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ORIGINAL ARTICLE

City Challenge: User Perception on the Governance and Quality of Parking Spaces in Central Business District of Kumasi, Ghana

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Abstract

City centers across the globe are areas of intense socioeconomic interaction and population flow, receiving huge public and private investments. The rapid increase in urbanization and mobility in developing countries to an extent, shows how pressure is increasingly exerted on providing parking spaces, particularly, in city centers. Governments of developing countries face challenges in planning for the constantly increasing population and this beset them in terms of guiding economic development and fast-tracking investment in urban infrastructure–parking spaces. City centers across many African countries have seen a tremendous increase in automotive and commercial activity due to urbanization. This has resulted in massive vehicular traffic congestion in this part of the city with unclear governance systems in planning for and managing parking spaces. The study sought to assess the management of parking spaces in central Kumasi (Adum), examine the willingness of users to pay more for managing traffic situations, and determine the factors that account for the management outcome in ensuring parking availability and decongesting the city center. The results showed that the parking fee was not appropriately set to reduce the demand for parking spaces and is being utilized as a revenue-generating strategy. A primary barrier to employing parking charges as a demand control approach is the willingness and ability of parking users to pay for the use of the facility, along with the poor operation of public transportation. Also, the study showed that the problem of parking inadequacy is partly behavioral, which requires thorough understanding and redress. The study concludes that adequate parking facilities should be provided alongside the increase in commercial activities. Future parking spaces should be preferably off-street parking spaces to help reduce the traffic congestion associated with on-street parking.

Keywords Parking space · Parking charge · Urbanization · Parking management · Central Business District (CBD)

Introduction

Urbanization and its attendant sprawl have become commonplace, particularly in developing countries, which is exacerbating their already numerous transportation infrastructure challenges [28, 46]. In 2018, 55% of the world's population resided in urban centers [53] which is estimated to increase to 68% in 2050. Thus, by 2050, the urban population is estimated to increase by nearly 2.5 billion people in absolute terms. Asia and Africa are predicted to receive over 90% of this population expansion in their urban areas [53]. The extant literature indicates that urban growth and urbanization have often been associated with modernization, industrialization, and the socio-economic development of cities. Consequently, studies indicate that the incidence of urbanization and growth in many African cities, including Ghana, has not been matched by the provision of transport infrastructure and services, although efficient and reliable transportation services are essential to public safety, economic growth, the progress of cities and overall quality of urban life [14, 17, 23, 29].

Increased automotive traffic, despite being a prominent aspect of most cities across the world, is one of the major difficulties associated with rapid urbanization in developing countries. This exerts pressure on public transport infrastructure, which undermines the agglomeration effects of

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cities' socio-economic development. These adverse effects will further exacerbate as the region's human population continues to rise [31, 41]. Relatedly, mobility flows are now a crucial dynamic of urbanization, and the infrastructure that supports them is typically the backbone of the urban form, particularly central business districts (CBDs), which are the most densely populated areas, with a high volume of visitors. Even though global urban mobility is expanding, access to parking spaces in city centers is becoming more challenging. Not only is it inconvenient to access city centers in relation to cost, time, and comfort, but also the sheer act of moving to and from CBDs causes several negative externalities.

CBDs of cities are noted to be areas of intense social and economic interactions and functioning [8], receiving huge public and private investments as well as places of intense population flow in the urban environment [58]. As a result, the physical expanse, land uses, and functions of CBDs are in constant change to reflect the level of interactions, investments, changes in urban economics, and patterns of growth. In many cities of the developing world, land use changes in CBDs are produced by rapidly changing informal land markets and shaped by demand and supply forces outside the control of city authorities [2]. Hence, city governments in the global south are overwhelmed and are unable to match these developments with the needed transport infrastructure. This situation to an extent, presents a dilemma for urban planning concerning the governance of parking in ensuring parking availability and decongesting the city as well as improving the functioning of CBDs.

Relevant to this paper, parking space alludes to land or space that is directly available from a road, carport, or moving region, and is covered or uncovered, spread out for, surfaced, and utilized or built for use by a standing motor vehicle [6]. Globally, car parking is a significant concern at both the local and strategic planning levels [45]. This is because parking spaces perform multiple functions in terms of socio-economic development, and improve physical access to facilities and the image of urban areas. Also, the effective governance of parking spaces is reported to have an impact on, among other things, the quality of service and congestion on access roads and internal city streets; the reliability, effectiveness, and financial performance of public transportation; the amenity, protection, and environmental integrity of the city and its environs; and the overall type and function of the metropolitan area [61].

Parking is, however, becoming an increasingly costly resource in almost every major city around the world, and its scarcity is a contributing factor to urban traffic congestion and pollution [9]. Due to structure and space constraints, the cost of park space expansion is unrealistically high and often prohibitive [19] in many African cities. Even though dedicated parking lots have expanded in most metropolitan areas, parking spaces still struggle to accommodate vehicles during peak hours. As result, many motorists park their cars on the street illegally and many will do so in the future [11]. This study posits that parking and traffic networks in cities are a critical component of the overall urban transportation network and the short-term interactions between these two systems can have a big impact on how well they work individually [16]. One of the most significant factors in shifting behavior when selecting a mode of transportation in an urban territory is the rational allocation of parking spaces [12]. The dominant narrative suggests a strong correlation between improvement in economic growth and its rapid urbanization. Ghana for instance has undergone a massive urban change or transformation with approximately 3.5 times increase in inhabitants of cities between the periods 1984 and 2014 [20]. Concurrently, there has been an increase in vehicular population in the country over the years. The Driver and Vehicle Licensing Authority registered about 42,976 in 1995 and 1,799,200 vehicles in 2014 [60]. Even though there has been a significant increase in the number of vehicles, evidence shows slow attempts to meet the increasing demand for transportation infrastructure such as parking spaces, showing intense congestion and traffic in city centers which poses several safety challenges. This is ubiquitous in many African cities.

Unlike the global north where studies show efficient management and governance of parking spaces amidst increasing urbanization, African realism suggests otherwise. For personal convenience and ease of mobility and to address the delays and irregularities associated with mass transits or public transportation, commuters prefer driving personal vehicles to the CBDs; hence, a high demand for car parks without correspondent increase in supply [13, 60]. As a result, several hours are spent by drivers in search for empty parking spaces upon reaching the CBD, while some end up resorting to illegal on-street parking. This has significant implication on congestion within the city center. Regardless of the many studies conducted on the importance of CBDs to economic and social development or otherwise as well as the importance of parking spaces to improving mobility in urban centers, there still appears to be increasing congestion in cities and an unclear understanding of the real issues of parking and how it is managed. For instance, [38] in Nigeria examined the challenges of traffic congestion and management problems within Ikeja's CBD. [13] also presented an economic model that linked parking prices to supply and demand distributions. In Ghana, [60] research considered the parking planning policy and related chronic traffic congestion in the CBD of Accra, whiles [1] investigated how the Adum's paid parking scheme affected parking turnover and duration. In all of the foregoing and over the years, the issue of parking inadequacy has been of major concern to city authorities, urbanites, researchers, and other stakeholders

because of its implication for the sustainability of African cities, including Ghana. The CBD of Kumasi continuously undergoes rapid land use changes as most residential facilities are gradually being converted to commercial uses with little or no attention to improving transportation infrastructure such as parking spaces. This process makes the center of Kumasi a unique case. This thus paper inquires: what governance issues surround the provision and managing parking spaces in the CBD of Kumasi? The paper provides an answer to this question by (i) identifying the existing management techniques and user perception on the quality of parking service delivery by city authorities; (ii) examining the factors that influence car parking pricing at the city center; (iii) assessing the willingness of users to pay for enhanced service to improve mobility and ease congestion at the city center.

Materials and Methods

Study Setting

The study focuses on Kumasi, Ghana's fastest growing city with a population of 1,730,249 [25]. Kumasi has been increasing rapidly with an annual population growth rate of 5.13% between 1984 and 2000, and 4.6% between 2000 and 2010 which is higher than the growth rate of the Ashanti Region as well as Ghana of 2.7% and 2.5%, respectively [25]. Since its establishment as the heart of the Ashanti Empire around the eighteenth century, Kumasi has been the crossroads between the northern and southern sectors of the country. The city covers approximately 214.3km^2 which is about 0.9% of the region's land [25]. Out of this, about 79% has been planned, approved, and developed. The center of Kumasi remains the largest employer and generates a greater proportion of the city's income [35].

Kumasi is modeled on a radial ring road pattern with a centrally located city center where all roads from the other parts of the city converge (Figs. 2 and 3). The CBD of the city experiences intense social and economic interactions with extensive land use implications [8]. Kumasi's CBD geographically covers Adum, Central Post Office Area, Asafo Market, Kejetia Lorry terminal, and Central Market; which is the largest open market in West Africa. The commercial district has a total land area of 119.18 hectares. The Central Market and the Kejetia Lorry Park constitute the heart of the CBD and together generate huge traffic beyond the city and the region as well. Commercial activities, as a result, take place in almost every available space in the CBD and largely along major road corridors [21].

These parts of the city employ a very large amount of people, generating huge revenue for the city and hence, contributing immensely to social and economic development [21]. However, the high demand for space in the city as a result of the high vehicular and human population greatly puts pressure on the CBD and affects the perfect running of the city [31]. Also, the city has its CBD characterized by highly concentrated socio-economic activities, everyday traffic congestion, and parking problems due to its outrageous number of vehicles and population [49].

Research Approach

The concurrent mixed-methods approach was employed, which is ideal for collecting, analyzing, and integrating quantitative and qualitative data in a single study such as the current one. The method allows the gathering and analyses of quantitative and qualitative data to give room for triangulation, which is an important strategy for enhancing the validity of the results. The approach has emerged with increasing focus on 'triangulation', where [59] explains as combining different methodologies in a single study of the same phenomenon. Making use of triangulation ensured that the weaknesses or limitations of each method were well addressed by the counter balance strengths of the other. For instance, data gathered from qualitative methods informed the preparation of quantitative data collection procedures as well as selecting appropriate respondents to be involved in the study. Further, investigator triangulation was enhanced by using more than one researcher in the field to gather and interpret data. Lastly, methodological triangulation was also carried out using more than one method for gathering data. This promoted the involvement of participants with adequate knowledge on the subject matter. The blend of these methods therefore yielded results which highlighted the contributions of both and each supporting the interpretation of the other. This was directly in line with the 'judicial principle' where evidence was sought from different sources and data collection efforts made use of these principles to enhance the collection of more reliable and valid data.

This research began with a review of relevant and related literature on the phenomenon at both international and local scales. The review focused on books, journals, conference papers and reports, policy documents, and existing literature concerned with the topic under study. The global review focused on studies and publications on urbanization and mobility, the economic benefits of city centers, transportation challenges in city centers, and management of parking spaces in the city by urban studies researchers and development agencies [1, 8, 22, 24, 33, 34, 42, 60]. The local review focused on land use and urban planning and development documents, such as metropolitan medium-term development plans, population, and housing census reports, and policies for managing transport infrastructure in the city of Kumasi [25].

Table 1 Selected streets for interviews

Road name	Capacity (Number of parking spaces)
Dominasi	85
Guggisberg	62
Apremusu	40
Apimpua (from Bogyawi Rd Adum Rd, Zongo Rd to Bogyawi	38
Harper 1(Area Infront of Stanbic Bank)	6
Mission Road	48
Prempeh II	78
Zongo (From Prempeh II to Guggisberg)	13
Asokwa	29
STC loop	29
Nsenie	68
Princess	59
Ntomme	25

Semi-structured interviews were conducted with experts from three relevant transport planning-related agencies in Kumasi, including the Physical Planning Department, Department of Urban Roads and Transport Department of the Kumasi Metropolitan Assembly (KMA), and Goldstreet Real Estate Limited; a private company contracted to manage all public on-street and off-street parking facilities in the CBD. The agencies were purposively selected due to their mandate in improving mobility and parking situation in the city center. The interviews centered on two key themes: (i) factors that influence car parking pricing at the center of the city, and (ii) the implications of such a pricing system on user satisfaction, park facility development, congestion, and traffic management facilities at the city center. Fundamentally, the interviews showed local level leadership position on the extent of planning authorities' role in managing the mobility and parking issues of the city center.

Additionally, a total of 348 parking space users were involved in semi-structured interviews along 15 streets within the CBD (see Table 1 and Figs. 1 and 2). Due to the absence of a sampling frame and based on a similar approach adopted by [3], convenience and purposive sampling techniques were employed to select the participants, focusing on both male and female participants who use parking spaces the city center. The semi-structured questionnaire comprised

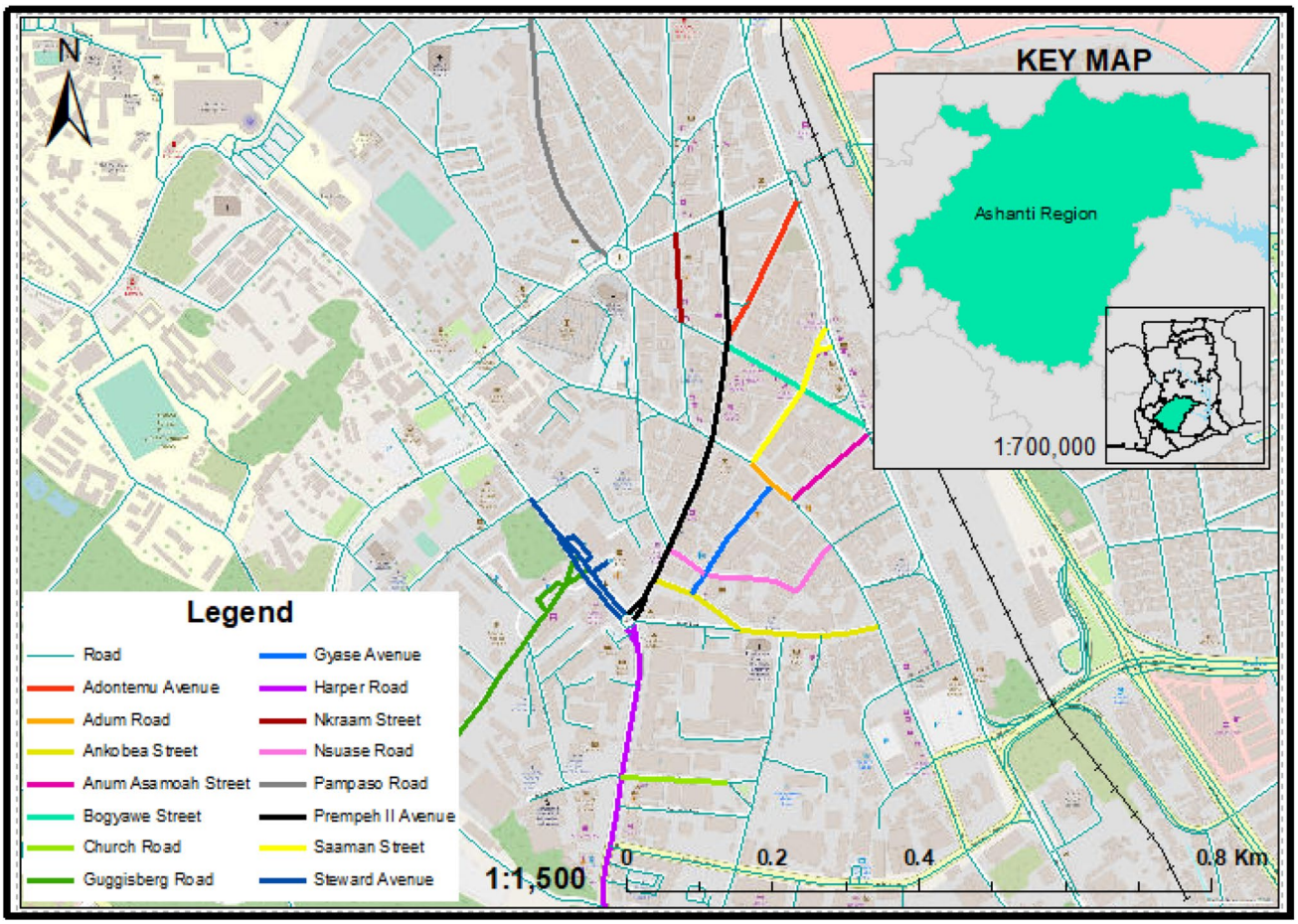

Fig. 1 A map showing selected roads for the research

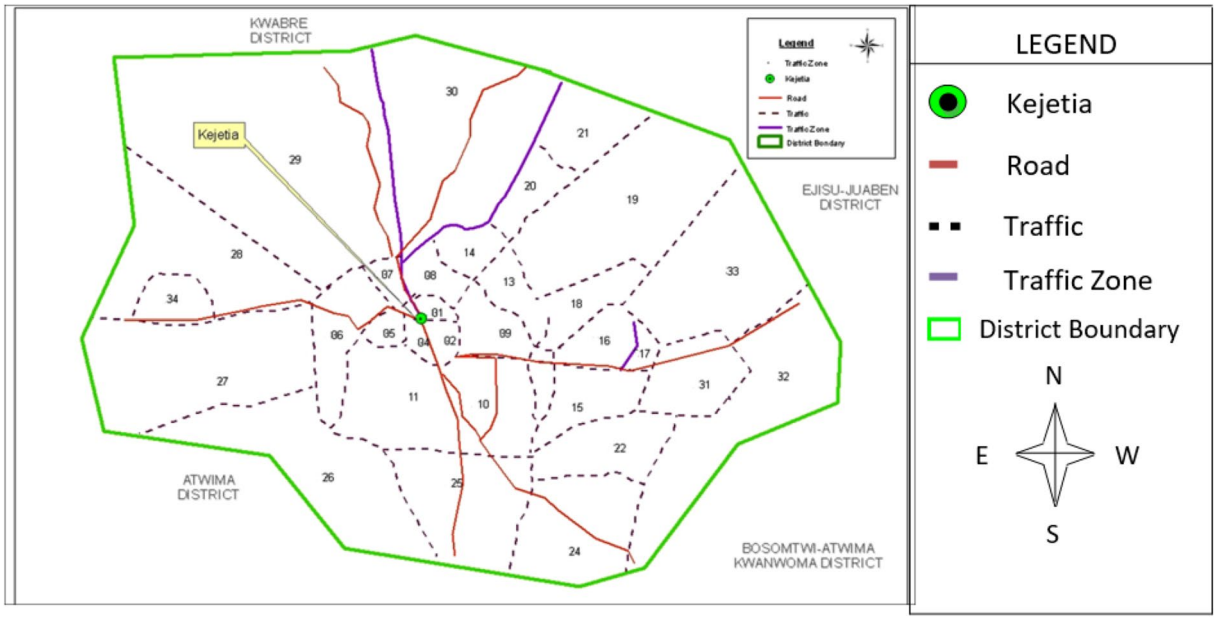

Fig. 2 A map showing the Traffic Zones in the Metropolis

a series of demographic questions such as age–sex composition, educational status, car ownership, and trip purpose as well as user perception on the quality of parking service delivery and their willingness and ability to pay for the usage of parking facilities.

The study employed both qualitative and quantitative approaches to analyzing the collected data. The qualitative data were analyzed using the thematic analysis approach. Thematic analysis is suitable when seeking to understand a group of experiences, thoughts, or actions across a data set. The data analyzed under this include responses from the institutions on the factors that influence car parking pricing at the center of the city and the implications of such a pricing system on user satisfaction, park facility development, congestion, and traffic management facilities at the city center. Themes were generated inductively and deductively based on the data gathered from the field and prior research, respectively. On one hand, codes were inductively developed from the respondents' perspectives on issues such as car parking facilities and challenges and the factors influencing park pricing. On the other hand, categories such as the implications of car pricing system on satisfaction of the users, park facility development, congestion, and traffic management facilities at the city center, were deductively created based on the findings from the literature and the research objectives. Relationships were, however, established by reconciling and refining the codes and categories into more conceptual categories based on common themes or relationships to minimise and avoid inconsistencies in the results. This process increased the understanding of the various datasets, as the research participants' perspectives on car parking pricing system and its influence on park development and user satisfaction were reflected in the final categories. Figure 3a, b presents the summary of the research approach employed for the study and analysis of the qualitative data, respectively.

Two indicators were employed to assess users' willingness and ability to pay for parking spaces. First, is the willingness to pay more for the current services provided and subsequently, when additional services are provided. Second, respondents were allowed to state their preferred type of parking facility upon which they were asked about their willingness to pay more to enjoy such enhanced services. The respondents were also asked to directly quote the amount they will be willing and able to pay before and after enhancement in service delivery. Also, four indicators were used to assess users' perception on the quality of parking service delivery namely parking space availability, parking charge, traffic congestion, and security of parked vehicles. The indicators identified were based on a similar study conducted by other scholars [26, 52]. In the study, the aforementioned factors were considered as part of the main determinants that influence parking choice. The data was analyzed and presented under three key themes based on the objectives of the study namely, (i) the factors that influence car parking pricing at the city center, (ii) the willingness and ability of users to pay for an enhanced and/or additional parking facilities to improve mobility and ease congestion at the city center, and (iii) user perception on the quality of parking service delivery by city authorities at the city center.

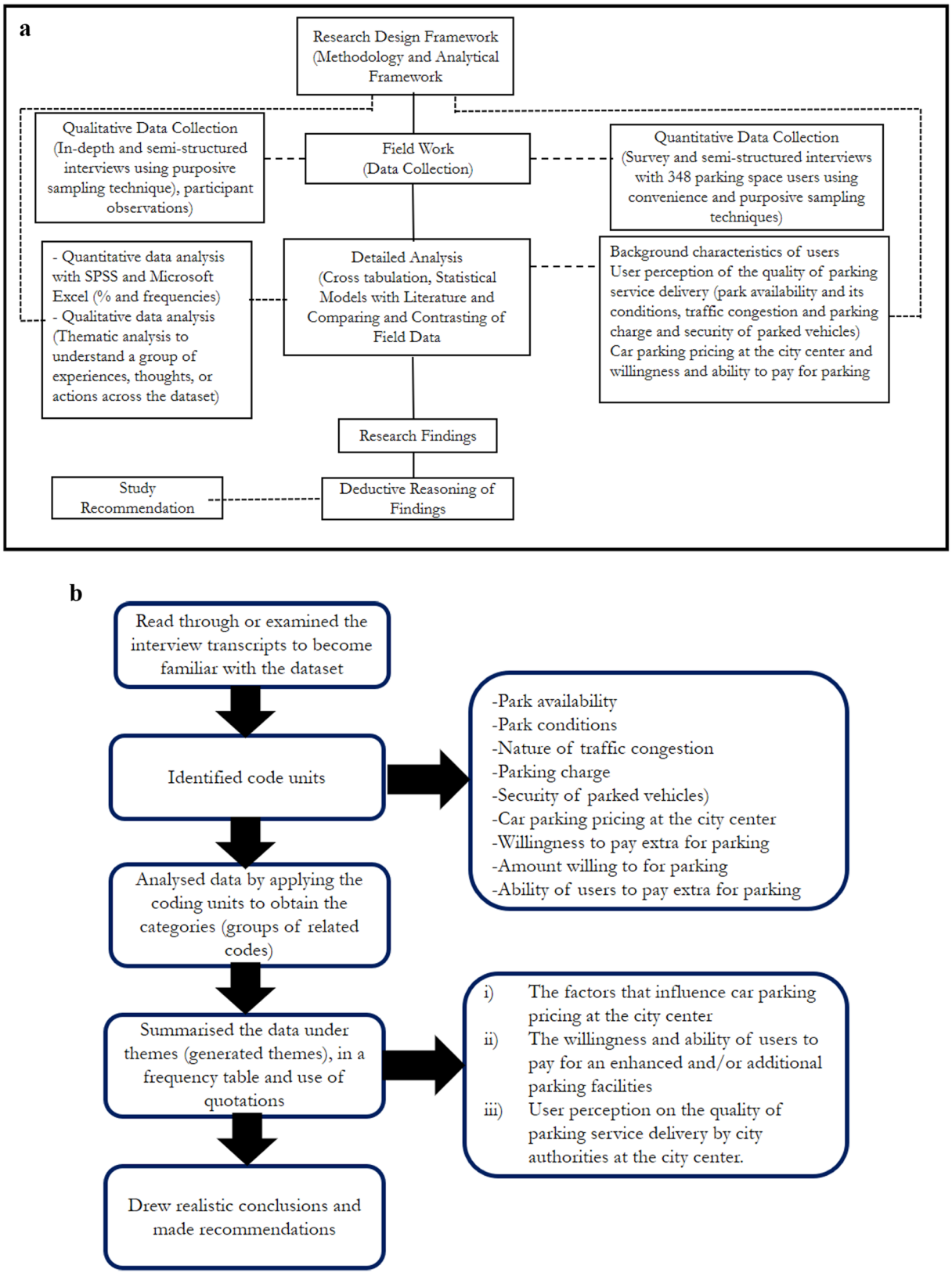

Fig. 3 **a** Flowchart of the research approach. **b** Flowchart of the qualitative data analysis

Results and Discussion

Background Characteristics of Respondents

The dominant narrative shows that car ownership has a significant impact on vehicle travel and, as a result, parking demand [32]. The study's results on the status of vehicle ownership indicated that the majority of the respondents (96%) owned the car personally whereas just a few (4%) did not own it. Inconvenience and delays in public transport were also observed as the major reasons for the ownership of vehicles and the decision to drive to the CBD as similarly reported by [60]. Also, the reasons for which people travel to Adum include shopping, visiting a relative or friend who works there and work. The majority of the respondents (61%) were in Adum to shop. This was followed by those whose purpose was to work (29.7%), whereas those who came to visit were 4.0%. Other people were in Adum for other purposes such as to visit the court, passport office, and repairing shop among others and this formed 6.0% of the respondents.

Gender is one of the most important socio-demographic factors that affect travel behavior [36]. According to [55], there are discrepancies in men's and women's transportation needs. Understanding gender differences in travel behavior aids in the development of more efficient and equitable transportation policies. The study showed male dominance as 64% of them accessed the CBD, compared to 36% of their female counterparts. Studies report that women have different mobility patterns, needs and behaviours, where female mobility is characterized by trip chaining and time poverty. The major reasons are that women are reported to do 75% of the world's unpaid care work, and women's physical condition [57]. Relatedly, unlike men, women have smaller range when travelling the same amount of time and also most often carry luggage and escort people on public transport and by foot. Aside the socially constructed roles, they appear more vulnerable due to their physical conditions, and are thus not largely involved in the transport sector, as drivers, engineers, operators and leaders, which is observed across the globe, including this study. According to [7], women remain more careful when in traffic where they exercise more caution and when navigating traffic and have less need for speed. According to Harvard Business Review, "women make up 20% of engineering graduates, but nearly 40% of them either quit or never enter the profession." The transport industry thus remains heavily male-dominated, which makes it harder for women service users which limits incentives for the sector to become more inclusive. From the above, although there exists different mobility needs and patterns, transport policies for most countries remain unrelentingly gender-blind. In Ghana, this is a reflection of what exists at the national level where there are considerably more male drivers on the road than females. Such differences according to [18] can be attributed to the fact that women own and drive cars less frequently than males, but travel more frequently as passengers. This has implications for resolving the discrepancies that are inherent in men's and women's transportation demands due to the underrepresentation of females in the transportation sector.

Car ownership has a significant impact on vehicle travel and, as a result, parking demand [32]. The study's results on the status of vehicle ownership indicated that the majority of the respondents (96%) personally owned the cars. Inconvenience and delays in public transport were reported to be the major reasons for the ownership of the vehicle and the decision to drive to the CBD [12, 24, 60]. Consequently, the study revealed that people accessed the CBD for so three major reasons, namely, commercial (shopping, selling of produce) (83%), social (visits to relatives and friends at the CBD) (43%), and administrative (57%). The many reasons for respondents accessing the CBD and the variety of activities and services it provides are emphasized by [58] who pointed out that a CBD 'houses' a large number of financial, industry, cultural, and service institutions, as well as several supporting facilities, which are important for economic development. This thus necessitates the need for effective management of the CBD to provide the services and the needed infrastructure that is a prerequisite to support the increasing commuters and to adequately provide the social, economic, and cultural functions it ideally should provide.

User Perception on the Quality of Parking Service Delivery

The user perception on the quality of service of the parking facilities in the CBD is analyzed in this section. The assessment and analysis are based on parking availability, traffic congestion, perception on parking charge, and security of parked vehicles.

User Perception on Park Availability and its Conditions

The growth of humanity's population has an impact on the requirement for more amenities and transportation [27]. The increasing demand for transportation facilities and infrastructure in the city center is a result of the presence of many socio-economic activities such as on-street petty trading which involves sale of foodstuff (fruits and vegetables), provisions, clothing, wholesale and retail trade. According to the zoning and planning standards and similarly confirmed by the agency officials, a parking space should be at least 2.4 m × 5.5 m in size, with appropriate spaces for vehicle movement and maneuvering onto and around the property.

First, in an attempt to ease traffic congestion in the CBD, city authorities had introduced various management techniques, relevant among them include on-street and off-street parking facilities, one-way street systems, traffic signals, parking restrictions (NO STOPPING, NO PARKING, NO WAITING and NO ENTRY), pelican crossing, zebra crossing and pedestrian walkways (see Fig. 4). The respondents had knowledge of four of the techniques, namely: availability of both on- and off-street parking facilities (93%); traffic signals (100%); no stopping and parking signs (100%) and one-way street (100%). The respondents indicated that these strategies by city authorities, are very important, but have not significantly addressed the congestion in the CBD. Some respondents recounted that:

> Parking facilities and relevant signals provided by the Metropolitan Assembly are important and were expected to go a long way to free the roads of many vehicles which would normally park on the roads… Over the years, however, there is intense congestion in CBD, particularly, between the hours of 9 am and 12 noon), because of the increasing number of vehicles and weak enforcement of traffic regulations.

> The essence of these techniques is to ease the congestion in the city center and improve upon safety. When you come to the CBD however, it is as if no rules work here – public transport operators park anywhere. You have pedestrians and vehicles fighting for space, which is not safe at all.

Fig. 4 A map showing on-street and off-street parking facilities in the CBD

The above finding supports the assertion of [45] who argued that the availability of a parking space is important in determining whether or not people drive to a specific place, as well as whether or not they own a car at all.

User Perception on Traffic Congestion and Parking Charge

Second, traffic congestion is seen in contemporary literature to be one of the major effects of inadequate parking spaces in city centers. [5] argues that cities that have high congestion rates coupled with inadequate parking spaces are more interested in developing and implementing parking policies to allow the easy flow of vehicles on the road (e.g. parking pricing). On this, approximately 56% of the respondents perceive the effect of the parking scheme on traffic congestion to be negative. Also, this category of respondents pointed out that generally cruising time is poor. The results of the analysis also indicated that the majority of the respondents (57.8%) used more than 15 min cruising for available parking spaces. A study conducted by [11] pointed out that cruising contributes unnecessarily to traffic congestion, car emissions, air pollution, and climate change in the surrounding area.

Even though according to [4] and [30], parking charge is regarded as the second most important strategy to reduce traffic congestion in the city center and has a positive impact on car utilization, while time constraints dictate the type of parking used thus whether on-street or off-street, the findings from the field proves otherwise. The results revealed that the institution of the parking charge has had an insignificant effect on cruising time and the number of vehicles that accessed the city center or on traffic congestion. More than half of the respondents (79.2%) indicated that the paid parking has had no change in their frequency of travel to Adum using their vehicle. On parking charge, the city officials pointed out that the parking charge in the CBD depends on the duration of usage, as observed in other cities across the globe e.g., [29, 39, 40, 47, 51]. Data gathered showed that the parking charge is paid hourly. The charge paid by the users is GH¢1.00 per hour. However, the charge increases from GH¢1.00 per hour to GH¢2.00 per hour after 2 h of parking. On the charge, 23% of the users regard the parking charge as expensive, 72% are generally satisfied with it, while the remaining 5% regard the charge as low/inexpensive.

The findings further showed that the majority of those who indicated that the charge was expensive are those whose purpose was to work (60%), followed by 34% of shoppers whereas 5% of those who revealed it was low were those who visited the center for other reasons, and spent less than an hour in the city. Workers who reported parking charges to be expensive explained that they park almost the whole day (averagely 5–7 h a day) and because the charge increases to GH¢2 after 2 h makes it expensive. However, they revealed that they pay a subsidized amount of GH¢10 a day, irrespective of the number of hours they use the parking facilities, which to them was still expensive. They were also of the view that parking spaces should be available for free usage, especially for those who want to shop or briefly transact business in the city center [50]. Further probing of those who perceive the charge to be expensive on their reasons for not resorting to other means of transport, particularly public transport, revealed that they are generally dissatisfied with the services provided by the operators and the poor state of public transport vehicles. This confirms the findings of [3] who reported that there exist inefficiencies in the comfortability and vehicular conditions of the public transport sector.

Out of the 72% of the respondents who were satisfied with the charge, 70% were shoppers, 19% were workers, whereas those whose purpose was to visit and for other reasons were 4.0% and 7%, respectively. According to these respondents, getting a place to park is what is important to them and the services provided correlate with the price being charged. They also pointed out that, they hardly park for long; hence, deem the price charged to be affordable. The forgoing further implies that the issue of parking is partly behavioral, which was not influenced by any particular factor such as parking price, available space, etc.; rather, ignore basic driving and parking etiquettes, where some drivers deliberately park their vehicle inappropriate way, for no particular reason. This is similarly reported by [43] that some of drivers tend to double parking, improvise their own parking, and others when supply and demand ratio of parking space is not balance. Therefore, there is a need for city authorities and managers of the parking spaces to effectively manage the parking spaces to reduce the heavy traffic congestion and pollution that is caused by the growing fleet of cars that enters Adum. The results of the findings support the assertion that people who want to make a rapid purchase all have an urgent need for parking and are willing to pay the price [56].

User Perception on the Security of Parked Vehicles

Lastly, the security of parked vehicles was reported to be a major determinant in the selection of parking spaces by users. It is one of the major considerations when assessing the quality of parking service delivery [10]. From the survey, 63% of the respondents reported the security of parking areas to be good, whereas 37% stated otherwise. This supports the findings of other studies which indicated that the most significant quality for drivers who choose off-street parking is parking security [15, 52]. It was revealed that generally security is not provided by the service provider. It was reported that by virtue of the location of the majority of the parking space (off-street) and the busy nature of the

city center makes it difficult for theft cases. For instance, one respondent remarked that,

> The focus of those who issue the tickets are on just the tickets and collection of the charges and not on ensuring the security of parked vehicles per se. It is indicated on their tickets that they will not be responsible for any theft cases with regards to the parking of the vehicle in the space.

The above notwithstanding, although there are no laid down measures to ensure the security of parked vehicles, city authorities and managers should institute measures to ensure the safety of both the parking space users and their vehicles. With the use of the criteria above in measuring the quality of parking service delivery, it was revealed that more than half of the respondents (56%) showed a general dissatisfaction with the service provision. Respondents who indicated they were unsatisfied stated that the services provided are not modernized and have had little impact on easing mobility. They are also of the view that the charges collected are ineffectively utilized. This is in line with the findings of [7] which indicated that when users' expectations exceed perceived service quality, a service quality gap develops, leading to customer dissatisfaction. However, it was observed that respondents' level of satisfaction was highly influenced by the location at which they park, and infrequent visits to the CBD.

Car Parking Pricing at the City Center and Willingness and Ability to Pay for Parking: Respondents' Perspectives

Car Parking Pricing in the City Center: Respondents' Perspectives

The determination of an optimal parking charge is a major challenge in most city centers. According to [34], the most appropriate charge is that which ensures there are just a few parking spaces available at every place and at every time so that those who are ready to pay the charge find a convenient place to park. Specifically, it is argued that when a parking charge is set too high, it results in a high number of vacant spaces, whereas a low parking charge will result in high demand for parking spaces with less supply hence more cruising time and traffic congestion [34]. Consequently, studies show that land value, the opportunity cost of the land to be used for the parking spaces as well as the possible externalities associated with the creation of the parking spaces (e.g. congestion and pollution) are factors to consider when setting a parking charge [44].

The city officials stated that the Kumasi Metropolitan Area outsourced the management of both on-street and off-street parking facilities in Adum to Goldstreet Real Estate Consult in 2006. The managerial duties include but are not limited to the determination of parking charges, maintenance of parking facilities and the demarcation and design of a portion of the road to be used as an on-street parking space which is subject to approval by the Department of Urban Road. Data gathered from an official of Goldstreet Real Estate Consult revealed that there are about 1278 publicly owned on-street parking spaces in Adum with just one off-street parking facility (KMA car park). The official further stated that the parking charge is currently GH¢1.00 (USD 0.12) per hour which is subject to the size of the vehicle and the number of spaces it occupies. He also indicated that;

> The charge increases to GH¢2.00 (USD 0.24) when a vehicle is parked for more than 2 hours and the factors that informed the charges were the number of employees employed in the company and their salaries as well as the cost of maintenance.

The results also revealed that people who work in Adum and hence park almost all day pay a flat rate of GH¢10.00 for a whole day's park, confirming earlier assertions from the respondents. However, interviews with the respondents indicated that there are variations in the amount paid as some pay GH¢5.00. One of the respondents who pays a lower price said that

> I have worked in Adum for a long and know most of the workers who collect the charges. I was able to bargain with them to reduce the price for me so even though some pay GH¢10.00 I pay GH¢5.00 to park for the whole day.

Also, interactions with the officials from Goldstreet Real Estate Consult, the Transport Department, and the Department of Urban Roads of KMA indicated that the goal for adopting the parking pricing strategy is not clear. For instance, officials from the Transport Department and Department of urban roads of the metropolitan assembly indicated that;

> The parking charge aims to help reduce the demand for parking spaces, reduce congestion and improve mobility in the CBD.

However, officials of Goldstreet Real Estate Consult indicated that the objective of the charge is to make parking spaces easily available for people to park. The results reveal that the current parking charge in Adum (GH¢1.00) per hour or GH¢2.00 over 2 h was not particularly set with the objective of deterring vehicle users or reducing demand for

parking spaces but to generate enough revenue for the maintenance and payment of workers' salaries. This indicates that the charge may not be punitive enough or optimal. Therefore, if appropriate measures are not taken by city authorities with the high rate of urbanization in Kumasi, it is likely to worsen the demand for parking spaces and its associated negative externalities.

Users' Willingness and Ability to Pay for Parking

Subsequently, the willingness to pay for parking spaces was examined. To assess the user's willingness and ability to pay, two instances were created. First, the willingness to pay more for the current service provided and subsequently, when additional services are provided. From the survey, most respondents (84%) indicated that they would not pay more for the current services provided because the services are not advanced, and do not meet the qualities they aspire to have of their preferred type of parking facility for an additional payment. This finding is supported by [48] who stated that parking space users are generally selective and they place value for money on the type of parking facility they choose. For others, the current price is expensive for them considering the hours they use the facilities. It was found that the longer the parking time of users, the more sensitive they are to the price changes as most of the respondents who work in Adum and parks reacted negatively to an increase in the parking charge. The findings support [30] study which stated that users who often park in a certain area are more sensitive to the price of the parking area than those who park occasionally.

In the second instance, respondents were allowed to state their preferred type of parking facility upon which they were asked about their willingness to pay more for it. On this, more than half of the respondents (74%) were willing to pay more (averagely, GH¢3.8/hour) when the services are enhanced–improved security (79%), improved security and shade (8%) and off-street underground parking, the creation of adequate parking spaces with clear demarcation of the spaces to ease parking and signage indicating the location of parking spaces (13%). In support of this, a study conducted by [54] showed that car drivers are willing to pay more when the services are enhanced or when additional services are provided. Similarly, findings of a study conducted by [37] indicated that drivers are willing to pay more for a parking facility when there is an improved level of security at the parking area. This implies that more revenue can be generated from the management of parking spaces for other development initiatives in the assembly by increasing the charges within a certain range when the services are improved.

Conclusion

The availability of parking spaces is significant in city development and the realization of sustainable city development due to the benefits they provide. Despite the benefits that are derived from them, their supply and management are threatened by increased competition for space in the city center, weak development control, rapid urbanization, and low priority of city authorities on parking spaces. The study sought to assess the governance of parking spaces in Adum and determine the factors that account for its ineffectiveness in ensuring parking availability. The study revealed a direct relationship between urban growth and the availability of parking spaces. The rapid rate of urbanization, increase in commercial activities and vehicular population have resulted in several transportation challenges, notably, scarcity of parking space and traffic congestion. The expansion of commercial activity in Adum has taken up a lot of space, displacing parking places. As a result, many customers are unable to park in several establishments in Adum due to parking space inadequacy. The study, therefore, reveals that the physical and demographic expansion of the city has had a great impact on parking demand and management.

The results further reveal that the parking charge which was adopted as a demand management strategy by the city authorities, is not serving its intended purpose. This is because the charge was not properly fixed. The charge is more or less being used as a revenue generation strategy by the institution responsible for its management. For instance, the factors considered to set the prices were the salary of workers and maintenance of the parking facilities. This explains its ineffectiveness in ensuring parking availability and in decongesting the city.

Also, the results indicated that the majority of people are not willing to pay more for the use of the parking facility if the services are not enhanced. Users are willing to pay more for services such as improved security, underground parking, the creation of adequate parking spaces with clear demarcation of the spaces to ease parking, and signage indicating the location of parking spaces. Averagely, users' ability to pay for the use of the parking facility is higher (GH¢6.2) than their willingness to pay (GH¢3.8). This implies that relying on just parking charges to ensure parking availability and decongesting the city to reduce traffic congestion and shift travel to alternative modes of transportation may not be enough.

Based on the foregoing, the study proposes that for the parking charge to work effectively, public transport ought to be improved to deliver services efficiently and effectively to reduce the inconveniences and inconsistencies associated with it. For instance, local authorities could invest in buses that would convey commuters to the

CBD and use an advanced information system and ticketing to help users know exactly where and when the buses are located and the approximate time it will reach their waiting areas. The proceeds from this could be used by the authorities to meet other development needs. Also, alternative transport options such as tro-tro and private vehicles should effectively be regulated to provide good services. The study further proposes that city authorities should fix the parking charge properly with the purpose of the charge made clear. The factors that informed the rate charged should be reconsidered and adequate user information provided to ensure that the price fixed is optimal and efficient. Also, variable pricing should be considered to discourage long-term parkers, minimize congestion and shift drivers to other parts of Adum which has less concentration of activities and fewer parking difficulties.

In addition, adequate parking facilities should be provided alongside the increase in commercial activities. Future parking spaces should be preferably off-street parking spaces (underground car park, multi-story car park) to help reduce the traffic congestion associated with on-street parking. The parking spaces should have a proper and clear demarcation of the spaces and user information (eg. signage) to make parking and location of parking spaces easy.

Declarations

Conflict of Interest The author declares that they have no conflict of interest.

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