

PARATRANSIT USE AMONG LOW INCOME INDUSTRIAL WORKERS IN NAIROBI

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ABSTRACT

Matatu mode of transport is one of the main means of paratransit in Kenya that has grown in numbers over the past years. Despite the growth, a significant proportion of the low-income population rely on non-motorised transport for their trips. This paper interrogates the extent to which matatu mode of transport is catering to the mobility demands of the low income industrial workers and the factors that influence matatu use among them.

The paper is based on an exploratory survey and case studies of industrial workers in Sameer Park Export Processing Zone (EPZ). The findings demonstrate that most industrial workers do not regularly use matatus for their work trips. Matatu use is determined by the fares charged, distance from residential area to the work place and the nature of employment. Industrial workers who cannot afford to use matatus regularly for their work trips are forced to switch between non-motorised transport and matatus. Residing in informal settlements close to work destinations becomes a coping strategy against the high paratransit fares. The study recommends that newly formed matatu industry institutions i.e. Transport Companies and SACCOs should play a significant role in controlling arbitrary fare increase by operators.

1. INTRODUCTION

Travel is an integral component of everyday life. It allows people to meet their needs and provides access to other persons, locations and services. Daily trips include travel to places of work, shops, entertainment areas, schools, hospitals etc. Modal choices range from motorised means of transport to non motorised means of transport. Developed and developing countries differ in terms of using these modes of transport for their daily trips.

In the urban setting of most developing countries, public transport is run by paratransit operators (Cervero and Golub, 2007). According to Illes (2005), paratransit operations are characterised by flexible fares, unscheduled operations and semi fixed routes. Paratransit comprises formally and informally operated minibuses, vans, taxis, station wagons, three wheelers, motor cycles and in some cases informally operated buses (Illes, 2005; Cervero and Golub, 2007). These operations play a key role in serving the mobility needs of both the low income and the middle income populace in developing countries. The extent to

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which this means of public transport is affordable is key in determining whether the basic mobility needs of the poor are met. In developing countries such as Kenya, paratransit constitutes the main means of public transport. Matatu² is the dominant means of public transport in Kenya (Graeff, 2009; Aligula et al. 2005).

Matatu has grown over the years since independence. It began as an illegal transport entity. In 1973 a presidential decree allowed matatus to carry fare paying passengers without obtaining a Transport Licensing Board (TLB) licence. Since then matatu mode of public transport has grown over the years with the goal of catering to the mobility demands of millions of Kenyans (Chitere, 2006; Khayesi, 2002; Graeff, 2009). The travel demands of both the low income and the middle income are met through this means of transport. According to the draft Sessional Paper on Integrated National Transport Policy (2010), 60% of the residents in Nairobi meet their daily travel needs by walking while 35% travel by public transport (mostly matatus and buses) and only 5% use private cars. Other scholars have shown that approximately 49 % of the commuters in Nairobi make their daily trips to destinations by the use of non-motorised transport, i.e. walking and use of bicycles (Salon and Gulyani, 2008; Aligula et al, 2005). Putting aside the difference in statistics of NMT users, we see that a significant proportion of Nairobi residents rely on non-motorised transport for their trips despite the growth in matatu numbers over the years.

Public transport fares in many developed countries are subject to government control (Iles, 2005). The aim is to limit fares to a level which is universally affordable. This is quite the opposite in some developing countries that rely on paratransit. The unregulated nature of most paratransit operations in developing countries can result in high levels of fares (Cervero and Golub, 2007). Matatu operators are part of the private sector in Kenya, over the years they have increased fares without much consideration of the passengers. There have been attempts by the Government of Kenya to reform the matatu industry in order to make it conform to the national policy goal of putting in place an efficient, affordable and safe transport service (Chitere, 2006). However these policy reform efforts have made no reference to public transport fare regulation. For instance Traffic Act CAP 403 has on the one hand focused mainly on refund of fares, payment and non-payment of fares (Section 63, 65, 66 and 101). The Sessional Paper on transport on the other hand has only made reference to fare tariffs for air travel and railway.

According to Salon and Gulyani (2008), matatu mode of transport is perceived to be an expensive mode of transport for the many urban poor in Nairobi. This is in terms of the level of fares paid and fare variations and this has implications on affordability. Based on World Bank (2002), inability to pay for public transport use limits travel choices. Baker et al, (2005) argues that some of these travel choices have been seen to affect the welfare of the commuters. This is in terms of increased fatigue due to use of NMT over long distances; residing in informal settlements to enable continued use of NMT thus cutting travel costs; increased insecurity, i.e. at night, and insecurity brought about by other road users (Baker et al 2005; Gomide et al 2004; Howe and Bryceson 2000; Mitullah and Makajuma 2009; Shuiying et al 2003). Scholars of travel behaviour and modal choice emphasise that commuters make decisions on whether or not to use a particular means of transport based on the considerations of the trip situation, costs and their socio-economic

² Traffic Act 403 defines a matatu as a public service vehicle having a seating capacity of not more than twenty-five passengers exclusive of the driver, but does not include a motor car. According to Chitere (2009), the word matatu is used to refer to smaller and medium-sized Public Service Vehicles (PSVs)—Nissans, Mini-buses and built-up Peugeot pick-ups with seating capacities ranging from 14 to 41 passengers; however the term matatu itself is Kikuyu in origin referring to the three ten cent coin (mang'otore matatu) that was the standard fare when these vehicles began operating in the 1950s (Khayesi, 1999).

characteristics (Jou et al, 2010). This paper seeks to analyse the extent to which matatu mode of transport is catering to the mobility demands of the low income and the factors that influence matatu use among low income industrial workers.

2. METHODOLOGY

Quantitative and qualitative methods of data collection and analysis were used during this study. The unit of analysis was the individual industrial workers in Sameer Park EPZ. Respondents were chosen from Sameer Park because it is strategically located close to low income residential areas such as Mukuru Kwa Njenga, Mukuru Kayaba, Mukuru Kwa Reuben, and Pipeline. It was also chosen because of the array of modes that can be used to access the industrial zone. Sameer Park consists of various EPZ companies that employ both casual and permanent workers. There are differences in income between the two groups. Many industrial workers in the Park are casuals who earn a wage of approximately 250 Kshs a day. There are however a few permanent contract industrial workers who earn slightly more than 10,000 Kshs in a month (EPZA, 2008). According to the Kenya National Bureau of Statistics employees earning below 23,671 Kshs can be classified as low-income. Consequently a majority of workers in Sameer Park can be classified as low-income earners.

The research design consisted of an exploratory field survey of 60 respondents who were selected using systematic random sampling as well as case studies. The survey of 60 respondents was done so as to aid in the identification of four case study respondents. Selection of the case study respondents was based on the modes used by the industrial workers. Key informant interviews of matatu operators along Enterprise Road and Mombasa Road were also carried out to find out the modal choices of the industrial workers. Statistical procedures used ranged from simple descriptive analysis to bivariate analysis methods such as chi-square tests. Qualitative data collected was thematically analysed based on the emerging themes in the literature.

3. FINDINGS

3.1 Matatu use among low income industrial workers

Survey respondents were asked about the modes they use for their work trips. Multiple responses were given to this question, thus a total of 87 responses to this question despite the sample size of 60 respondents (see table 3.1). There are industrial workers who switch between various modes of transport to get to work. Almost half of the respondents (49.4%) use matatus for their work trips. This ranges from those who use matatus for daily trips and those who use matatus once in a while. Another 41.4 % of the respondents walk to work. This category consists of those who walk daily and those who walk less frequently. There are also a few respondents who use buses for their work trips (4.6%). These are mainly respondents who live at a distant from the Industrial Park. Cyclists are few with only 3.4% using bicycles for the work trips. Some industrial workers (1.1%) sometimes have to work night shifts or early morning shift; they therefore use the company vehicle to get either to or from work.

On the habitual modal choice; about a quarter (26.7%) always use a matatu for their work trips while other industrial workers always walk to work (26.7%). There are industrial workers who switch modes i.e. they mostly walk and rarely use matatu (16.7%); those that mostly use matatus and rarely walk to work (8.3%); industrial workers that only cycle

(5%); those that use matatus mostly and buses rarely (5%); those that do not have a consistent pattern of which mode is mostly used (3.3%).

Table 3.1: Modes Used for Work Trips

Modes Used for Work Trips

Modes	Responses		Percent of Cases
	N	Percent	
Matatu	43	49.4%	71.7%
Bus	4	4.6%	6.7%
Walking	36	41.4%	60.0%
Cycling	3	3.4%	5.0%
Other	1	1.1%	1.7%
Total	87	100.0%	n.a.

Source: Field Research, 2010

Respondents who stated that they always used matatu were asked why they always used this means of transport. Respondents gave multiple responses to this question. About a third (37.5%) stated that matatu is the most regular means of transport. Others said that it is impossible to walk from their residential locations to the Industrial Park because it is too far (34.4%). Only 9.4 % responded that they could afford to use matatus every day. These were mainly workers from Kencall BPO which has many permanent employees who have higher incomes compared to casual workers in other companies. A few respondents stated that they use matatus in order to save on time (9.4%). One stated that he has to go to college after work thus he has to use a matatu (3.1%), while others stated that they use matatus for security reasons (6.2%). Respondents expressed that the routes that they used were not very secure early in the morning. Thus they had to use matatus for their work trips. More than a third of the respondents (40%) stated that they use matatu a few times in a week and that they do so when they are late. About a third (30%) stated that they only use matatu when they have been paid. Similar to Howe and Bryceson (2000), the findings demonstrate that matatus are mostly used during end month period when the workers have been paid. Matatu drivers who were key informants in the study stated that there is lower ridership in the middle of the month compared to the end of the month. This is noted by the difference in the time they have to wait for a matatu to load at peak hours during the middle of the month and at the end of the month. One case study respondent revealed that he uses matatu in the morning because he did not want to be late and walks in the evening as he is not in a hurry.

Some respondents expressed that they use matatus only during rainy season (20%). A few respondents (10%) stated that when they are tired of walking then they use matatus. For those who never use matatu for their work trips, more than a half (52%), stated that they lived close by. Like Mitullah and Makajuma (2009) study which stated that NMT (Non-Motorised Transport) users rarely used matatus because they were expensive, 40% of the industrial workers in this study also stated that they do not use matatus because matatus are expensive and they lack money. One respondent stated that he has a bicycle thus he does not use matatu. Another stated that there is no matatu reaching her residential location thus she has no option but to walk (8%).

Following these responses, sampled respondents were further categorised into those that only used motorised means (Matatu), those that only used NMT and those who switched between motorised and non-motorised means of transport. It was found that 36.7% always used motorised means (matatu), 30% of the respondents always used non-motorised means of transport and 33.3% switched between motorised and non motorised means of transport to get to work.

3.2 Factors influencing matatu use among industrial workers

3.2.1 *Effects of Paratransit Fare Levels and Variations on Modal Choice*

The study results show that the level of fares charged affects the industrial workers decision to use matatus for work trips. More than half of the survey respondents (58.3%) state that their decision to use a matatu is affected by the level of matatu fares. These respondents included those who only use non-motorised means of transport to get to work and those who interchange between motorised and non-motorised means of transport. The rest of the respondents state that their decision to use a matatu is not affected by the paratransit fare levels (41.7%). Of those who state that the levels of matatu fares affect their decision to use a matatu, 60% have casual contracts of employment. More than three quarters (76%) of the respondents who are not affected by fare levels have permanent contracts of employment. A large majority (87.5%) of those who state that their decision to use a matatu is affected by matatu fare levels live within 4 kilometres from Sameer Park whereas the 68% of respondents who are not affected lived more than 4 kilometres away from the Industrial Park.

More than a half of the respondents (58.3%) state that the fare variations affect their decision to use a matatu. Of this group 34.3% are regular NMT users; 14.3% are motorised transport users whereas 51.4% switch between NMT and motorised transport for their work trips. The rest of the respondents state that matatu fare variations do not affect their decision to use a matatu (41.7%). About a third (34.3%) of these respondents are NMT users, more than two-third (68%) of the respondents are motorised users and only 8% switch between NMT and motorised transport for their work trips (see Table 3.2). According to the key informants, apart from the usual difference between peak and off peak fares variations occur when there is traffic jam, during rainy season, during police crack downs and matatu strikes. This is because the demand remains high while the supply is affected by these factors.

Table 3.2: Influence of Matatu Fare Variations on Decision to Use a Matatu by Modes Used for Work Trips

		Modes Used			
	Do changes in matatu fares affect your decision to use	NMT	Motorised	NMT and Motorised	Total
Yes	Count	12	5	18	35
	% within	34.3%	14.3%	51.4%	100.0%
No	Count	6	17	2	25
	% within	24.0%	68.0%	8.0%	100.0%
Total	Count	18	22	20	60
	% within	30.0%	36.7%	33.3%	100.0%

Source: Field Research 2010

Nearly half of the respondents (48.3%) of those who are affected by fare variations state that they opt to walk. However, 19% state that they have no option but to use a matatu. Some motorised transport users explained that they have to wait for a cheaper matatu when there are matatu fare hikes (12.1%). A case respondent revealed that cheaper matatus are mostly those that can be classified as unroadworthy. There are also industrial workers who opted to cycle (8.6%) and others who are not affected by fare changes (8.6%). A few opt to use a bus because bus fares rarely fluctuate to unaffordable levels (3.4%).

The standard paratransit fare level was determined by the fares charged at peak time by matatus plying Enterprise and Mombasa Road as well as those plying various residential areas. Low fare levels (below 30 Kenyan shillings) indicated that one matatu could be used to get to work or one relied on NMT thus no costs. High fare level (above 90 Kshs) indicated that two matatus had to be used to get to work. Fare levels was analysed against the modal choices of the respondents. It was found that all of those who used NMT as the only means of transport were categorised as using less than 30 Kshs in a day, in actual terms they did not spend any money on transport. More than two-thirds (63.6%) of those who use motorised means spend more than 90 Kshs in a day for their work trips. 70% of those who switch between motorised and NMT use between 30-60 Kshs per day for their work trips. Chi square tests revealed that there was a relationship between the paratransit fare levels and modal choices. According to a case respondent who interchanges between matatu mode and NMT; "Fares are very important on my choice not to use a matatu every day. This is because matatu fares are expensive and my income is not much. Perhaps if the fares were cheaper I would use matatus every day." This agrees with Jou et al (2010) conceptualization that trip costs (in this case fares) are one of the key measurable factors that influence modal choice.

3.2.2 Distance from residential area to the work place

On the residential area of the respondents it was found that about two-third (66.7%) of the respondents reside approximately 1-3 kilometres from the Industrial Park. Of these 52% of the workers reside in informal settlements that are close to the industrial park. Gomide et al (2004) emphasises that people with low income tend to reduce their transport costs by residing in informal settlements that are close to their work destinations. Only 5% of the respondents were found to reside more than 9 kilometres away from the industrial site. These were from residential areas as far as Ngong and Kahawa Sukari.

Distance categories were collapsed to respondents that resided within a radius of 4 Kilometres from the industrial park and those that resided more than 4 Kilometres from the industrial park. Of those who always use NMT for their work trips, 100% reside within 4 kilometres from their place of work. Of those who use motorised means of transport for their work trips 81.8% live more than 4 kilometres away from Sameer Industrial Park. Concurring with Baker et al (2005) that the distance covered to the work destination influences modal choice. Thus, industrial workers who reside more than 4 Kilometres from Sameer Park EPZ are more prone to use matatus for their work trips than those who reside less than 4 Kilometres from Sameer park.

3.2.3 *The nature of employment*

The nature of employment in terms of the type of contract was investigated as a proxy for income. This was because during the pilot survey it was seen that respondents tended to be sensitive about stating their income. Of those who were sampled 55% have permanent contracts of employment whereas 45% of the sampled respondents have casual contracts of employment. According to one case the income of the worker determines his ability to afford to use matatus for work trips. One case study respondent stated that it is mostly workers from Kencall BPO that use matatus more frequently; this is because they have better incomes than other workers in the Industrial Park.

The survey showed that 72.2 % of those who used NMT for their work trips have casual contracts where as 81.8% of those that used motorised means for their work trips have permanent contracts. Chi square test revealed that there is a relationship between nature of employment and modes used for work trips. Therefore employees with casual contracts are more prone to use NMT than those with permanent contracts. And that those with permanent contracts are more prone to use motorised means of transport than those with casual contracts. (Chi-Square= 11.984 $p < 0.05$ $df = 2$).

Case studies that were carried out demonstrated that there were also other characteristics that were important in investigating the modal choices of the industrial workers. Case study respondents stated that the marital status and family size were important characteristics to investigate. This was because many of the casual workers who were married and had families tended to walk more than those who were single with no families to take care of.

3.3. Coping Strategies and their effects

Three main coping strategies emerge from the data. These are: using NMT as the sole mode for work trips, using matatus irregularly and using matatus that are unroadworthy but charge cheaper fares. This section outlines these coping strategies of the industrial workers and also examines the effects of their travel choices

3.3.1 *NMT as the sole mode used for work trips*

Respondents were asked whether they faced any challenges using other means of transport apart from matatu. Almost three-quarters (70%) of the respondents stated that they did in fact face many challenges. About 41.4% of the respondent complained of improper NMT infrastructure. They stated that NMT routes are impassable during rainy season and very dusty at other times. The workers arrive very dirty to work during both rainy season and dry season. Comparable to the residents in Wuhan, China (Shuiying et al. 2003), NMT users in Sameer Industrial Park also complained of insecurity as one of the major challenges that they faced while using NMT (24.3%). A case study respondent

stated that some routes were dangerous very early in the morning. The respondent stated there have been a lot of muggings along some routes and that women were mostly targeted.

Some respondents complained that daily use of NMT made them very exhausted and this affects their performance at work (15.7%). Thus use of NMT as the sole mode of travel would be pleasant when one resides close to ones work destination. Most of the residents who use NMT and live close to Sameer Industrial Park reside in informal settlements. As one opts to cut their transport and housing costs they are also forced to face other challenges mostly unique to informal settlements such as insecurity, lack of amenities and the constant threat of eviction.

Opting to walk has other challenges such as encroachment on NMT paths by motorists and other road users (Mitullah and Makajuma, 2009). Industrial workers who regularly walk have to put up with matatu operators and other motorists who drive on the NMT footpaths during traffic jam. This reduces the safety and comfort of using NMT as there is the constant threat of being knocked and injured by the vehicles.

3.3.2 The 'irregular' matatu user

The irregular matatu users range from those who use matatus when they have extra money, to those who use it when they are late for work, to those who switch from NMT to matatu during rainy season. Some respondents are forced to be irregular matatu users because of various challenges they face. Some industrial workers complain that fare hikes are the major reason why they do not use matatus regularly. Matatu operators are known to arbitrarily raise fares without considering the passengers budget. This forces some respondents to use NMT when they cannot afford to use matatus. As stated previously irregularity is seen at the end of the month when the industrial workers have some income to use on public transport. These workers revert back to walking in the middle of the month when they do not have money. According to one case respondent, the low income of the industrial workers is what dictates their modal choice. Apart from income, irregular use of matatu is also brought about by traffic jam, where some respondents opt to walk rather than getting late to work due to traffic jam. On the flip side there are those who opt to take a matatu when they are late or do not wish to arrive late to work. The typical modal choice pattern would be that of using a matatu in the morning so as to arrive to work on time and walking back home in the evening to save on fare. To others the rainy season is a deterrent to using NMT. Since they do not want to get to work dirty they opt to use a matatu.

3.3.3 The 'cheaper' motorised option

Not all low income industrial workers reside in informal settlements in order to reduce travel costs. There are those who reside at a distance from their work place and still use matatus or other motorised means. They however opt to use PSV that charge cheaper fares. These vehicles are mostly third hand or fourth hand vehicles that are not well maintained. Due to the poor mechanical and physical shape the vehicles cannot compete with other well maintained vehicles on the routes. Some of these vehicles have therefore adopted a strategy of attracting customers by charging cheaper fares.



Photo 3.1: Picture of 'old matatu'

Source: <http://webpub.allegheeny.edu>

The advantage to the industrial workers is that at least there are vehicles that charge cheaper fares thus reducing the strain on their pockets. The disadvantage is that such vehicles often breakdown along the way after the passengers have paid the fare. The passengers are then forced to walk the rest of the way or look for another vehicle. In addition due to the poor condition of the vehicle, the carbon emissions of the vehicles are significantly higher than those of other PSVs. Users remain oblivious to this fact.

4. CONCLUSIONS

The study concludes that the ability of matatu transport to cater for the mobility demands of the low income workers in Sameer Park is mainly conditioned by the fares charged. This is seen by the coping strategies that they take up against these fares. Due to their low wages from casual employment, many of the industrial workers who are affected by fare levels opt not to use matatu but other means of transport. For those who cannot afford matatu fares, NMT becomes the main mode of travel. Other industrial workers are able to cope with these fares by using matatus irregularly. There is therefore a mix of matatu use and NMT for work trips and those who opt to use other cheaper motorised means. Increased use of these 'cheaper' motorised options has dire consequences on the environment. The study further concludes that residing close to work places as a coping strategy by industrial workers encourages and sustains the growth of informal settlements in Nairobi resulting in increased social exclusion.

5. RECOMMENDATIONS

Given that matatu transport is private sector driven and continues to be the main means of public transport in the country, efforts by Government to subsidise matatu fares might not be feasible at this time. Perhaps newly formed matatu industry institution i.e. Transport Companies and SACCOs can play a significant role in controlling arbitrary fare increase by crew. At the institutional level, trade unions for workers should also focus on the travelling conditions of industrial workers. Trade Unions are known to mainly lobby for better working conditions of workers but there is also need to lobby for better transportation options for their workers. This could be for instance by allocating a monthly transport allowance to staff or providing company transport. Thus increasing the modal choices available to industrial workers; finally, an improvement on NMT infrastructure would have a positive impact on the work trip experiences of the industrial workers. All these would result in better quality of travel and well being for not only industrial workers but also other low income employees in other sectors.

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