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An Analysis of User Perceptions Towards Public Parking Management in Kampala City

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Abstract
The parking problems in Kampala City have become more pronounced due to the increasing private vehicle numbers resulting from a growth in population and income levels. Understanding public perceptions and the various stakeholders' parking needs and preferences is fundamental for identification of priority areas for improvement. This paper assessed the user perceptions of public parking management and the parking needs and preferences for various stakeholders in Kampala City. The study was evaluative and employed a cross sectional research design with a range of data diverse triangulation quantitative and qualitative techniques. From 328 questionnaires, participants were asked to assess fifteen (15) public parking management attributes from a point of view of their satisfaction. Also, a public parking stakeholder analysis was done and the level of influence by each stakeholder category in regards to parking management in the city and their parking needs and preferences were established. The study results revealed- that the customer satisfaction Index (CSI) of parkers was 52.4% indicating a relatively lower satisfaction level of the parking management in Kampala City. From the fifteen public parking management attributes, four (4) of them to include affordability of parking, availability of parking spaces, accessibility to parking spaces and as well Safety and security for vehicles were accorded the greatest importance. While thirteen (13) public parking stakeholders in Kampala City that included Ministry of Works and Transport (MoWT), Kampala Capital City Authority (KCCA), Multiplex Limited, Private Parking suppliers, public transport operators, Business Community, Commuters, Private Car Drivers, Logistics Vehicles, Traffic Police, Residents, shoppers and tourists and the academia were identified. The study recommends prioritization of those factors that parkers deem very important by the relevant authorities, stakeholder involvement in parking planning and management, establishment of an efficient enforcement and control mechanism, having a public parking vision with clear goals and objectives and as well the use of technology to enhance efficiency for both parkers and parking suppliers.

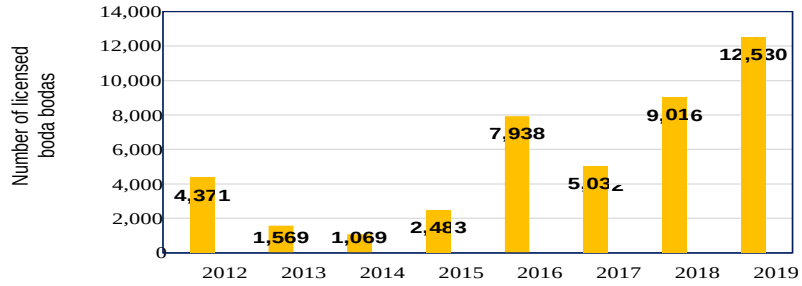
Keywords: Public Parking, User Perceptions, Stakeholders, Parking Needs and Preferences

1. Introduction

1.1 Background

Car parking is one of the most intractable problems faced by modern day cities. With rapid urbanization and the increased use of motor vehicles, parking problems in several cities across the globe have become more pronounced. Henry (1997) observes that population growth and increasing living standards of the urban residents are the major causes of the increase in the number of cars in cities. The insufficient public transit services in especially developing country cities make it unattractive and so most people prefer travelling by private cars (Kiggundu et al., 2021).

As seen in Fig 1. Motor vehicle ownership and use among the high- and middle-income people in Kampala is on the rise. Cars are still considered a status symbol by the majority of individuals in developing countries, though, a considerable proportion of individuals and businesses consider them a necessity (Uganda bureau of Statistics (UBOS),2024) The persistent growth in private car ownership and usage is compounding the traffic congestion problem, increased delays, air pollution, loss of productivity and more parking demand and supply management requirements. Besides, most of the roads in the region were constructed in the 1960s for 100,000vehicles. Today, over 400,000 vehicles use the same roads each day (World Bank, 2017) As shown in Fig. 2 The number of licensed boda boda's has also greatly grown by about 186.7% between 2012 and 2019



Source: (UBOS ,2016)

Fig. 1 Number of Licensed Boda-bodas between 2012 and 2019

As with many other problems in city management, what the users know and think about parking planning and management can have important implications for the design and the success of the parking sector. User perceptions are critical as they can influence policy outcomes and community engagement. An understanding of how the users perceive the public parking management issues in Kampala is fundamental for effective decision making. User perceptions shape responses to threats, guide development and influence city dynamics.

By analysing user perceptions, gaps in awareness, knowledge, and engagement can be identified, leading to more informed parking policies and interventions. Therefore, studying user perceptions is fundamental to addressing city challenges and ensuring successful outcomes in areas ranging from planning, provision and management of public parking in cities like Kampala.

2. Study Objectives

a) To assess the user perceptions towards public parking management in Kampala Central Business District
b) To characterize the various public parking stakeholders needs and preferences in Kampala Central Business District

3. Literature Review

3.1 Public Parking Management in Kampala City

Paid on street parking was introduced in 1997 through the city's Strategic Framework for Reform whose overall objective was to improve service delivery in the KCC area. Through a process of competitive bidding, the contract to manage and control on street parking was awarded to Green Boat Entertainment. The contract was to run for four years between 1998 and 2002 and then after it was re-advertised.

Kampala City Council (KCC) awarded the contract to manage the city streets parking spaces to Multiplex (U) Ltd on September 1, 2017. Kampala Capital City Authority (KCCA) later renewed their contract until 2020. However, the contract only covers Kampala Central Division. Currently, anyone who parks at any gazetted space in Kampala Central Division is supposed to pay Shs1,000 per hour, and this only applies to the first two hours. If one spends 30 minutes parking in the same place after the first two hours, they are

expected to pay an additionalShs800.This means that if you park your car for eight hours, you will be required to pay Shs11,600; Shs2,000 for the first two hours and Shs9,600 for the extra six hours.

Table.1: Summary of on street parking characteristics in Kampala Central Business District

Characteristics	Details
Parking management	Multiplex Limited Uganda
Parking reinforcement	1 parking manager per 30 parking spaces + parking ticket sellers
Parking ground	Asphalt in a relatively good condition
Parking position	Most are parallel to the kerb, some are at an angle
Parking space size	Length varies from 5m to 6m (5.5m on average)
Parking lines	Some clearly marked
Parking space numbers	Some clearly marked
Parking fees (as of January 2019)	1 hour: USh 1,000 (approx. 0.27 USD) 2 hours: USh 2,000 (approx. 0.54 USD) Over 2 hours: Ush 800/30 min (approx. 0.21 USD) KCCA vehicles are exempt from parking fees
Parking fee payment type	Cash or MTN and Airtel Mobile Money

Source: Report on Smart Parking for KCCA, (2019)

According to Rye (2010), the paid-on street parking is based in the Central Business area. This includes; William Street, Market Street, Burton Street, Ben Kiwanuka Street, Nasser Road and Channel Street. It also includes areas of Kampala and Jinja Road.

The paid public off street parking is privately provided and managed. Such parking spaces are way expensive compared to on street parking and a few drivers can afford it. The fares are unregulated and it's upon the owners to establish how much parkers pay depending on the time spent within such facilities. Restricting the amount of parking places and adjusting parking fares is an effective instrument in managing car traffic in city centres (Rye, 2010). However, in Kampala City, the capacity to manage and regulate car parking is limited by the small fees charged especially for on street parking.

3.2 User Perceptions towards public parking management

Senge (1990) refers to perceptions as" deeply ingrained assumptions, generalizations, or even pictures or images that influence how people understand the world and take actionn". Iindividuals' beliefs of public parking are important in determining what kind of issues people deem as important in regards to public parking. This could be through the identification of negative aspects that might need priority for improvement.

User perception of the parking problem is also fundamental in informing public parking planning and management decisions. However, it should be noted that perception is personal and more subjective and thus may differ from varying individuals or users.

Shaffer and Anderson (1983) explored the public perceptions of security and attractiveness of urban parking lots. In their work, participants viewed different scenes of various parking facilities and were asked to rate the slides for attractiveness, security, or prominence of various variables in the scenes. Their results indicated that maintenance and design of parking facilities was critical for users and the general public.

Mendat and Wogalter (2003) assessed perceived problems of parking facilities by conducting two studies. In their first study, 319 participants were asked to generate a set of parking facility-related problems from their life experience. These were categorized into different problem categories. The second had participants rate the 30 problem categories. Five main factors were identified (a) Compliance and Visibility, (b) Layout and Design, (c) Safety and Crowding, (d) Difficulties at Access Points and Environment, and (e) Aesthetics. It was concluded that aaspects of each of these factors have implications for improving parking facilities. In this paper, the authors intended to explore the importance and satisfaction of parkers with certain parking attributes in Kampala City in order to better understand the gap and provide useful information about future priority areas for investment and improvement. It was necessary to analyse all the extracted factors of parking lot competitiveness in the city and obtain a broader perspective in relation to parkers critical factors to choose a parking space. Authors Martilla and James (1977) created an Importance Performance Analysis (I.P.A.) which, due to its simplicity and ease of use, became a popular instrument for measuring customer satisfaction in different areas of research. Th I.P.A. framework has been widely used in various fields and contexts. Though no know study in regards to public parking has applied the concept, there are a variety of studies in the transportation sector that have applied the approach to understand customer perceptions and satisfaction for example, (Hidayat,2018 and Sinha et al,2019) measured performance level of public transport and user perceptions of public transport quality respectively.

3.3 Public Parking stakeholder needs and preferences

Different people have different parking needs and thus define each problem within the context of their own needs. Also, Parking needs differ between various stakeholders. Some of the stakeholders that are likely to be affected by the parking issue include: commuters (seeEnoch, 2002; Feeney, 1989; Marsden, 2006); shoppers (discussed by Matsoukis, 1995; Meek, Ison, & Enoch, 2011); retailers (addressed by Rye, Hunton, Ison & Kocak, 2008) and employers (discussed by Valleley, Garland& Jones, 1997). In addition, literature also discusses the various roles the government can play with respect to parking, for instance the responsibilities of planning officers (Forinash, Millard-Ball, Dougherty, & Tumlin Smart, 2003; Kenworthy & Laube, 1996), transport planners (Mcshane & Meyer, 1982) as well as the significance of those employed in enforcement (Barter, 2011; Cullinane & Polak, 1992). Less mentioned by the literature are the stakeholders who are non-parking participatory but who may be either directly or indirectly affected by parking, such as pedestrians (as explored by Wood, Frank, & Giles-Corti,2010), cyclists, or public transport users (as referred to by Shatnawi, 2010).

Citizens and various stakeholders should be involved in parking decisions. Parking attracts the interest of different road users. Consultation is all-important in terms of parking policy, not least in order to obtain public acceptance. Consultation can be undertaken at a number of levels whether it be at national or local level.

Auwerx et al (2016), describe the following stakeholder interests as summarised in Table .2 below; Residents are interested in an attractive neighbourhood with good quality and safe urban space. They might also be interested in finding on street parking close to home for short stay use or for longer stay use. Private parking space at home or close to home is not always used for car parking creating additional pressure on the street parking capacity.

Visitors are interested in affordable parking close to their destination. Visitors can be shoppers, commuters, people engaging in leisure activities, tourists among others. Professional curb space users such as urban logistics and delivery companies need re assurance about availability of free spaces in order to conduct their activities in an efficient way. Specific user groups such as drivers with disabilities will need to be accommodated on street in order to be able to reach destinations of their choice.

The challenge for local authorities is increased as these user groups do not share the same expectations and needs towards the parking system in terms of cost, availability and capacity. Also, it is not clear at what point of decision making such stakeholders should be engaged. The following resulted from compiling

information from several sources (Litman, 2006; Kuzmyaket al.2003; Rye, 2010) and from a personal point of view about various stakeholders that could be engaged in parking issues stipulating their potential needs and wishes.

Table 2: Needs and preferences of various stakeholders affected by parking in urban areas.

Level	Stakeholders	Wishes
Supplier	Private parking owners	Maximum revenue generation and attraction of as many drivers as possible to their parking areas Minimum construction and management costs.
Public Parking Managers	Traffic control officers, Parking Regulators and attendants	More revenue from on street parking More on street space for parking to ensure smooth traffic flow. More off-street parking to accommodate more vehicles
Receiver	Shoppers	Accessible and affordable parking
Workers	Commuters/Daily users	Accessible and affordable parking for longer stay with assured vehicle safety and security.
Residents	Staying in busy Urban areas	Travel without traffic on the nearby streets. Affordable parking with assured safety and security for their cars

Source: (Litman ,2006; Kuzmyaket et al, 2003; Rye ,2010)

This multitude of stakeholders clearly makes the problem more challenging and, in order to consider their different perspectives, requires the adoption of multi-criteria approaches. There are various aspects to consider when planning for public parking and each area or city has unique needs. Therefore, there are is no single parking policy that will be compatible to all regions. According Litman (2006), the following principles should be put into consideration by planners in order to have credible parking management decisions;

a) Consumer Choice. People should have viable parking and travel options.
b) User information. Motorists should have information on their parking and travel options
c) Sharing. Parking facilities should serve multiple users and destinations.
d) Efficient utilization. Parking facilities should be sized and managed so spaces are frequentlyoccupied.
e) Flexibility. Parking plans should accommodate uncertainty and change.
f) Prioritization. The most desirable spaces should be managed to favor higher-priority uses.
g) Pricing. As much as possible, users should pay directly for the parking facilities they use.
h) Peak management. Special efforts should be made to deal with peak-demand
i) Quality vs. quantity. Parking facility quality should be considered as important as quantity,including aesthetics, security, accessibility and user information.
j) Comprehensive analysis. All significant costs and benefits should be considered in parking planning.

3.Methodology

The Public Parking Service quality attributes were identified based on literature and interviews made with parking experts and discussions with various public parking users in Kampala Central Business District. Fifteen (15) attributes were established that involved both quantitative and qualitative aspects in terms of relative importance and performance and these were rated with two parallel measuring five-point scales “one”

representing very unsatisfied and “five” representing very satisfied with public parking management and “one” representing very unimportant and “five” representing very important for parking management as below;

Table.3: Public Parking Management Attributes

Qualitative	**Quantitative**
Accessibility to parking spaces	Availability of parking spaces
User Information	Walking Distance after parking
Customer Response	Affordability of parking
Enforcement	
Management Behavior	
Safety and security	
Design and Aesthetics	
Sanitation	
Higher user prioritization	
Clear Rules and Regulations	
Peak Demand Management	
Use of Information Technology (IT)	

Source: Author (2024)

The study was evaluative and employed a cross sectional research design with a range of data diverse triangulation quantitative and qualitative techniques.360 survey forms were uploaded online using the Kobo toolbox that was later sent to the ODK Ordinary Data Kit, and the response rate was 328 (91.1%). The survey forms assessed demographic characteristics, travel patterns and then participants were asked to rate the public parking management aspects based on relative importance and quality on a scale of five (5) in Kampala City. These facilitated the importance Performance analysis (IPA) as suggested by Martilla and James (1977).

The importance -Performance Analysis (IPA) is a statistical method to compare between service performance based on user experience and the level of satisfaction. It involves establishment of a questionnaire with particular attributes that are measured on a five-point Likert scale. The attractive features of the technique are that it is easily understood, can be easily administered and is relatively cheaper to implement.

The quadrant of each attribute suggests a different managerial strategy, as described in Figure 2 below. Attributes positioned in Quadrant I (*Concentrate here*- **High Importance/Low Performance)** pose the greatest weakness of parking management and require urgent managerial attention in order to improve quality and performance. Attributes that are positioned in Quadrant II (*keep up the good work*- **High Importance/High Performance**) suggest that managers are doing the right thing and that in future they strive to preserve the quality of these attributes. Attributes in Quadrant III (*low priority*- **Low Importance/Low Performance**) are considered as attributes of low priority and do not require additional financial resources or improvement of performance attributes. The attributes that fall into Quadrant IV

(*possible overkill*- **Low Importance/High Performance**) and thus managerial suggestions are aimed at allocating funds to the attributes that have greater importance for the consumer.

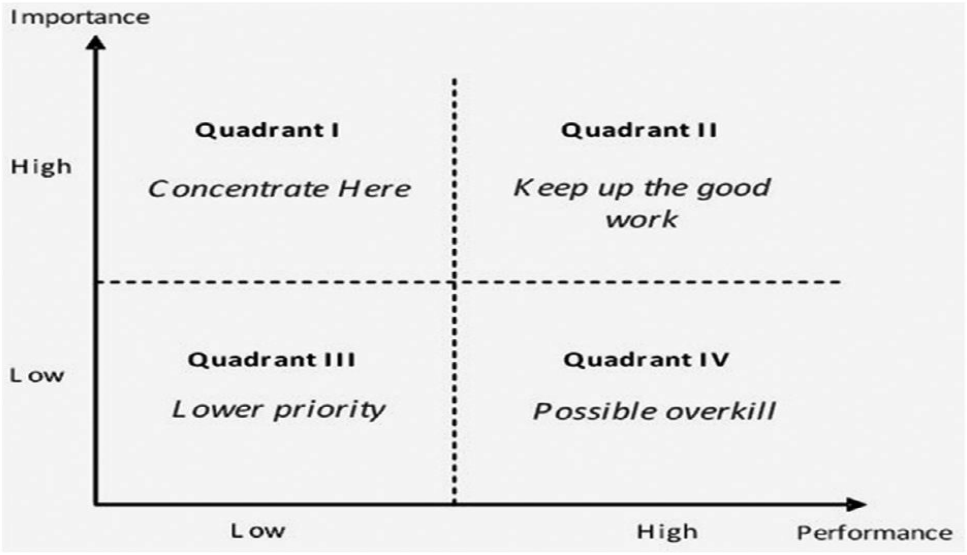


Fig.2: Importance-performance analysis (IPA) grid.

Respondents were selected conveniently from the Central Business District of Kampala City. Convenience sampling involves taking samples that are conveniently located around a selected area (Edgar& Manz, 2017). This sample method does not require a random selection of respondents based on any criteria, but instead researchers can subjectively select people at random who are happy to be approached and become part of the research. This technique is suitable where there is no access to the full target population for a representative sample. It might be challenging to replicate results of convenient samples.

However; Sekaran and Bougie (2010) suggest that when larger numbers of respondents are used, the findings can be representative. Therefore, this study ensured using sufficient samples with a survey that was evenly spread. Interviews were conducted to supplement on the information that was collected through the questionnaires to establish the various public parking stakeholders, their needs and preferences.

4.Results and discussion

4.1 Demographic Characteristics of Respondents

Table: 4 Demographic Characteristics of Respondent

	Characteristic	Frequency	Percentage
Sex	Male	125	38.1
	Female	203	61.9
	Total	**328**	**100**
Age Group	20-29	101	30.8
	30-39	95	29.0
	40-49	98	29.9
	50 -69	34	10.4
	Total	**328**	**100**
Highest Level of Education	Bachelor's Degree	144	43.9
	Certificate	54	16.5
	Diploma	59	17.9
	Post Graduate	71	21.7
	Total	**328**	**100.0**
Occupation	Civil servant	78	23.8
	Employer	34	10.4
	Private formal business	178	54.3
	Private informal Business	38	11.6
	Total	**328**	**100.0**

Source: Field data (2024)

The study results in Table 3 above indicate that of the respondents, a majority (61.9%) were female and this was due to their higher levels of willingness to participate and share the required information. Also, the study identified that majority of the private car drivers seeking parking in the study areas were female and this contributed to the higher levels of their participation while their male counterpart's representation was at 38.1%.

In terms of age, it was revealed that though there existed age differences, the majority of the respondents were between 20 and 29 years at 30.9%, closely followed by those between 40 and 49 years at 29.9%, those between 30 and 39 years at 29.0% and the least were between 50 and 69 years at 10.4%. This indicates that majority of the private car drivers in the CBD of Kampala are youths. In terms of education levels, majority of the respondents 43.9% were bachelors' degree holders while 21.7% were post graduates,17% were diploma holders while 16% were certificate holders. Atleats all the private car drivers in this study had attained a certain form of education. For the form of employment, Majority (54.3%) were private formal business owners and employees, 78% were civil servants, 38% were informal business owners and the least 34% were employers.

4.2 Movement and Travel Dynamics

Table .5 Shows the Movement and Travel Dynamics of respondents

	Travel Dynamics	Frequency	Percentage
Most Frequent Transport Means	Boda-Boda	55	16.8
	Bus	1	0.3
	Private vehicle	203	61.9
	Taxi	66	20.1
	Walking	3	0.9
	Total	**328**	**100.0**
Daily Number of Trips	0-2	281	85.7
	3-4	41	12.5
	5-6	4	1.2
	7-8	1	.3
	Over 9	1	.3
	Total	**328**	**100.0**
Number of Cars in the household	1	279	85.1
	2	46	14.0
	3	3	.9
	Total	**328**	**100.0**
Reasons for coming to CBD	Leisure	2	.6
	Shopping	54	16.5
	Work	272	82.9
	Total	**328**	**100.0**
Distance to CBD	0-10km	220	67.1
	11-20km	96	29.3
	21-30km	11	3.4
	Above 40	1	.3
	Total	**328**	**100.0**
Where does your vehicle get parked?	Off street open ground	79	24.1
	Off street underground	5	1.5
	On street open ground	217	66.2
	On street underground	27	8.2
	Total	**328**	**100.0**
How long do you normally walk after you have parked to your destination?	100m	259	79.0
	200m	55	16.8
	300m	12	3.6
	400m	2	.6
	Total	**328**	**100.0**
Distance after parking	1-5mins.	217	66.2
	11-15 mins	10	3.0
	16-20 mins	1	.3
	6-10 mins	100	30.5
	Total	**328**	**100.0**
How much do you normally spend on parking each time you come to Kampala?	10.000-12000ugx	2	.6
	2000-4000ugx	135	41.2
	5000-7000ugx	169	51.5
	8000-10.000ugx	21	6.4
	Above 12.000ugx	1	.3
	Total	**328**	**100.0**
How much time do you normally spend looking for a suitable parking space?	11- 15 mins	52	15.9
	16-20 mins	3	.9
	5-10 mins	273	83.2
	Total	**328**	**100.0**

Source: Field data (2024)

The study results in Table. 5 above indicate that 61.9% use private cars frequently as a means of travel, 20.1% use Taxi or Matatu, while 16.8% use Boda Bodas frequently, 3% walk and 0.3% use buses. This implies that majority of private car owners barely use other available mobility options in the city. The proportion of respondents significantly reduced with the daily number of trips to the Central Business District with 281 (85.7%) doing one or two trips while 41 (12.5%) doing 3 to 4 trips daily, while 1.2% make 5 to 6 trips ,0.3% make 7 to 8 trips and 0.3% of the respondents also make over 9 trips to the CBD daily. Also, the distribution of the respondents decreased with the increase in the number of cars owned with 279 (85.1%) owning a single car and 46 (14%) owning two cars.

Further, it is evident that a majority 272 (82.9%) came to the CBD for work while 54 (16.5%) drove to the city centre for shopping purposes. Further, with respect to the distance covered, it was revealed that 220 (67.1%) covered less than 11km to the city centre 96 (29.3%) covered between 11 and 20km to the city centre. Lastly, majority 217 (66.2%) usually utilized on-street (open ground) parking, followed by off-street (open ground) at 79 (24.1%). The current practice of non-restriction for the use of on street parking makes it preferable to parkers.

The study results also indicate that 70% of respondents walked for about 100m after parking their vehicles ,16.8% walked for a distance of 200m after parking their vehicles, while 3.6% walked for about 400m after parking and 0.6 walked for 400m and above after parking their vehicles. Parking designers usually call for maximum walking distance between 300 and 600 feet for retail customers but between 1,200 and 1,500 feet for employee parking. That also, distances increase even more when you look at special event standards: maximum walking distances accepted for theme parks, stadiums and arenas reach as high as 2,000 feet. According to Zhang et al. (2020), the acceptable maximum walking distance after parking is equal to 350m (Zhang et al. 2020). Based on the study results, majority of the drivers walk a reasonably acceptable distance after parking their cars and it takes them between 1-3minutes to arrive to their final destinations.

Also, Majority of the respondents (51.5%) spend between UGX. 5000 (USD.1.35) to 7000 (USD.1.88) on parking daily. Since majority of respondents visited the city centre for work and given the fact that they mainly utilise on street parking without time restrictions, the lesser fees charged makes the demand for on street parking more while priority users (short stay parkers like shoppers) may find it difficult to find suitable parking. This could have an effect specially to surrounding business as they are likely to lose out on potential clients who may not be able to find suitable parking. Also unrestricted on street parking could have a huge impact on traffic flow in the city which may result into accidents and more pollution.

Majority of the respondents spend between 1-5minutes looking for suitable parking in the city 273(83.2%), while 15.9% of the respondents spend between 11-15 minutes and only 0.9% of the respondents spend 16 to 20 minutes while looking for suitable parking. Drivers should be able to access information about available parking even before trip generation. If user information is not availed, drivers tend to spend so much time cruising around which escalates their transportation costs and as well leads to more pollution in cities and towns. It also damages the image of the city especially for visitors as it may give a bad experience

4.3 User Perceptions towards Public Parking Management in Kampala Central Business District

As seen in Table.4 Below, the average importance and performance ratings indicate a gap between importance and performance with a lower performance rating on majority of key important public parking attributes.

Table 6: Average Scores for Performance Perception and Importance

Feature	Importance rating (Ii)	Performance Rating (Pi)	W_i	P_iW_i
Availability of parking spaces	4.000000	1.432927	0.026682	0.038233
Accessibility to parking spaces	4.192073	3.625000	0.067499	0.244685

Walking Distance after parking	2.871951	3.603659	0.067102	0.241812
Affordability of parking	4.420732	3.902439	0.072665	0.283572
User Information	2.975610	4.103659	0.076412	0.313569
Customer Response	2.942073	3.201220	0.059608	0.190819
Enforcement	3.103659	2.509146	0.046722	0.117231
Management Behaviour	4.253049	3.402439	0.063355	0.215562
Safety and Security	4.390244	3.006098	0.055975	0.168266
Design and Aesthetics	3.039634	4.301829	0.080102	0.344586
Sanitation	3.780488	2.600610	0.048425	0.125934
Higher User Prioritization	3.164634	2.801829	0.052171	0.146175
Clear Rule and Regulations	3.490854	1.902439	0.035424	0.067393
Peak Demand Management	4.064024	2.201220	0.040988	0.090223
Use of IT	3.015244	1.335366	0.024865	0.033204
Total				**2.621264**
Average	**3.5802846**	**2.928658667**		

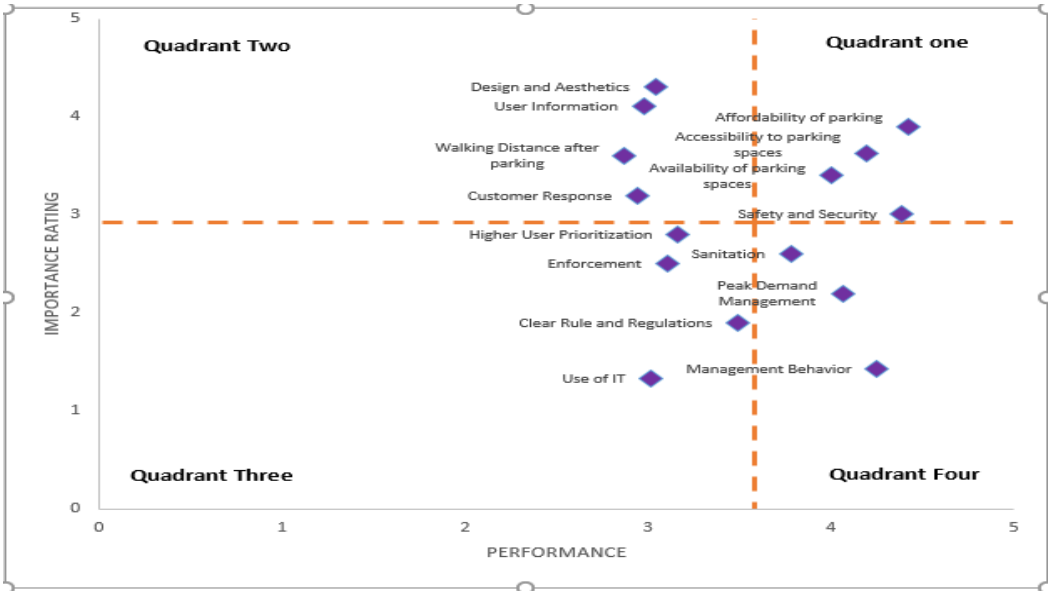
Source:(Author,2024)

Using the formula $W_i = \frac{I_i}{\sum_{i=1}^{n} I_i}$

$CSI = \sum_{i=1}^{n} (P_i W_i)$

The customer satisfaction index (CSI) is hence 2.62 which indicates that generally, the parkers are not satisfied with the parking management in Kampala Central Business District (KCBD). By converting this score into a percentage (2.62 out of 5), one can see that the existing parking service in the selected areas of KCBD is 52.4% successful in satisfying its users.

Figure 2: An Importance-Performance Quadrant Analysis framework for public parking management in Kampala Central Business District



Source: (Author ,2024)

Fig.3: KCBD Parkers Importance Performance Analysis (IPA) Grid

From Figure .3 above, the intersection in the IPA is determined using the mean level of importance at 3.6 and the mean level of performance at 2.9. In Quadrant I, parkers reveal the attributes (Design and Aesthetics, User Information, Walking Distance after parking and customer response) as very important, but the

performance is low and therefore pose the greatest weakness of parking management and require urgent managerial attention in order to improve quality and performance.

Attributes in regards to Affordability of parking, Availability of parking spaces, Accessibility to parking spaces and Safety and Security fall under Quadrant II and parkers in Kampala Central Business District (KCBD) gave them the greatest importance and they feel satisfied. Such attributes must be preserved in the future not to risk falling back to Quadrant I. The attributes that are considered as low priority in Quadrant III include Higher user prioritization, Enforcement, Clear rules and regulations and the use of Information Technology (IT). These attributes are not regarded as very important by the parkers. However, their performance is fair. Management could therefore transfer resources to improve and maintain the most important attributes. The attributes (Sanitation, Peak Demand Management and Management Behavior) in Quadrant IV are considered unimportant with good performance. Parking management Authorities in Kampala City should strategically give attention to those attributes that parkers give the greatest importance yet their performance is not satisfying especially in Quadrant I.

4.3.1 Testing for differences in response to importance by demographic characteristics

A number of studies have shown that demographic variables affect the way individuals respond to the survey and run using chi square statistics ($\chi 2$), the table below presents the p-values related with the responses regarding the differences in the ratings of importance per attribute

Table. 7 T -Test for respondent's characteristics and ratings for importance

Attribute	Gender	Age	Education level	Occupation
Availability of parking spaces	.416	.575	.860	.565
Accessibility to parking spaces	.765	.379	.540	.819
Walking Distance after parking	.244	.451	.692	.683
Affordability of parking	.192	**.011**	.349	.478
User Information	.876	.477	.164	.630
Customer Response	.909	.328	.486	.983
Enforcement	.879	.484	.210	.836
Management Behavior	.209	.178	.554	.617
Safety and Security	.869	.191	.730	.252
Design and Aesthetics	.749	.342	.508	.265
Sanitation	.802	.669	.260	.563
Higher User Prioritization	.581	.784	.118	.570
Clear Rule and Regulations	.672	.628	.973	.823
Peak Demand Management	.214	.207	.467	.795
Use of IT	.447	.730	**.000**	.981

Source: (Author ,2024)

As seen in Table 7. above, the study findings indicate that for all attributes, gender and occupation did not explain significant differences in the ratings of attribute importance ($p>0.05$). In addition, there were no significant differences in responses on the ratings about the importance of all the parking attributes by age ($p>0.05$) except for 'affordability of parking' ($p<0.05$) where the older individuals believed that the parking services were affordable. Lastly, there were no significant differences in responses on the ratings about the importance of all the parking attributes ($p>0.05$) except for 'Use of ICT' ($p<0.05$) where the more educated individuals believed that the use of ICT for parking purposes is important.

4.3.2 Testing for differences in response to performance by demographic characteristics

A number of studies have shown that demographic variables affect the way individuals respond to the survey and run using chi square statistics ($\chi 2$), the table below presents the p-values related with the responses regarding the differences in the ratings of attribute performance

Table. 8. T-test for respondent's characteristics and ratings for performance

Attribute	Gender	Age	Education level	Occupation
Availability of parking spaces	.911	.741	.000	.430
Accessibility to parking spaces	.108	.416	.020	.498
Walking Distance after parking	.140	.418	.002	.765
Affordability of parking	.573	.427	.000	.397
User Information	.286	.195	.000	.529
Customer Response	.448	.368	.000	.124
Enforcement	.122	.246	**.284**	.534
Management Behavior	.940	.614	.009	.430
Safety and Security	.843	.579	.000	.207
Design and Aesthetics	.533	.869	**.633**	.826
Sanitation	.216	.216	**.393**	.725
Higher User Prioritization	.455	.074	.005	.327
Clear Rule and Regulations	.861	.453	.000	.347
Peak Demand Management	.733	.644	.000	314
Use of IT	.987	.785	**.418**	.326

Source:(Author,2024)

Table 8 above indicates that for all attributes, despite being positive, gender, age and occupation did not explain significant differences in ratings on the ratings of attribute performance ($p>0.05$). Secondly, there existed significant positive differences in all the attributes ($p<0.05$) except for 'enforcement', 'Design and Aesthetics', 'Sanitation', and 'Use of IT' where $p>0.05$.

5.Parking needs and Preferences for various stakeholders in Kampala City.

As shown in Table 9 below, a comprehensive analysis of the various public parking stakeholders has been done based on key informant interviews and literature where their respective strengths, weaknesses, needs and preferences are put together in order to understand their underlying dynamics. The insights of how they interact and collaborate has shown the stakeholder's engagement may be scaled or develop strategies that leverage the strengths of each stakeholder while addressing any potential issues and finally achievingg a comprehensive public parking system that is efficient and effective.

Table 6. Public Parking Stakeholders in Kampala City, Challenges, importance and influence levels and as well their parking needs and preferences.

Stakeholder	Problems	Prospects	Importance level	Influence Level	Parking Needs and Preferences
Ministry of Works and Transport (MoWT)	• Low power execution • Focus on On- street Parking only	✓ Setting Policies and guidelines ✓ Managing and Coordination of various stakeholders ✓ Monitoring and evaluation of performanc	High	High	✓ Maximum Revenue Collection ✓ Adherence to Policies ✓ Sufficient Parking Provision

		e			
Kampala Capital City Authority	• Low Power Execution • Focus on only on street parking • Focus on Financial gains • Lack of maintenance • Poor parking planning	✓ Policy Implementation ✓ Formulating By Laws ✓ Stakeholder Engagement and collaboration ✓ Performance Monitoring and Evaluation	High	High	✓ Maximum Revenue ✓ Sufficient parking provision ✓ Adherence to Policies
Multiplex Limited	• Focus on Revenue maximization • No user information • Manual Systems	✓ Incorporating Technology in the management ✓ Expansion of management to other areas ✓ Customer feedback	High	High	✓ Maximum Revenue Collection ✓ More parking spaces
Private Parking Suppliers	• Discrimination in clients • Higher charges • No user information • Manual systems	✓ More investment ✓ Incorporating Technology in operations ✓ Performance Monitoring and Evaluation	High	Low	✓ Maximum Revenue ✓ More investment
Public Transport Operators (Matatu, Taxi, Special Hire, Buses, Boda-bodas, Commercial Bicycle riders)	• No conformation to parking rules and regulations	✓ Adherence to rules and regulations	High	Low	✓ Availability of Loading and offloading areas ✓ Affordable parking ✓ Safe Parking
Business Community	• Illegal Parking • Conversion of parking to vending or shops	✓ Adherence to rules and regulations	High	Low	✓ Access to convenient parking ✓ Affordable parking ✓ Safe parking

Commuters/Passengers/Pedestrians	• Lack of adherence to parking rules	✓ Adherence to rules	Low	Low	✓ Safe drop off points ✓ Clear Walkways without parked vehicles
Private Car Drivers	• No conformation to parking rules and regulations	✓ Adherence to rules and regulations	High	Low	✓ Availability of Parking ✓ Accessible parking ✓ User information ✓ Affordable parking ✓ Safe parking
Logistical Vehicles	• Defaulting parking fares • Illegal Parking	✓ Adherence to rules and regulations	High	Low	✓ Accessible parking ✓ Affordable Parking ✓ Safe Parking
Traffic Police	• Corruption	✓ Following the Law	High	High	✓ Adherence to rules by drivers ✓ Safe parking
Local Community/Residents	• No conformation to parking rules and regulations	✓ Adherence to rules and regulations	High	Low	✓ Safe and affordable parking ✓ Clear walkways without parked vehicles
Shoppers /Tourists	• No conformation to parking rules and regulations •	✓ Adherence to rules	High	Low	✓ Accessible and safe parking ✓ Affordable parking
Researchers and Academic Institutions	• Lack of knowledge dissemination	✓ Innovation in parking ✓ Consultancy	High	Low	✓ Parking management knowledge transfer and dissemination

Source: (Author ,2024)

In the context of public parking planning and management in Kampala, the responsibility lies greatly with the Ministry of Works and Transport (MoWT) and Kampala Capital City Authority (KCCA). However, the active involvement of various stakeholders including communities and the private sector is critical.

The efforts put forth by the private sector in the provision of public parking serves a commendable step in achieving an efficient public parking system in the city. The local communities also play a a vital role in promoting awareness, encouraging participation, and ensureing use of available parking facilities while the private sectors contribute their expertise and resources to provide and manage off street parking. The active involvement of local government, communities and the private sector and other stakeholders can form a collaborative approach to addressing parking issues in the city through fostering a sense of ownership and responsibility among all stakeholders.

This multistakeholder approach can be taken as an essential step for the success and sustainability of the parking sector in Kampala City. From the context of implementing various parking policies, the successful execution can rely on effectively engaging and mobilizing the various stakeholders in the city. Thus, it's important to recognize and appreciate the importance of stakeholder engagement in public parking planning and management.

6.Conclusion

Based on this study, it can be concluded that the parking supply and demand management in Kampala is insufficient. While, understanding user opinion and attitudes towards service provision is key for proper monitoring and evaluation. It also gives a ground for identification of priority areas that could need urgent action or improvement. Also, stakeholder engagement and collaboration are key in developing efficient public parking systems. Mapping and understanding the roles, responsibilities and challenges of the various stakeholders can help in developing strategies intended to fill the existing gaps. The case of Kampala City provides valuable insights of the local context which can contribute to the development of a customer focused parking sector.

7.Recommendation

Enforcement, if parking regulations are to be effective, there should be proper enforcement. This means employing enough and qualified staff to manage parking facilities. The fine should be proportional to the offence or otherwise the parkers will risk the very low charges. Some countries have police has been eliminated in enforcing parking rules and regulations and this has substantially boosted local revenues from fines collected. Involvement of various stakeholders in parking planning and management, various stakeholders could significantly contribute to the establishment of a parking system that is efficient. This is important because it facilitates an understanding of a shared vision and how the parking policies and proposals could affect them. This mimmizes risk and resistance.it also helps to proactively consider the needs and desires of the various affected persons either directly or indirectly.

Regular monitoring and evaluation of parking performance, sufficient parking sectors should have a vision, goals and objectives. There should be determination of how often it is necessary to monitor and evaluate progress in achieving each objective. For example, should it be quarterly, at the end of each year or otherwise. Development of performance indicators to measure progress in achieving each objective is critical. The type of information needed to measure performance and how the information shall be collected and analyzed is important. There should also be Identification of suitable ways to present the findings to different audiences including within the local community. Use of Technology. The enhances the efficiency and security of parking management by automating access control and payment verification. Technology can also help in reducing urban congestion, commute times, gas use, and pollution by availing instant information to users and managers thus making parking more convenient. The use of technology can therefore be a huge time saver for both parking owners and drivers.

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