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ARTICLE



Bus rapid transit implementation with the inclusion of incumbent paratransit operators in African cities: lessons from Accra

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ABSTRACT

Bus rapid transit (BRT) is considered the cheapest and fastest to implement mass transportation system compared to rail and tram. However, the implementation of BRT becomes complicated where there are incumbent paratransit service providers. In African cities, it has become mandatory to include these operators because they are the most extensive public transport service providers, employ many people, and make governments unpopular when excluded. In Accra, the government sought to implement BRT with the inclusion of incumbent paratransit operators but could only implement a conventional bus service. This article analyses the approach adopted to examine the reasons behind the inability to execute the planned BRT and draw lessons from the Ghana experience. This article adopted informal transportation and BRT characteristics based on the African experience to analyse the incorporation of incumbent paratransit operators in Ghana. The findings show the challenges the implementing agency encountered, resulting in a shift from BRT to a conventional bus. The underlying reason for the difficulty is the depth of change required by both paratransit operators and government institutions. Given the depth of change for capital investment, capacity, and governance reforms required, the paper recommends a more gradual BRT implementation approach in African cities.

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1. Introduction

Paratransit operators are the primary public transportation providers in most African cities (Kumar & Barret, 2008). Paratransit has been described as a public transport system that operates with small to medium-sized vehicles in a flexible non-scheduled manner (Behrens et al., 2016). Operators of paratransit services are known to be demand-responsive, providing low-cost services, serving as a source of employment, and operating without subsidy from governments (Cervero, 2000). Paratransit services have expanded over the years due to several reasons, including rapidly uncoordinated urban growth, weak to no local government regulation, and inadequate provision of formal public transit. Despite the benefits of their services, dependence on fares coupled with weak regulation has contributed to making them

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competitive on the road resulting in accidents, road rage, and sometimes lethal conflicts among operators. Due to the nature of their operations, they ignore routine maintenance and reinvestment in acquiring larger new vehicles (Kumar et al., 2021; Tun et al., 2020). Such conduct has affected the quality of paratransit services, which has been largely regarded by some commuters as unsatisfactory (Agyemang W., 2013; Schalekamp & Behrens, 2010).

Many city authorities have resorted to implementing a bus rapid transit (BRT) system to regulate, provide an efficient mass transportation system and simultaneously eliminate shortcomings associated with paratransit. BRT is a mass transport system that uses large buses and dedicated busways for rapid and scheduled transit (Cervero, 2013; Deng & Nelson, 2011). Following the successful busway implementation in Curitiba-Brazil in 1974 and subsequent modern BRT in Bogotá in 2000 (Deng & Nelson, 2011), BRT operations have been recorded in 170 cities (Global BRT Data, 2021). The expansion in BRT technology worldwide is attributed to its comparatively low implementation cost to rail and tram, rapid implementation, high performance and positive impact on commuters (Hidalgo & Gutiérrez, 2013).

Public institutions overseeing transportation reforms have adopted different approaches with BRT implementation where there are existing paratransit operators. Incumbent operators are either supported to be part of the BRT or excluded from the reforms. The advantages of supporting incumbent operators are that it enables acceptance and avoidance of standoffs, as happened in Quito, where military intervention was required (Chrustie et al., 2006). However, the demerits of supporting incumbent operators include increased cost of implementation (Flores & Zegras, 2012) and possibly hijacking the reform process without forming a company for formal operations (ITDP, 2017). Concerning supporting incumbent paratransit operators, Schalekamp et al. (2016) identified four reform approaches; (1) incorporation into operating companies (2) a stepped process of paratransit operational improvements and corporatisation to become future conventional bus or BRT operator (3) operator consolidation and competition regulation through franchising or concession (4) incremental upgrade of incumbent paratransit services not necessarily leading to corporatisation or formalised bus service.

Another aspect of the approach is the implementation timescale. Transport reform institutions have adopted two main time scales – the abrupt or ‘big bang’ and the incremental corridor-by-corridor approach. The abrupt approach where all the BRT corridors are developed simultaneously across the city was adopted in Santiago de Chile (Hidalgo & Graftieaux, 2007), while the incremental approach has been adopted in Mexico City (Hidalgo & Graftieaux, 2006). The incremental approach allows operators and commuters to adjust to the new transport system while public authorities learn from each corridor implementation strategy. The incremental approach also allows for the implementation cost to spread over a while. The abrupt approach ensures a functioning city-wide reform within a short period. The main shortcoming of the abrupt approach is that transportation in the entire city might come to a standstill when an aspect such as an electronic payment system fails. Moreover, the abrupt approach requires a high initial investment in comparison to the incremental approach.

BRT implementation has been tortuous in African cities where informal transport operators provide the primary means of public transportation. Lagos pioneered BRT in Africa in 2008 on a 22 km corridor with a 60% segregated busway (Otunola et al., 2019). The planned extension of the BRT stalled until a 13.5 km extension in 2015. In 2009, the

first full BRT commenced transportation services in Johannesburg on a 25.5 km corridor. Before implementation, the implementation agencies assumed that negotiations with incumbent operators would take a month but eventually took 3 years (McCaul & Ntuli, 2011). Although the BRT route has increased by 18.5 km, this is lower than initially planned. Despite not meeting the planned extensions, ridership is lower than expected, meaning the government must subsidise the BRT for a more extended period (Scordia & Munoz-Raskin, 2019). In Accra, the plan was to incrementally implement BRT on a corridor-by-corridor basis, starting with a pilot by 2012. After years of delays, public officials in Accra could not implement BRT, but a conventional bus service in 2016 branded *Aayalolo* on a 22 km corridor. The new bus service experienced low patronage and subsequently collapsed in 2018 after incurring losses and drivers complaining of unpaid salaries. The *Aayalolo* bus service commenced operations again in 2019 on a different corridor with a changed operational mechanism.

The aim of this article is to analyse the approach adopted, examine the reasons behind public officials' inability to implement the planned BRT and draw lessons from the Accra experience. This article analyses the changes government institutions and paratransit operators were required to go through. The approach adopted for BRT implementation can be as important as the technical infrastructure development. The approach can result in unanticipated high cost (Flores & Zegras, 2012), violence from incumbent operators (Venter, 2013), or smooth transitioning of incumbent operators into the new service (Gilbert, 2008). The approach did not result in BRT in Accra, nor did the incumbent paratransit operators wholly embrace the new service. The unsuccessful BRT implementation in Accra and slow implementation in other African cities has led to some scholars questioning the intentions of international bodies that support BRTs in Africa (Rizzo, 2015; Wood, 2015). The lessons from Accra are useful for African cities in pursuit of public transport reforms with BRT aimed at involving incumbent paratransit service providers.

Participation of people who are likely to be impacted by a change in the change process is known to reduce resistance to change (Coch & French, 1948). Most organisations, therefore, involve employees or groups that are likely to be impacted by the change. In practice, the participation of people in the change process has not always led to participation in the project. The depth of change has been identified as one reason for resistance to change even after participation (Huse, 1980). Huse (1980) argued that the greater the depth of change, the more it impacts the psychological makeup and personality, requiring full participation if the individual affected accepts the changes. There are two main types of change, evolutionary and revolutionary. Evolutionary change is gradual and often encounter less resistance, whereas revolutionary is drastic and often encounter strong resistance (Burke, 2018). It, therefore, suggests that of the two main types of organisational change – revolutionary and evolutionary – the revolutionary type require more participation due to the depth of change. People who experience high levels of participation have reported higher readiness and acceptance of change and considered change as less stressful (Oreg et al., 2011).

The following section describes the methodology. Section 3 describes the planned approach, characteristics of what was eventually realised, aspects of the approach that enabled the paratransit operator's participation, and then disagreements. Section 4 discusses the lessons that can be learnt based on the merits and demerits of the approach. In conclusion, section 5 reflects on the challenges of BRT implementation with the inclusion

of incumbent paratransit operators as a revolutionary change that exposes their lack of financial and competencies for such changes and therefore recommends an evolutionary approach for cities with similar settings like Accra.

2. Methodology

The method adopted to analyse the BRT implementation approach was two-fold. The first part was to develop a framework of characteristics of paratransit operations and BRT. Paratransit operations have specific characteristics that make the operators extremely competitive on the road resulting in undesirable outcomes such as accidents, road rage, and lethal conflicts. BRT, on the other hand, has features that facilitate a shift from these undesirable characteristics. Public officials, therefore, introduce BRT to exercise regulatory control, ensure mass transportation and address the undesirable outcomes. BRT implementation with the inclusion of incumbent paratransit operators changes their operational characteristics. Based on city cases where public officials opted to support incumbent paratransit operators to transition to BRT, a framework depicting the main characteristics between paratransit and BRT was developed (Table 1). The characteristics associated with paratransit services are from African city cases in Accra (Addo, 2002; Saddier et al., 2016), Johannesburg (Venter, 2013), Cape Town (Schalekamp & Behrens, 2013), Lagos (Mobereola, 2009), and Dar es Salaam (Ka'bange et al., 2014). The characteristics associated with BRT were derived from Deng and Nelson (2011) and the BRT planning guide (ITDP, 2017).

The second part of the method used the framework in Table 1 to inform the design of qualitative interviews in a deductive manner. Interviews as a qualitative method were chosen to gather stakeholder views and opinions and to obtain an extended understanding of these views (Mayring, 2014). The interview questionnaire was designed to elicit information on the implementation approach based on paratransit services before the BRT and their expected role in the BRT. Table 2 shows the main topics from which specific questions were developed for the interviews. Each topic had several sub-questions that were used to understand the approach and the implementation process. The depth of change for transitioning from paratransit to BRT was central in the specific interview questions in Table 2. The personnel interviewed were from the Accra metro assembly (AMA), the Greater Accra Passenger Transport Executive (GAPTE), academia, paratransit association executives, drivers and owners. Whereas the personnel from the AMA, GAPTE, Academia and paratransit

Table 1. Characteristics of paratransit operations and expected change with BRT.

Paratransit characteristic	BRT characteristic
Self-regulated transport by union/ association/company	Regulated by public/private authority and formation of bus operating company (BOC) by paratransit association/company
No exclusive dedicated bus lanes and no scheduled operation	Exclusively dedicated bus lanes and scheduled operations
Mainly individually owned mini and midi buses	Large buses owned/leased by the bus operating company(ies)
No direct removal of old paratransit fleet	Some or all existing paratransit fleet may be removed or relocated from the BRT corridor
No distinctive operations of trunk and feeder arrangement	New trunk and feeder, or trunk only arrangement
Revenue depends on the number of passengers and cash-based collection	Revenue depends on distance travelled per bus, and fare collection is either electronic-only or with cash collection

Table 2. Main topics used for the interview questionnaire.

Main topics for the interview questionnaire	Respondent groups
A Information on paratransit services and how the association is organised.	Paratransit drivers, association executives, and vehicle owners; AMA; GAPTE; Academia
B The nature of paratransit services before the Aayalolo bus service.	Paratransit drivers, association executives, and vehicle owners; AMA; GAPTE; Academia
C The process of incorporating the incumbent paratransit service providers into the Aayalolo bus service.	Paratransit association executives; AMA; GAPTE
D BRT characteristics incorporated into the Aayalolo bus service.	Paratransit association executives; AMA; GAPTE; Academia
E The nature of paratransit services after the Aayalolo implementation.	Paratransit drivers, association executives, and vehicle owners; AMA; GAPTE; Academia
F Compromises made by both paratransit operators and the Aayalolo implementing agencies.	Paratransit drivers, association executives, and vehicle owners; AMA; GAPTE
G Perception on future public transport services in Accra.	Paratransit drivers, association executives, and vehicle owners; AMA; GAPTE; Academia

associations were purposely selected based on their participation and research experience on the reform processes, the drivers and vehicle owners were randomly selected. All personal from the various groups were interviewed on how they perceive the changes and how they affect their activities. In all, 16 people were interviewed between August and September 2017. The interviews were conducted on a one-on-one basis in the preferred language of the interviewee. The interviews were audio-tapped, translated to English (for interviewees that were not conducted in English), transcribed, and analysed using ATLAS.ti software. Published reports and scientific articles were used to support the interview. Descriptive summaries and categorisation of the data were done under themes, and explanation-building analytical techniques were followed to report the findings (Kohlbacher, 2006; Mayring, 2014).

3. Results

The findings of the interviews help our understanding of the reform approach, the process of incorporating the paratransit service providers in Accra, and why public officials could not implement a BRT but a conventional bus service. The findings have been synthesised in four broad categories:

- The planned reform approach
- The nature of the Aayalo bus service
- Actions that have enabled paratransit operators participation
- Disagreements with the Aaylolo bus service approach

3.1. The planned reform approach

Before the BRT project implementation, urban passenger transport was self-regulated by paratransit service providers. The metro, municipal and district assemblies (MMDAs) were limited to the provision of transport terminals. The implementation of BRT, which commenced in 2008, required establishing legal, regulatory and institutional frameworks, urban passenger transport unit (UPTU) at the Accra metropolitan assembly (AMA), and capacity development for the UPTU. In addition, another institution, the Centre for

Urban Transport (CUT), was established to provide advisory, training and research functions (The World Bank, 2017). As depicted in Figure 1, the Greater Accra Passenger Transport Executives (GAPTE) was created later for cross-jurisdictional public transport regulation and BRT implementation since the BRT would operate across the jurisdiction of several MMDAs.

It was decided from the onset to include existing paratransit operators and implement the BRT on a corridor-by-corridor basis. The UPTU of the AMA was to engage the paratransit associations and discuss government plans for improving transportation within GAMA through BRT implementation. Firstly, the incumbent paratransit operators were to be registered to establish their identity and route of operations (Finn et al., 2009). After registration, type A permits would be issued for their operations, which must be renewed annually based on meeting improvement requirements. This decision was meant to remove rickety paratransit vehicles that did not meet public transportation standards. Secondly, type B permits would be issued to provide high-quality services based on scheduled services without the type A 'fill-and-go' practice. Type B permits would have bus priority over type A permits, and therefore type A routes would be cancelled if they undermine type B. The permit was to be renewed after 3 years, subject to meeting requirements. Finally, route service contracts enabling the BRT would be implemented. The government would provide the BRT road infrastructure in the form of dedicated bus lanes and improved bus stops, while operators provide vehicles and operating capacity investments. Eight BRT routes were planned, with another within the central business district as a connecting route for the other eight (Figure 2) (Antwi, 2014). The BRT was supposed to operate on the trunk lines, and type B continues as feeder routes. The paratransit services continue their operations as type A. The overall planned BRT implementation would be done incrementally, starting with route 2, as shown in Figure 2.

The incumbent paratransit associations, which provided about 80% public transportation in Greater Accra Metropolitan Area (GAMA) and are a significant stakeholder, considered the planned approach unacceptable. They protested the overall plan and

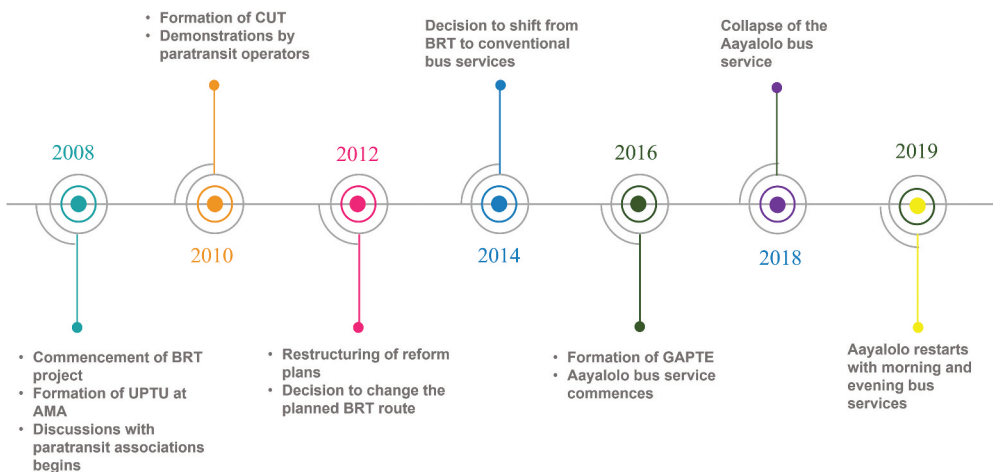


Figure 1. Timeline of the public transport reform events in Accra.

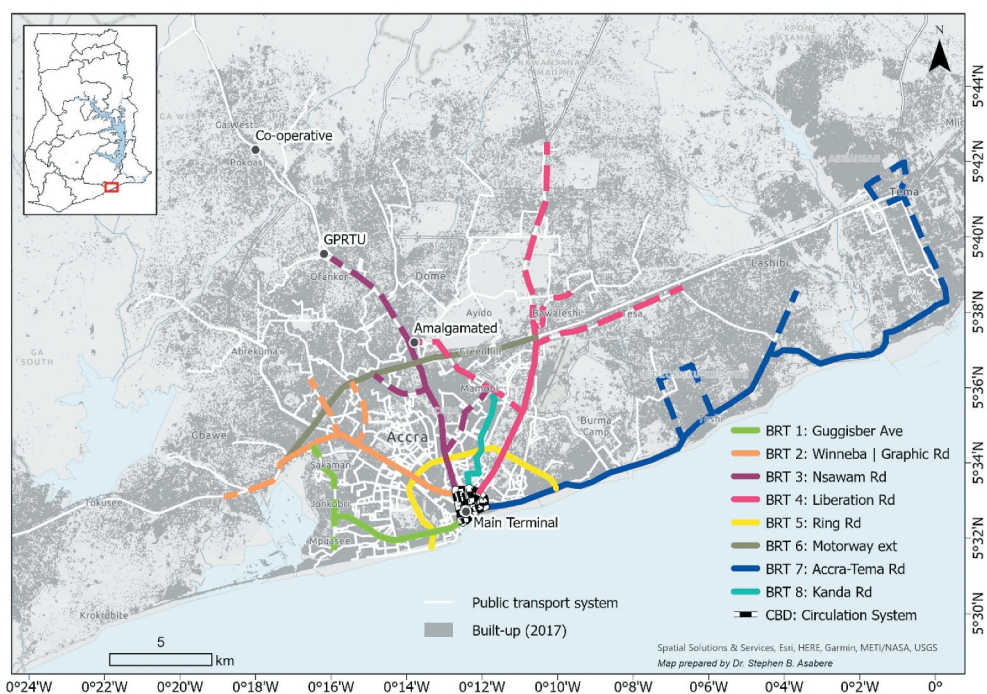


Figure 2. Planned BRT routes and bus terminals of the Ayalolo in GAMA.

considered it a means for the government to remove most of their members from the public transport service. They considered the annual renewal permit type A as a first step. They further argued that they do not have adequate financial capacity and competence to participate in the type B permit and the route service contract. Consequently, they boycotted discussions with the government, staged demonstrations and withdrew their services on certain days on specific routes to show their influence on mobility in the city. Through these actions, they managed to court support from the public forcing the government to reconsider its decision.

Furthermore, an update of the BRT design and cost estimate for the pilot BRT on route 2, including a flyover for the dedicated lanes, showed that more than the budgeted cost was required. Owing to the cost overruns and financing gaps, agitations from incumbent paratransit operators, and institutional development issues, the government opted to shift from the planned BRT to a type B permit on the BRT 3 corridor (Figure 1) (The World Bank, 2017). Paratransit associations were required to form bus companies to operate the BRT formally. Three bus operating companies were formed. Ghana Private Road Transport Union (GPRTU), the largest paratransit association in GAMA, formed the Accra GPRTU Rapid Bus Transit Company Limited (GPRTU company). Co-operative association, the largest shared taxi association in GAMA, formed the Ghana Co-operative Bus Transit Association Limited (Co-operative company). The minor paratransit associations, including the Progressive Road Transport Association (PROTOA), Concerned Transport Operators and Image Transport, came together to form Amalgamated Bus Transit Limited (Amalgamated company). Paratransit services were not to be removed entirely from the corridor but could

not use the dedicated busway. They were to provide feeder services to the BRT setup. The newly formed BRT companies were supposed to purchase high occupancy buses suitable for mass transportation. The timeline for these activities is shown in Figure 1.

3.2. The nature of the *Aayalolo* bus service

In November 2016, the President of Ghana inaugurated the *Aayalolo* bus service, stating that it is a measure to address the traffic congestion situation in Accra (Jafaru, 2016). However, the pilot *Aayalolo* bus service is the type B permit and not BRT. Segregated busways that ensure BRTs have speed and reliable schedules are missing for the *Aayalolo*. Existing paratransit operators were not barred from the route and therefore competed for passengers with the *Aayalolo* buses at the bus stops. The *Aayalolo* service uses high occupancy buses designed for the comfort and safety of commuters compared to paratransit vehicles. The incumbent paratransit associations, which formed three formal bus operating companies, operated the pilot service.

GAPTE regulates the services of the three bus companies. However, the study shows that personnel from GAPTE were responsible for the day-to-day management of the bus services. The regulatory institution simultaneously serving a managerial role of the buses is because the paratransit associations that have formed companies do not yet have the competence to manage the companies. The bus companies presented selected paratransit drivers interested in transitioning to be *Aayalolo* drivers to GAPTE for training. Many drivers applied, but only a few could be employed as the total number of buses is 245. The drivers who were selected were trained in operating large buses in a non-competitive manner and customer care. The training process also resulted in an upgrade of driver's licenses from a minibus to large buses.

The bus service operated on a 22 km trunk only road with about 3.5 dedicated lanes at sections known to have extreme congestion. Bus stops used by paratransit operators were extended and modified to accommodate the *Aayalolo* buses. It was scheduled to move every 15 minutes during off-peak and 10 minutes during peak hours. But the schedule periods were regularly not met as vehicles are usually stuck in traffic congestion affecting arrival time at the terminals. Each *Aayalolo* bus company – GPRTU, Co-operative, and Amalgamated – operates from a different terminal on the BRT route 3 (Figure 2) and does not compete with other companies' buses for passengers. Each company on the corridor commence from their assigned terminals but have the main terminal as their destination.

Despite inadequate dedicated bus lanes, there is no arrangement to remove or relocate the paratransit fleet from the corridor. Sections of the bus stop marked 'BRT bus lane' meant only for the *Aayalolo*. However, all paratransit vehicles use the bus stops in the absence of security personnel. The paratransit drivers do not accept reasons for prioritising *Aayalolo* at the bus stops as they have been operating on the corridor before the new bus service. As a result, the minibuses often block the *Aayalolo* buses and wait for incoming commuters to board, making the bus stops a hub of competition among paratransit and the *Aayalolo* vehicles.

The government bought the *Aayalolo* buses and leased them to the bus operating companies. The price per commute was lower than the price by paratransit operators for the same distance. A pre-board payment fare collection system was used through

electronic payment cards. Commuters were required to tap in and tap out with their electronic cards during boarding and alighting. Revenue generated by each bus company depends on the distance covered by the buses and not the number of commuters that board the vehicle. GAPTE had the responsibility of distributing the revenue to the bus companies based on their expenditure.

3.3. Actions that have enabled paratransit operators participation

Since paratransit operators form about 80% of public transport provision in GAMA, government institutions deemed their participation mandatory. The paratransit operators were sceptical of government intentions and thus joined the discussions from a position of non-trust. The government institutions implementing the reform decision to include the incumbent paratransit operators and continuously engage them resulted in an improved relationship among the different participating associations and between the associations and government institutions. A paratransit association executive mentioned that ‘during negotiations, we all meet and afterwards socialise, discussing issues of common interest, the BRT has therefore brought the cordial relationship between the various associations participating in it. Now, we (different paratransit associations) also come together to address issues that affect our members’.

As a result of incumbent paratransit service providers inclusion and continuous engagement, the government institutions explained the benefits of BRT services in regular income, retirement benefits, and status associated with formal work. The paratransit operators could then grasp these benefits resulting in a change of their resistance and protests towards the reforms. Visits to BRT operations in Curitiba, Lagos and Johannesburg were organised for some paratransit association executives to witness the government’s intentions first-hand. These actions culminated in acceptance and general trust in the project as the association executives could clearly explain to their members what government intends to implement. All these efforts from the government resulted in many drivers applying to participate in the *Aayalolo* bus service as some paratransit operators consider it as ‘the future of public transport in Accra’.

One other reason contributing to the paratransit operator’s decision to participate in the reforms was the government’s decision to allow informal transportation services on the *Aayalolo* corridor. Negotiations with the associations delayed implementation because of a standoff allowing paratransit operators on the corridor alongside the *Aayalolo* buses. As a result, the paratransit companies decided to operate only after the government had agreed to allow a dual system with mixed traffic on the corridor.

3.4. Disagreements with the *Aayalolo* bus service approach

All interviewed participants from the government and research institutions agreed that the *Aayalolo* bus service had been performing below expectations due to the unavailability of dedicated bus lanes affecting planned schedules. The government did not have the financial capital to invest in the infrastructure needed to achieve the speed and reliability associated with BRTs. The unavailability of dedicated lanes affected patronage. The paratransit vehicles can use short-cuts to the same destination, making them

sometimes faster than the *Aayalolo*. In addition, the mixed traffic for both *Aayalolo* and paratransit vehicles has resulted in fierce competition for passengers. They share the same road space and bus stops, and compete for the same commuters. Therefore, some paratransit operators believe that since they have been providing public transport service earlier, the *Aayalolo* bus service is encroaching on the infrastructure meant for them.

Despite the inclusion of paratransit associations and drivers in the *Aayalolo* bus service, the fleet owners who bear the risk of acquiring vehicles for paratransit services were not involved in the *Aayalolo* setup. The government's decision to procure the buses and lease them to the participating associations led to the oversight of paratransit fleet owners who are not active in the association, except those with positions. Therefore, this group is aggrieved that they were not considered to participate in the reforms despite government institutions position that they cannot provide the capital required to purchase the required large buses. The owners and owner-drivers interviewed mentioned that they would have been interested in a vehicle replacement subsidy to be re-invested in acquiring new buses.

Another aspect of the implementation identified as disagreeable is the role of GAPTE as regulator and manager of the bus services. The personnel managing the bus services at the terminals were employees of GAPTE but not the companies. GAPTE assumed this role because the companies did not yet have the competence to manage formal bus services as expected by GAPTE. There is, however, no structure in place to enhance the paratransit associations capacity for formal operations. In addition, a third party manages the money accrued from the farebox. Since the paratransit associations do not appoint the bus companies managers, there is a lack of financial transparency between GAPTE and the companies. Consequently, the enthusiasm of the paratransit associations in the bus service had waned. The associations instead focus their attention on the paratransit services, which they still have direct control. As a result, the paratransit structures were all in place to compete with the *Aayalolo* bus service.

4. Discussion

The findings of this paper have demonstrated the tortuous journey of BRT implementation in Accra. Eventually, a BRT could not be implemented but a conventional bus service. The implementation process has revealed the institutional, governance, and financial challenges the implementation agencies encountered and the difficulties of including incumbent paratransit operators. It has also shown the lack of competence and financial constraints paratransit operators have even when asked to participate in formal transport services. Nevertheless, this experience provides lessons useful for African cities with similar public transport dynamics to Accra.

While including incumbent paratransit operators in public transport reforms may not be the ideal option, it has become the preference for cities where informal transportation mainly provide public transport services. Moreover, paratransit operators consider themselves legitimate operators since they have provided public transport services for decades after inadequate supply and collapse of formal bus services. Eliminating them may make the government unpopular and increase the already high unemployment rate in African cities. As a result, all BRT implementation efforts in Africa have included the participation of existing paratransit

operators (Ka'bange et al., 2014; Mobereola, 2009; Schalekamp & McLachlan, 2016). However, the inclusion of incumbent paratransit operators would not make the implementation easy but instead prolong the implementation process, as shown in Accra.

Paratransit operators self-regulate their services but participating in BRT results in government institutions regulating their operations. As a result, their participation is from the point of mistrust of the government's intentions, and therefore BRT implementing institutions must win the trust of the paratransit operators. To win their trust, governments must support them to form formal companies required for the BRT (Kumar et al., 2021). Comprehensive support and guidance of incumbent paratransit operators to participate in reforms with BRT in Mexico City laid the foundation for implementing the first BRT corridor and subsequent corridors (Flores, 2016).

Incumbent paratransit operators often do not have the required capital investment and competence for formal operations. The main capital requirement from paratransit operators is an investment in acquiring large new buses. Because they do not keep records of their income and expenditure, it is difficult for the owners to acquire loans to meet this cost. One approach adopted in Lagos is that the government-supported incumbent operators acquire loans for the fleet (Mobereola, 2009). Another approach that has been adopted in most cities is where the old fleet is valued, scrapped and then owners are required to invest the amount of the fleet in purchasing a new one. This approach was adopted in Bogotá and cities in South Africa (Rodriguez et al., 2017; Schalekamp & McLachlan, 2016). The vehicle replacement scheme mechanism can be done where the government has committed enough financial resources to the reforms. A third approach is where the incumbent paratransit associations partner with other institutions willing to provide financial support (Flores & Zegras, 2012). To address competence for formal operations, the partnered institution may also perform the management role. Schalekamp (2017) describes how the BRT implementing institution in Cape Town has taken the responsibility of training the paratransit association executives who have formed BOCs on formal operations at the University of Cape Town. Following from this example, government support for paratransit operators transition to BRT should include training the BOCs on bus service management practices and not only that of drivers.

The findings of this paper have also revealed the government's institutional and financial constraints in implementing the BRT despite BRT being considered the cheapest and easiest mass transportation service to implement compared to rail and tram. This assertion may be true for cases where there is an established institutional and governance arrangement, a budget for public transportation infrastructure, and existing operators have the financial investment and competence for formal services. However, this was not the case in Accra, and the same situation has been reported in several African cities (Klopp et al., 2019; Poku-Boansi & Marsden, 2018). The BRT implementation has become a precursor for governments to rethink public transportation, and therefore the costs involved become relatively high. Despite financial support from the World Bank, the cost of BRT implementation has contributed to the slow pace of BRT implementation in African cities compared to Latin America. As a result, Africa has 131 km of BRT road network in 5 cities, whereas Latin America has 1,886 km of of BRT road network in 57 cities (Global BRT Data, 2021).

5. Conclusion and recommendations

This research has shown that incumbent paratransit operators in BRT implementation have become mandatory for cities like Accra since their exclusion may not be politically feasible due to their role in public transportation. However, their inclusion complicates the implementation process as they do not have the financial capital and competence for formal transport services like BRT. This research has also revealed the institutional and governance challenges and the weak capital investments of government institutions that undertake such reforms. A combination of these problems has affected BRT implementation in Accra. Nevertheless, governments institutions must implement mass transport services like BRT considering the growing urban population and unsafe transport services provided by paratransit operators in Accra.

After many years of neglect of public transport within their jurisdiction, government assertion of regulatory control is an appropriate reminder to paratransit operators that the period of complete self-regulation is over. Thus, a new control mechanism from public authorities that would benefit both operators and users of public transport services is the goal. However, it is relevant for governments to engage incumbent operators in the implementation process to facilitate their participation. While paratransit associations are mainly engaged, and their drivers are trained to become operators of the new buses, it is necessary to identify avenues to engage the vehicle owners to guarantee broad participation (Venter et al., 2018). It is also crucial to ensure that representatives of newly formed BOCs expected to manage the bus services are trained on proper management and administrative practices.

In the absence of government regulatory control and comprehensive engagement of all incumbent paratransit groups, providing them with the appropriate skills development and opportunity to invest in the reforms, paratransit operators would not consider themselves a part of the new transportation and are likely to return to their paratransit service. No real reform is likely to negatively affect government interest in the reform process resulting in abandonment and a return to the undesirable characteristics of paratransit operations.

However, given the existing constraints, it is relevant for cities with similar conditions like Accra to recognise that it would take a more extended period for BRT implementation than Bogotá and other South American cities, which took 4 years to complete the first corridor with all components of a BRT. After studying the paratransit services in Johannesburg for decades, Browning (2001, 2006) argued that it would take about 30 years to reform the sector because it is difficult for operators to make significant changes. As a result, Salazar Ferro et al. (2013) recommended a hybrid transport system in Cape Town and other South African cities in complementary formal and paratransit transportation systems. A gradual phased public transport reform in six stages has been recommended by Kumar et al. (2021).

Since the reform approach of incorporating incumbent paratransit operators into BRT has not worked, the stepped transition and upgrading approach need to be considered and developed further for African cases. The typical Bogotá approach where paratransit operators form formal bus companies, and the government provides the infrastructure on a corridor-by-corridor basis has proven challenging to implement in Accra and other African cities. The depth of change for both government institutions and incumbent paratransit operators is high when the approach is to include existing operators, albeit on a corridor-by-corridor basis. Future research should consider developing a more gradual approach that considers the time required to

improve the governance, capacity, and competence of national, sub-national governments and incumbent paratransit operators. Another aspect to consider is spreading the financial capital required for governments and incumbent operators over a period. These recommendations are in line with the findings of Kumar et al. (2021) and Tun et al. (2020). Addressing these shortcomings is likely to lead to a less complicated mass transportation service in the form of BRT.

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