 1987, ATA was the only taxi association in Alex, having operated illegally in the area since 1940. The mass entry of operators in 1987 as a result of deregulation gave rise to ARMSTA, which immediately engaged ATA in sectarian violence as it vied for members, routes and ranks in the ensuing free-for-all. The Alex taxi war was finally resolved in 1994, but not before countless lives had been lost.*

In the immediate post-Apartheid years, from 1994 onwards, political killings in South Africa declined, but taxi violence increased.

Now largely delinked from politics, the violence became more widespread, decentralised and complex. A major factor in the continuing violence was the rise of 'mother bodies', which were informal groupings of individual local taxi associations, usually organised on a regional level. Associations controlled taxi ranks and routes, and collected fees for doing so that depended on the profitability of a route. Mother bodies provided protection to associations and taxi operators against competition by rival associations, in return for collecting a share of the revenue.[30]

These protection rackets required hitmen and hit squads, employed by the mother bodies. In 1997, police revealed that hit men were paid R1 000 for killing a taxi passenger, R2 000 for a taxi driver, R4 000 for a taxi owner, and as much as R80 000 for an executive member of a rival mother body.[31]

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There is no formal accounting in the taxi industry. There are no receipts, no audits and no taxation. The entire industry is a cash business, and executives in mother bodies could become extraordinary rich. Rivalries between mother body bosses could be as intense and violent as rivalries between drug lords. What was once a violent rivalry between competitors over routes and passengers turned into a violent, mafia-like enterprise to extract money, loyalty and compliance from taxi associations, owners and drivers.[32]

This situation made it exceptionally hard to intervene in the taxi industry. As early as 1995, the government convened a National Taxi Task Team to seek ways to address taxi violence. Comprising government officials, taxi industry representatives and advisers, it held numerous public hearings and two plenary discussions, before recommending that the taxi industry be re-regulated in 1996. This regulation began to be implemented in early 1998, and would consist of registering legal taxis, dealing with illegal taxis, and a moratorium on issuing new taxi operator permits.[33]

Rather than calming troubled waters, the re-regulation policy almost immediately led to a significant surge in taxi violence. Although authorities and commentators were at a loss to explain it, it was clear that the violence was a direct result of 'Mafia-type elements clinging to their positions of power'.[34]

From its inception, the taxi industry was steeped in corruption. Permits were procured with bribes, and police were paid to turn a blind eye to unroadworthy vehicles and illegal operators. Some government officials and police officers also had a direct ownership stake in the taxi industry, operating taxis for their private account.[35]

The involvement of government officials and police in taxi conflicts perpetuated the adversarial relationship between taxis and the government. Taxi operators and drivers felt victimised, unrecognised for the service they provided, and were unhappy that they, unlike buses and other forms of public transit, were not subsidised.[36]

In 1996, then-president Nelson Mandela lashed out at the South African Police Service (SAPS), saying, 'The level of corruption among policemen is so high that government efforts to halt the upsurge of crime and [taxi] violence are severely undermined. Government has declared war on taxi-violence, but instead of helping to eliminate crime and violence a good number of policemen are known to be undermining the effort by associating with the criminals for financial gain.'[37]

Two years later, Neville Thomas, then head of the SAPS's Special Presidential Taxi Task Team, was even more blunt: 'Policemen hire out their weapons to be used in hits, if they don't actually perform the hits themselves, and they hire themselves out as bodyguards to senior executives [of the mother bodies]. They further hamper investigative work by stealing dockets or leaking their contents, and warning suspects of impending arrests.'[38]

Although minibus taxis proved to be an effective, flexible and more cost-effective transport option than its formal counterpart, the recurring taxi violence and its evolution to be in direct competition with formal public transit modes resulted in authorities viewing them as 'a (necessary) nuisance that should be formalised'.[39]

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Taxi violence would continue into the 21st century, and remains a major problem to this day.

6. The Taxi Recapitalisation Programme

After the failure of the NTTT re-regulation process, the government developed a plan to restructure the taxi industry through recapitalisation in 1999. The idea was to tempt taxi owners with subsidised new, larger and more efficient vehicles. The government would pay taxi owners a 'scrapping allowance', which would serve to remove older, unsafe taxis from the road, and which could then be used as deposit for the purchase of new 18-seater (minibus) or 35-seater (midibus) vehicles.[41]

The purpose of the programme was not simply to upgrade the fleet, but also to formalise and institutionalise the industry, to replace the old permits with new taxi operators' licences, and bring at least part of the industry into the 'first economy', or formal economy. The permit conversion process sought to confine operators to specific routes in an attempt to minimise competitive conflict among rival taxi operators. The programme would also bring taxi ranks under municipal control, again to minimise violence over ranks that were monopolised by taxi associations. It further sought to extend labour law protections to taxi drivers and other employees in the industry.

Four government departments were involved in drawing up the policy, namely the Department of Trade and Industry, the Department of Minerals and Energy, the Department of Finance, as well as the Department of Transport.[42]

In this effort, the government recruited the newly formed South African Taxi Council (Sataco), which was formed as an industry response to the government's failure to resolve taxi violence. The organisation had as its aims 'the achievement of peace and unity in the taxi industry', and 'the development of economic benefits and empowerment for all those operators in the industry'.[43]

The formation of Sataco and its support for the taxi recapitalisation programme (TRP) prompted the establishment of a rival body, the National Taxi Alliance (NTA), as well as a National Taxi Drivers' Organisation (Natdo), both of which were opposed to the government's restructuring and recapitalisation plans.[44]

By 2001, it was clear that Sataco was not widely representative, and a unity conference was called in 2001, leading to the formation of the South African National Taxi Council (Santaco).[45] It became the first national taxi organisation actively pursuing the industry's formalisation, recapitalisation, restructuring and modernisation.

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By the time of the implementation of the TRP in 2005, it was already clear that it was a technocratic pipe dream to try to restructure the industry from the top down in a government-led programme. The biggest manufacturers of taxi vehicles declined to tender for the project, since it would require producing vehicles to specifications that did not exist anywhere else in the world. A few minor manufacturers did tender, but their proposals proved to be unaffordable. While the TRP process was ongoing, active, market-driven re-capitalisation was occurring in some key sectors of the taxi industry, outside the government-subsidised process, with long-distance operators out of Gauteng, for instance, purchasing an impressive new fleet of midibuses without any government assistance.[47]

Within the taxi industry itself there was also significant opposition to the programme. This was expressed through protest marches, blockades, intimidation and violence. Among the problems was the fact that only some taxi operators could afford the new vehicles, which left a large number behind in the 'second economy' as illegal operators.

There was also substantial resistance among drivers. Under the more formal, recapitalised system, drivers could expect to see working conditions improve. Many were not interested, however, since longer working hours enabled them to earn more. Many also feared losing their jobs instead. The larger midibuses threatened to put drivers out of work. The requirement for formal-sector maintenance plans also sidelined many small, informal vehicle workshops that serviced the taxi industry.[48]

By some estimates, 40 000 drivers stood to lose their jobs as a result of the TRP.[49] In a country in which over 40% of the working-age population is unemployed, any scheme that is expected to reduce employment will meet with strong opposition.

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The expense of replacing taxi vehicles was passed to passengers in the form of higher fares, which raised discontent with the programme among the taxi-using public, too.[50]

The differential between higher fares charged by new taxis purchased under the TRP and lower fares charged by older taxis now deemed to be illegal operators further contributed to conflict within the industry. Newly formalised taxi operators aggressively opposed 'pirates' who could undercut them.[51]

Academics have pointed out that the TRP aims to improve the quality of service of the taxis, improve safety and convenience of travellers and affordable taxi operations, facilitate tax compliance by operators, and monitor the route operations and revenue generated by the taxi industry. However, even though the programme is extensive, it deals mainly with the replacement of the ageing taxi fleet, but does not address issues such as the destructive competition and route rationalisation.[52]

The licensing process has also entrenched route monopolies, which cause further conflicts when larger, non-local associations are granted exclusive use of routes to which smaller, local associations also lay claim.[53]

As recently as 2018, the chairman of the Parliamentary Police Portfolio Committee, Francois Beukman, warned that taxi violence had reached 'crisis levels' in South Africa. The deaths of 11 taxi drivers in a single incident was 'a further indication that violence in the taxi industry has now reached crisis levels in the country and a multi-sectoral intervention strategy must be implemented to effectively deal with this scourge'.[54]

According to a 2013 paper by M.M. Baloyi in the *Journal of Public Administration*, the empirical evidence revealed that the TRP failed to achieve its objectives. 'The South African roads are still packed with unroadworthy taxi vehicles, taxi violence is still taking place, the industry is still practically informal and unregulated.'[55]

The paper argued that while the TRP was a good policy with great intents, its implementation had been a flop.[56]

The initial target was to remove 100 000 taxis from the roads by paying the owners a scrapping fee of R50 000. This target was later raised to 135 894, and the fee was raised to R91 100. By September 2018, however, only 72 653 taxis had been scrapped, at a cost to the fiscus of R4.4 billion. Some of the old taxis, supposedly scrapped, turned up on the roads again, still operating as taxis.[57]

In an attempt to address the failures of the previous scheme, the government in 2019 announced a Revised Taxi Recapitalisation Programme (RTRP), with an even higher scrapping fee of R124 000 per vehicle. It appointed a new service provision partner, which created a commercial trading entity, Taxi Recapitalization SA, to implement the programme. The goal is to go beyond merely replacing vehicles, and make the programme less dependent on the government by providing commercial services in the taxi industry such as 'the affordable supply of new taxi vehicles, finance, short-term insurance, spare parts, repairs, fuel, lubricants, electronic fare collection and property management'.[58]

It is too early to tell whether the new programme will be better accepted within the industry and more effective than the last, but introducing a government-backed competitor for taxi-related services into the industry might prove a bitter pill to swallow.

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With their roots in the struggle against Apartheid, many taxi owners still feel that instead of appreciating their effort and contribution towards mobility, government is out to punish them through formalisation, imposing onerous labour conditions, safety standards and taxation.[59 60]

7. Integrated Public Transport Networks

In 2006 and 2007, the preparations for the 2010 FIFA World Cup prompted a change in government transport planning. Born out of contractual commitments to provide public transport services to stadiums, the plans soon extended to establishing Integrated Public Transport Networks (IPTNs), with the emphasis on building networks across different modes of transport.[61]

Leaning on 'policy transfer' from a similar project undertaken in Bolivia, the initial focus was on establishing Bus Rapid Transit systems in 12 cities and six more heavily populated regions, which would fill the role of ailing or absent rail services, and incorporate both existing scheduled bus services and the minibus taxi networks.

The implementation of BRT has not gone as planned. Instead of smoothly integrating with the taxi route networks, the taxi industry roundly rejected the idea.[62] The NTA in 2009 demanded that the entire BRT system be 100% owned by the taxi industry, claiming that it developed and owned the routes that the BRT planned to target, and that the BRT threatened the livelihoods of the broader taxi industry.[63]

(The notion of route 'ownership' is, of course, problematic, but it is one which government policy has tacitly acknowledged in its dealings with the taxi industry.)

Despite years of consultation, there are few signs of greater acceptance of the government's IPTN plans. While some taxi operators have been successfully contracted into the system, many industry players continue to express 'rage' against the implementation of BRT and the exclusion of minibus taxis from central business districts in favour of bus services.[64]

Among their complaints are a lack of taxi subsidisation to compete with subsidised buses, and the creation of bus lanes that unfairly advantages buses over taxis.[65]

In many cases, taxi operators had to be bought out to create competitive space for BRT services. In Cape Town, for example, the city paid R1 billion to buy up taxi operating licences.[66]

One critical shortcoming of the government's approach was a lack of adequate consultation with various associations that took into account specific local needs and ambitions. Engagement processes lie on a continuum, wrote Herrie Schalekamp and Roger Behrens of the Centre for Transport Studies at the University of Cape Town in 2010, ranging from active empowerment and collaboration, through consultation, through simply providing information, and persuading stakeholders to accept a predetermined outcome.[67]

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'If current evidence is taken into account, the closed outcome of BRT-related paratransit engagement processes, limited communication of progress in engaging paratransit, and the absence of accessible transitional business plans, it is possible to draw the conclusion that the present engagement process lies at the latter end of the continuum tending towards persuasion and information dissemination,' they wrote.[68]

'Our business is under siege,' Santaco secretary general Philip Taaibosch told a conference in 2008, referring to the 'monster' National Land Transport Bill of that year, which contained many provisions aimed at formalising the taxi industry and integrating it with the Bus Rapid Transport systems under development. He said that the government was blind to the effects such legislation would have on the industry, and that it could literally close taxi operations down.[69]

'Government, through its plans, through its agencies, is planning to take the taxi industry away from us,' he said. 'It is extremely wrong to allow laws created by government to close businesses.'[70]

'Unsurprisingly, the results of the BRT projects to date have illustrated limitations in local level institutional capacity to manage large-scale transformation,' wrote Schalekamp and Behrens, 'and have furthermore revealed strong opposition from the paratransit sector and indeed tensions between groupings within this sector.'[71]

More than a decade later, BRT is only operational in limited parts of Cape Town, Johannesburg, Tshwane, and George, and has struggled with large and persistent operating deficits. This is prompting a rethink in how better to integrate minibus taxis with other modes of transport.[72]

Among the initiatives being piloted are upgrading minibus taxi services and formally contracting them into IPTNs while downscaling the rollout of BRT services; paying minibus taxis a subsidy as an incentive to improve service quality, vehicle maintenance and driver behaviour, and institute formalised employment contracts for drivers; investing in improved minibus taxi infrastructure such as upgraded ranks; and implementing professional development programmes for drivers and taxi operators to enable them to formalise and manage their growing operations.[73]

Among the initiatives being piloted are upgrading minibus taxi services and formally contracting them into IPTNs while downscaling the rollout of BRT services; paying minibus taxis a subsidy as an incentive to improve service quality, vehicle maintenance and driver behaviour, and institute formalised employment contracts for drivers; investing in improved minibus taxi infrastructure such as upgraded ranks; and implementing professional development programmes for drivers and taxi operators to enable them to formalise and manage their growing operations.

The effectiveness of these interventions remains to be seen. For example, Cape Town taxi operators have found ways to incorporate professional development skills into their existing operations, but the city's plans to corporatise taxi services to integrate the industry into wider IPTN objectives has made slow progress.[74]

Even extensive attempts to engage the minibus taxi industry from the outset, such as occurred with George's RBT project, have proved to be difficult, and have led to widespread strikes and protest actions.[75]

8. Taxi operations and practices

Five distinct role players make up the informal transport industry, namely the owners, the drivers, the passengers, the taxi associations, and the regulation authorities. The drivers lease the vehicles from the owners, and have to earn a certain sub-minimum to make the business viable. The owners have very little control over the way their vehicles are used, and have no control over the flow of cash.[76]

Routes are undocumented, and those taxis that do have operating licences are limited only by their route endpoints at taxi ranks. Vehicles do not carry visible information about routes or destinations. There is also little or no signage at taxi ranks. Although formal taxi ranks typically exclude taxis without valid operating licences, there are many more informal ranks, at which regulation is lax or non-existent.[77]

Despite this lack of formal documentation, routes are well known to the drivers and passengers, however, as are the numerous stops along the route. These stops are likewise neither documented nor marked by signage, but many have informal names commonly used between drivers and passengers.

Drivers can also be directed to stop anywhere. 'After robot' is a common phrase used to indicate the next traffic light, and 'short left' means to stop as soon as is convenient. Drivers also have some leeway to make minor diversions from standard routes upon request.

Drivers are coordinated by marshals at formal or informal taxi ranks, and marshals are paid for their service by the drivers. Depending on the route, direction of travel and time of day, marshals will either direct passengers to taxis until a vehicle is full, or signal that a driver may depart without a full complement of passengers. Taxis that are not full will pick up passengers along the route. During the course of a day, about 40% of taxi trips start at taxi ranks, and 60% start at stopping points along the route.[78]

Taxis do not run on a fixed schedule. Marshals generally make sure that taxis depart frequently during peak hours, and less frequently but still regularly during quieter times of the day. This makes the industry highly responsive when queues develop; marshals can forgo the usual break between taxis, and rapidly load available taxis to send them off as fast as possible.

Drivers work very long shifts, often starting long before daybreak and continuing until after dark.

Drivers work very long shifts, often starting long before daybreak and continuing until after dark. Off-peak hours do provide some opportunity for driver downtime, however.

Passengers pay fares to the driver after departure. Often, a helpful passenger in the front seat will collect the fares on behalf of the driver, and will ensure that everyone on board pays the appropriate fare based on their intended destination. The driver will check that the correct total has been collected, and the assisting passenger will deposit the money in the taxi's cash register (ashtray).

Fares differ depending on distance. On a long route, a taxi might charge three different fares, depending on the passenger's destination. The fare structure is fairly flat, however, which makes longer routes less profitable, and less desirable for drivers.

Drivers are expected to meet set financial targets that depend on the route they drive, and their income depends on meeting these targets. High targets set by owners is a major cause of overloading and reckless driving in the taxi industry.

Since the business is almost entirely cash-based, however, drivers pay owners based on expected, rather than actual, occupancy. This amount is called the 'check-in'.[79] There are some variations in how the check-in is calculated, but generally, the model provides opportunities for drivers who hustle to pocket whatever they earn in excess of their targets. This again incentivises overloading and speeding. It also explains why many drivers are uninterested in labour protections that impose shorter working hours on them.

The cash nature of the business suits owners, who can avoid taxation, as well as drivers, who can earn excess profit off the top, but it also suits passengers very well.

Most passengers work low-income jobs, and many of those jobs, especially in domestic work or garden labour, are paid off-the-books, in cash. A large number of South Africa's poorer commuters do not have bank accounts into which salaries can be paid, or bank cards with which to make payments.

Despite the highly informal nature of the industry, it works surprisingly well. It is an excellent example of an emergent market that arose out of a pressing need within the community, and its operations and interactions are a direct result of these grassroots origins.

The language in taxis has a particular idiom. Besides creative nicknames for various stops and destinations, the taxis themselves are often nicknamed. Perhaps the most popular nickname was that of the Toyota Super 10, a popular vehicle in the 1980s, which was called a *Zola Budd*, after South Africa's barefoot world-champion track and field runner. A rival model, the Isuzu minibus, was quickly labelled *Mary Decker*, after an American runner who tripped and fell in an incident involving Budd in the 1984 Olympics.

Instead of using signage or printed schedules, drivers and passengers communicate using an elaborate system of hand signals. Some signals are universal. A downward pointing finger signals 'down this road' or 'wherever you are going'. A down-pointing finger making circular motion means 'nearby' or 'very local', indicating the need to travel only a very short distance. A finger pointed upwards signals 'to town'. A cupped hand with the fingers pointing down means 'shopping centre'.

> *Most passengers work low-income jobs, and many of those jobs, especially in domestic work or garden labour, are paid off-the-books, in cash. A large number of South Africa's poorer commuters do not have bank accounts into which salaries can be paid, or bank cards with which to make payments.*

Other signals are unique to particular destinations. Kliptown in Soweto was built near a large rubbish dump, so the signal is a hand waving in front of the face, to indicate stink. Orange Farm is a large township to the south of Johannesburg, and its signal is a cupped hand with upward-pointing fingers, as if holding an orange. The name of Diepsloot refers to uneven terrain, and the signal is a hand making a wavy motion, indicating hills and valleys.[80]

The taxi industry has proved to be highly flexible, very responsive, and deeply integrated with the culture of the communities that it serves. In these respects, it is objectively superior to the rigid, limited, scheduled and bureaucratic nature of formal public transit alternatives.

9. Size, scope, efficiency and safety of minibus taxis

A great deal of the media coverage and academic work on the taxi industry has focused on its negative aspects, such as it mafia-like competitive behaviour, tax avoidance, unroadworthy vehicles and aggressive driving.

Decades of attempts to formalise the industry have met with only limited success, leaving much of the industry still unregulated and operating in the informal sector. It is exactly the informal nature of the industry that renders it very resistant to attempts to monitor and regulate it, whether that involves corporatising taxi businesses or extending labour protections to drivers.

'Formalisation or no formalisation, the point is that the state must leave our industry alone. It should rather provide assistance in the form of subsidies,' one taxi owner told researchers in 2018.[81]

Despite all this, it is important not to succumb to a one-sided view of the industry as chaotic, predatory, and unsafe.

> *In 2018, the minister of transport released statistics showing that there were 130 996 taxis running under formal operating licences.In 2017, Santaco reported that there were more than 200 000 minibus taxis operating in South Africa, generating an estimated R90 billion in annual revenue.*

Getting an idea of the size of the industry is complicated by its largely informal nature. In 2018, the minister of transport released statistics showing that there were 130 996 taxis running under formal operating licences.[82] In 2017, Santaco reported that there were more than 200 000 minibus taxis operating in South Africa, generating an estimated R90 billion in annual revenue.[83]

A recent survey conducted by the City of Cape Town found that the average taxi makes a profit of R72 000 per year, which, depending on the cost of a vehicle, translates to an excellent annual return on capital invested of between 30% and 70%.[84]

Private vehicles are the dominant form of transport in South Africa. In 2013, 38.4% of workers reported either driving or being driven in private or company-owned passenger vehicles, according to the most recent National Household Travel Survey (NHTS), published by Statistics SA in 2014. Minibus taxis were used by 26.5% of survey respondents, 21.1% walked to work, and only 7.6% and 5%, respectively, used buses or trains.[85]

> *The total number of public transport trips stood at 5.4 million per day in 2013, of which 67.6%, or 3.65 million, were on minibus taxis, 19.5% were on buses and 12.9% were on trains.*

The role played by the minibus taxi industry becomes clearer, however, when considering only public transport modes. The total number of public transport trips stood at 5.4 million per day in 2013, of which 67.6%, or 3.65 million, were on minibus taxis, 19.5% were on buses and 12.9% were on trains.[86]

The efficiency of the taxi system can be seen in a number of measures.

Only 17% of households reported not having access to taxis. This compares to 50% reporting a lack of access to bus services, and 81% reporting unavailability of train service. Counter-intuitively, access to taxis is higher in rural areas, and higher among the poor. Only 12% of rural households report not having access to taxis, and only 10% of the poor do.[87]

According to the NHTS, only 12.8% of taxi passengers were required to make a transfer during their journey, which is fewer than either bus or train passengers. Walking time to the public transport pickup point was also significantly shorter than that for either buses or trains. More than half of taxi passengers walked less than five minutes to their pickup point. Total time travelled was also significantly shorter for taxis, with a mean of 50 minutes, compared to 74 minutes for both buses and trains.[88]

Only in terms of price did buses, with a mean cost of R472 per month, and trains, at R371 per month, outperform minibus taxis, which cost passengers R515 per month. To put that in perspective, private motor vehicle drivers spend a mean of R1 011 per month.[89]

The price disadvantage of taxis compared to other modes of public transport cannot entirely be ascribed to inefficiency in the taxi industry, since both bus and train fares are heavily subsidised by government.

Subsidies accounted for about 50% of the revenue of the Passenger Rail Agency of South Africa, the state-owned passenger rail operator, in 2014/15. The Golden Arrow bus company in Cape Town received about 55% of its income from government subsidy in 2012. And Cape Town's BRT system covered only 35% of its own costs in the 2015/2016 financial year.[90]

That said, taxi associations do operate like cartels, and set monopoly prices for each route, probably in contravention of the Competition Act of 1998. The greater availability of taxis, compared to alternative transport options, also helps to keep prices up. Associations sometimes interdict rivals in court over contested routes. The government compounds the ability of taxi associations to act as cartels by issuing formal operating licences only to association members. This enables associations to exclude would-be new entrants to the market simply by denying them membership.[91]

In 2018, minibuses taxis accounted for 19.2% of major crashes, even though they account for only 1.6% of the total number of vehicles on the road (assuming Santaco is correct in its 200 000 estimate).

The stranglehold of the taxi associations also means route efficiency can suffer. We have already seen that longer routes are less profitable than shorter ones, so it stands to reason that it pays to force commuters to take multiple shorter trips than a single long trip. As a result, adding a longer direct route where shorter connecting routes already exist is often opposed by the operators of the existing routes, and sometimes violently so. These challenges can be overcome, but usually only within the same taxi association. It is almost impossible for a new operator, outside the existing associations, to establish a new, more efficient route.[92]

'Operators who think they can make a profit should ideally be given a licence and allowed to enter the market, and they should be protected from violence by the state,' wrote Andrew Kerr for the World Bank. 'However, given the history of violence between associations, which is often the result of competition over routes, the government seems reluctant to make licences more easily available and encourage entry beyond that deemed sufficient by taxi associations.'[93]

In terms of safety, the negative image of minibus taxis may also be somewhat exaggerated.

On the face of it, it would appear that minibus taxis are quite unsafe. In 2018, minibuses taxis accounted for 19.2% of major crashes, even though they account for only 1.6% of the total number of vehicles on the road (assuming Santaco is correct in its 200 000 estimate).[94] However, this number is deceptive, since minibus taxis cover far greater distances every day than most other vehicles on the road.

An estimate of fatalities by mode of transport per passenger-kilometre travelled would be the gold standard in assessing the relative safety of travelling in minibus taxis. However, the Road Traffic Management Corporation (RTMC) has not issued any data on distances travelled since 2008, and prior to this date, it had a hard time identifying which minibuses did and did not operate as taxis.

Analysing this old, messy data results in a fatality rate per 100 million kilometres travelled in 2008 of 29 for buses, 24 for minibuses (whether or not they are used as taxis), and 9 for regular passenger cars.[95] This makes minibuses 2.7 times more dangerous than normal passenger vehicles.

This data does not distinguish between short, urban routes and regional or cross-country routes. According to Kerr, taxi association members blame long-distance routes, on which drivers get little sleep, for the bulk of the serious accidents.[96]

> *Considering the number of people who take cars to work compared to the number commuting by taxi, being a minibus taxi passenger is 4.3 times safer than being a driver or passenger in a private motor vehicle.*

Assuming that this 1:12 ratio holds, excluding the 40% of road fatalities made up by pedestrians or cyclists,[98] supposing (too generously) that bus fatalities are negligible, and considering the number of people who take cars to work compared to the number commuting by taxi, being a minibus taxi passenger is 4.3 times safer than being a driver or passenger in a private motor vehicle.

The truth is probably somewhere in between, which suggests taxis compare well to other forms of transport in terms of safety.

We can conclude, therefore, that despite the negative press it receives (including in this report), the taxi industry plays a critical role in South Africa's transport landscape for millions of passengers every day. It is a highly successful, profitable industry that emerged as a market-driven response to egregious government spatial planning policies, the legacy of which is still being felt today.

It has created jobs for hundreds of thousands of people, including as drivers, marshals, vehicle washers, mechanics, body shop personnel, vehicle parts and accessory sellers, and informal traders, many of whom would otherwise have had few opportunities for gainful employment.

Despite the well-known problems of unroadworthy vehicles and aggressive driving, there is contradictory evidence on taxi safety. They are probably safer than the news headlines would have you believe, at least on shorter urban and peri-urban routes, but there is much room for improvement.

Despite cartel pricing, taxis remains fairly affordable compared to other modes of transport, and if government did not pay large subsidies to bus and train services, they would be the cheapest mode of transport available by a substantial margin.

Despite some glaring inefficiencies, it is still objectively more efficient than formal public transit alternatives in important respects that matter to commuters.

10. There is a 'third way'

Besides phased BRT implementation and incremental paratransit formalisation, there is a third way to engage the minibus taxi industry. Advocated by several researchers, but hitherto unpopular with government, it builds on the observation that taxi operations suffer from overstated criticism and are more efficient and safer than generally perceived.[99]

Described by transportation and urban planning expert Robert Cervero as a policy of recognition rather than regulation, the 'third way' favours supporting and upgrading minibus taxi services instead of introducing new, competing, and subsidised bus systems. The goal then would be to deregulate market entry to allow free competition between operators, with government regulation restricted to issues of public safety such as roadworthiness and driver behaviour.[100]

Deregulation and free competition leads to reduced fares, reduced overall public expenditure, improved service levels, greater innovation, and a greater responsiveness to the needs of passengers.

> *Resolving the problems of competition would require a paradigm shift in how government approaches the taxi industry. Instead of pandering to the power of taxi associations that operate like cartels and co-opting them into the process of issuing operating licences, it would have to actively police anti-competitive practices, including violence that asserts 'ownership' rights over routes.*

As we've seen, free competition is not without its problems. Resolving these would require a paradigm shift in how government approaches the taxi industry. Instead of pandering to the power of taxi associations that operate like cartels and co-opting them into the process of issuing operating licences, it would have to actively police anti-competitive practices, including violence that asserts 'ownership' rights over routes.

'Instead of trying to wrest ownership of the public routes commons from the strongmen for its 'own' allocation, the state should be keeping these routes open for the free use of its public, including aspirant taxi entrepreneurs,' wrote researcher Mark Ingle, who, like Kerr, favours a combination of deregulation and better policing. 'The state's current approach, if it has the enforcement capacity to give effect to it, would seem to sound the death-knell for a market-driven taxi industry.'[101]

Cervero advocates reducing regulations in order to foster an array of transport services at different price points, which he calls 'economies of scope' in contrast with 'economies of scale'.[102] Market distortions, such as supplier-side subsidies for train and buses, should be eliminated in favour of user-side subsidies. A voucher system would stimulate fair and equal competition among different modes of transport. This would also reduce the conflict between private paratransit and formal public transit services.

'It is, however, evident that this approach [would] necessitate a comprehensive review of current policy on the regulation and integration of paratransit,' wrote Schalekamp and Behrens.[103]

11. Technological innovation

As early as the late 1990s, the use of smart cards was mooted as a way to remove cash from taxi operations, as part of the government's taxi industry restructuring process. The objective was not so much to improve the travel experience for passengers as it was to formalise financial flows to bring taxi revenues into the formal, tax-paying economy.

Private technology firms also saw a huge opportunity to capture a share of a market that involved vast financial flows.

In August 1999, the South African Local and Long Distance Taxi Association (SALLDTA)[104] began introducing smart card systems on routes in the Soshanguve area.[105]

Before the month was out, however, violence flared up between SALLDTA and the Federated Long Distance Taxi Association (FELDTA), and by the end of the year, 15 people had been killed.[106]

> *Taxi drivers were said to oppose the idea because it limits their access to cash for small daytime expenses like buying food, and because the smart card system exposed them to having to declare their incomes.*

The violence was blamed on 'general dissatisfaction with the proposed new smart card system'. Taxi drivers were said to oppose the idea because it limits their access to cash for small daytime expenses like buying food, and because the smart card system exposed them to having to declare their incomes.[107]

The company implementing the smart card system, Net1 Applied Technology (Aplitec), refuted claims that the technology had anything to do with the violence. It was supported by its partner, identified in a different news report as the South African Local and Long Distance Taxi and Bus Organisation (SALLDTBO).[108]

That organisation's executive chairman, Simon Sentle, told a reporter that there was no pressure on rival associations to use the Net1 system. Some of them used a rival system in the same area. Net1 and SALLDTBO were determined to continue the rollout.[109]

By October, however, the government had stepped in to quell the violence, banning all taxi operations in the area, closing all ranks and pickup points, and abolishing the recently introduced smart card systems.[110]

The dream of implementing smart cards in taxis resurfaces every few years.

In 1999, Taxi Link suffered a defection of staff to competitor Aplitec, after the group 'lost faith in the company's smart card business solution for the taxi industry'.[111]

In 2000, Aplitec reported that its smart card division had suffered a R13 million loss, saying the intervention of the authorities and continued violence in the taxi industry, which culminated in the closure of numerous taxi routes, hampered the performance of the division deploying the smart card system in the industry.[112]

In 2003, journalist Rodney Weidemann wrote: ‘Locally, the idea of using smart cards as a means of payment for commuters who use the minibus taxi industry has long been mooted, and now that multiple application cards are on their way, this may be a viable option.’[113]

In 2005, Santaco undertook to implement OmniPay’s Electronic Management System (EMS) in taxis, ‘for safer commuter fare collections, better management of taxi associations and protection of commuters’.[114] The cards would also provide medical and funeral insurance for passengers. The project never got off the ground.

At the same time, Prism Holdings announced a partnership with Taxifone to develop a cashless, smart card-based payphone solution in taxis.[115] The project was stillborn.

In 2007, Santaco again promised smart cards in taxis, this time for the 2010 FIFA World Cup, and cabinet approved the idea of an ‘integrated ticketing system’ across multiple modes of transport.[116] That never happened.

In 2010, Santaco said that its commercial trading arm, TaxiChoice, would launch a cashless electronic fare collection system ‘in the next few weeks’. It never materialised. The association did, however, protest vehemently against other vendors hoping to implement similar EMS solutions, making the dubious claim that it held sole rights to EMS in the taxi industry ‘as mandated by the national Department of Transport’. This was denied by a department spokesperson at the time.[117]

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In 2012, Digicore Holdings’ vehicle tracking division Ctrack and Translog Management announced an electronic fare collection rollout called Tap-i-Fare to 3 000 taxis in the province of KwaZulu-Natal.[118] Limited success was reported in a press release in 2013 for the system, which involved prepaid smart cards, alongside vehicle monitoring technology.[119] Nothing has been heard about it since.

None of these attempts to improve fare handling in the taxi industry survived the test of time.

In 2015, Santaco’s TaxiChoice division conducted a new cashless electronic fair-payment pilot project in KwaZulu-Natal.[120] In 2016, it announced a smart card called FairPay, which would also allow passengers to buy financial services and groceries. As a prepaid card, it did not require a bank account, but could function as an alternative to a bank-issued debit card.[121] The EMS system would also offer vehicle tracking and monitoring, and pay drivers electronically. The system was intended to be rolled out to all 200 000 taxis operating in South Africa within three to five years.[122] It has been rolled out in Tshwane, but there has been no progress on its rollout to other routes.[123]

Meanwhile, Uber, the formerly cashless, app-based ride hailing service, faced the South African reality by announcing that it would in future accept cash as an alternative to credit card payments via the mobile application.[124] A company spokesperson said that although the need to accept cash arose in emerging markets, the company saw a significant bump in sign-ups after introducing cash fares even in Singapore, with 90% credit card penetration.[125]

Around the same time, mobile phone operator Vodacom threw in the towel on its local implementation of M-Pesa, a mobile money and payment system targeted at the unbanked, and famous for its success in Kenya.[126]

Mobile phone usage in South Africa is high: In 2019, 87% of a surveyed population of adults said they own a mobile phone, and 95% have access to one. Only 63% of South Africans use a smartphone, however.[127]

(Reports by the communications regulator that smartphone penetration nearly doubled from 43.5% in 2016 to 81.7% in 2018 do not account for multiple phone ownership. In the same way that the 91.7 million mobile phone subscriptions do not imply South Africa's population is much greater than it really is, as the regulator's smartphone numbers do not represent the actual number of people using smartphones.[128])

> *Smartphone owners are typically higher-income earners, which means the 37% of South Africans who do not own a smartphone are significant in the context of providing services to the poor, and overlap with the customer base of the taxi industry.*
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> *...*
>
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Vodacom's goal when it launched M-Pesa in 2010 was to find 10 million subscribers within three years. Six years later, however, it had only 76 000 active users. The failure was ascribed to various causes, including an inability to bring the unbanked onto the platform.[129]

In South Africa, cash remains king. In 2015, cash usage as a percentage of GDP stood at 58.2%.[130] In 2017, about 90% of all payments in South Africa (by number, not value) were made in cash.[131]

According to a recent poll conducted on Twitter by Capitec Bank, 35% of South Africans would be prepared to go cashless, while another 10% said maybe.[132] This implies that even in the wealthier end of the market that is likely to own advanced smartphones, have bank accounts, and are likely to respond to Twitter polls, cash remains important.

Euromonitor, too, reports that cash remains the dominant form of payment in South Africa, 'despite the recent drive towards a cashless society'.[133]

By late 2018, Schalekamp found that 'cashless fare payment systems do not appear to be in use amongst [minibus taxi] services, though TaxiChoice, the commercial arm of the national [minibus taxi] council (Santaco), has attempted to do so three times in recent years.'[134]

Schalekamp says reasons for the current absence of cashless fare payment systems include the complexity of the labour relations reorganisation needed to take cash-fare collection out of drivers' hands, as well as the high cost of mobile data that limits the use of cell phones or apps to facilitate fare payment on both the passenger and operator sides.[135]

Several alternative technologies have been proposed for cashless fare payment in minibus taxis, and Schalekamp assessed them all on a range of criteria such as complexity, hardware requirements, and the ability to deal with differentiated fare structures.[136]

One proposed solution uses a Short Message Service (SMS) short-code system, which would require passengers to type in a keyword, plus a vehicle identifier such as a registration number, plus another code to specify the actual fare. This is bound to be overly complicated, as passengers mistype codes and identifiers. It would also make it time-consuming and cumbersome for drivers to accept fares.[137]

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Another option is to use an Unstructured Supplementary Service Data (USSD) system to bring up a menu of payment options. Such a system has been tested, but it has the same problems as an SMS short-code system. The same is true for using Wireless Application Protocol (WAP) systems.[138]

The use of credit or debit cards won't fly simply because too many taxi passengers are unbanked. Even those that do have bank cards often find themselves with zero balances by the end of the month, necessitating cash transactions.

The same is true for QR codes linked to bank accounts or mobile payment platforms.[139]

Most near-field communications (NFC) solutions were found to score badly on a range of criteria, except for a mobile phone-based system in which it is linked to either airtime balance or a bank account. Schalekamp found this to be the most promising technology solution, but it still has significant limitations, namely that both the taxi driver and passenger need a device capable of NFC communication, and that it is unsuitable for differentiated fares.

There have been a handful of other technological innovations, but few have made any significant impact.

In 2018, a Gauteng entrepreneur launched a minibus taxi hailing app called Aftarobot, to service the Johannesburg Southern Suburbs Taxi Association. The goal was to implement it in 10 000 vehicles owned by 4 000 owners servicing 50 000 commuters.[140] (These numbers seem strange. One taxi per five passengers seems like an awfully bad business.)

Aftarobot was to be used by all stakeholders in the taxi ecosystem, from passengers and drivers to marshals, patrollers and owners. To date, fewer than 1 000 copies have been downloaded from the Google Play store, suggesting the venture's failure is imminent.

A better use of mobile applications has been to enable data collection. Successful projects have been conducted in Cape Town[141] and Johannesburg[142], resulting in a wealth of data on minibus taxi routes, passenger numbers, stops, and travel times.

WhereIsMyTransport is a mobile app that provides public transport data on 30 major cities in Africa, the Middle East and Asia, including Johannesburg, Cape Town, Tshwane, Durban, Port Elizabeth, East London, Bloemfontein, and George. It has also mapped entire paratransit networks, and uses this data in providing information to its users.[143]

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Finally, the use of GPS trackers has become extensive in the taxi industry. Having first been installed for insurance purposes as anti-theft and anti-hijack devices, these trackers enable owners to monitor vehicles and routes. There are also more sophisticated systems that can monitor driver behaviour and overloading problems, and even activate an immobiliser if taxi bosses detect unauthorised activity. These smarter systems are in their infancy, however.[144]

12. Lessons learnt and recommendations

South Africa's minibus taxis form a vibrant and profitable industry that grew out of the needs of a community that was literally swept aside, out of the cities, by the Apartheid government. Both the spatial dislocation and socio-economic circumstances of millions of working-class commuters live on as a legacy of those dark days. It provides transport to millions of people who have few alternatives, and it offers employment and profit opportunities to hundreds of thousands of people who previously were denied the right to own or operate businesses.

The industry has proved to be highly flexible, very responsive to the needs of passengers, and deeply integrated with the culture of the communities that it serves. It is also surprisingly efficient, despite cartel pricing and its lacking well-documented routes and stops, published fares, or formal schedules.

Attempts to formalise the sector have had limited success. A majority of taxis now operate under formal licences, and some have been successfully integrated with broader public transport initiatives. However, operating conditions, safety standards and labour protections remain hard or impossible to enforce. Many taxis also remain outside the formally licensed industry.

The industry is almost entirely cash-based, and all attempts over the years to change this, promoted by government, taxi owners' associations and technology companies, have met with failure. The dream of cashless fare payment systems, and bringing drivers into the electronic finance net, remains elusive.

> *Taxis cater to the low end of the transport market. Many passengers work cash jobs, or are reliant on cash earned by extended family members, and have no bank accounts. Few passengers have no mobile phone at all, but most who do have only basic or feature phones, and not smartphones.*

The reasons for this are not complicated. Taxis cater to the low end of the transport market. Many passengers work cash jobs, or are reliant on cash earned by extended family members, and have no bank accounts. Few passengers have no mobile phone at all, but most who do have only basic or feature phones, and not smartphones. Bringing this market segment into the formal economy with electronic payment systems is a formidable and perhaps insurmountable challenge.

Drivers themselves are also resistant to cashless fare systems, even if it would result in better working conditions, because operating on a cash basis allows them the flexibility to profit from exceeding targets, stay out of the tax authorities' grasp, and buy lunch *en route*.

Some owners have been willing to formalise their businesses in order to grow them, but many still prefer to operate a cash industry out of the glare of auditors, tax collectors and government bureaucrats.

Changing this culture in the taxi industry has proved to be a difficult undertaking, with which even the largest association of taxi associations, Santaco, has had limited success.

Experience suggests that there is greater scope for success with innovations that help taxi owners and associations manage drivers, vehicles and routes, than there is to improve the interaction between passengers and taxis.

It is probably not feasible to formalise routes beyond what the taxi operating licences do, or to formalise schedules. The flexibility and informality of minibus taxis are among the key reasons for their success.

Interventions aimed at cashless fare payment would need to take into account that many passengers lack smartphones, lack bank accounts and formal payment methods, and are resistant to substituting cash with cards that have only limited use.

Idealistic visions of smart mobile cities are deeply interwoven in government-led public transit projects and academic research. They may be appropriate in prosperous cities where the majority has access to up-to-date mobile technologies and formal means of electronic payment. However, in a developing country such as South Africa, with its own socio-economic challenges and cultural history, the dream is soon shattered by reality.

> *Interventions aimed at cashless fare payment would need to take into account that many passengers lack smartphones, lack bank accounts and formal payment methods, and are resistant to substituting cash with cards that have only limited use.*

The most compelling opportunities for improving the quality and profitability of taxi services probably lie less with technological innovation than with regulatory changes that would reduce government intervention in the market. Policies designed to establish successful policing of anti-competitive behaviour, unsafe vehicles, overloading and reckless driving, while reducing the cartel power of taxi associations, promoting competition, and lowering barriers to entry for new operators, could bring about the largest potential improvements to the industry and the experience of taxi passengers.

ENDNOTES

1 Except where context indicates otherwise, the term ‘black’ is used to identify those formerly disenfranchised by the Apartheid government, and formally classified as either Black, Coloured or Indian by law.
2 Paratransit: transportation service that supplements larger public transit systems by providing individualised rides without fixed routes or timetables.
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