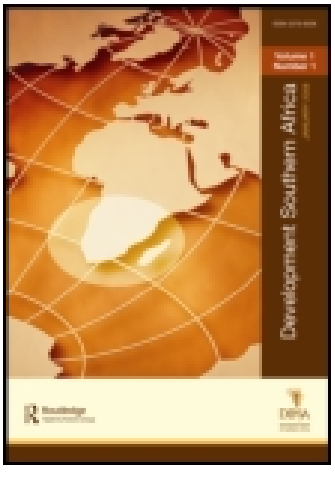

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Delivery of urban transport in developing countries: the case for the motorcycle taxi service (*boda-boda*) operators of Kampala

William S Kisaalita & Josephat Sentongo-Kibalama[1]

In East Africa, the development of the bicycle and motorcycle taxi *(boda-boda)* service can be seen as a spontaneous entrepreneurial response to the increased availability of bicycles and motorcycles. Concomitant with the increasing number of *boda-boda* operators is the escalating passenger safety concern. A needs assessment survey instrument was administered to randomly selected motorcycle *boda-boda* operators from a Kampala suburb (Kalerwe and Bwayise locations). Besides safety, the questionnaire addressed issues related to preferred equipment type, ownership, operator training, profitability and operators' attitudes toward organised association. The results of the study support the notion that it is difficult for *boda-boda* operators to make substantial improvements in their incomes. The results also illustrate the importance of this emerging cottage industry to the local economy. However, more needs to be done to protect the public and to enhance the *boda-boda* operators' professionalism.

1. INTRODUCTION

Many urban and peri-urban centres in developing countries are experiencing worsening traffic congestion and environmental degradation due to rapid urbanisation and unbalanced transport systems (Zhang & Fujiwara, 2004). With dwindling resources, most developing countries' governments are facing the dilemma of how to promote affordable public transport (Khisty, 1993), giving rise to the trend of turning to the private sector for the provision of public transport services (Sohail et al., 2004). In such cases, a large number of individual operators, whose main aim is to maximise profits, enter the market. Privatisation increases efficiency, but may also lead to undisciplined behaviour that can adversely affect passenger safety (Swaddiwudhipong et al., 1998).

A case in point is the development of the bicycle and motorcycle taxi *(boda-boda)* service in Uganda and Kenya that has been attributed to a spontaneous entrepreneurial response to free market conditions and the availability, as a result, of greater numbers of bicycles and motorcycles (Iga, 1999). The unprecedented growth of *boda-boda* services in Kampala and other Ugandan cities may also be partly attributed to the deregulation of the energy

[1]While this article was in review, our co-author Josephat Sentongo-Kibalama passed away. We remember him and his many contributions over the years with admiration, gratitude and a strong sense of loss. Respectively, Professor, Biological and Agricultural Engineering Department, Faculty of Engineering and College of Agricultural and Environmental Sciences, University of Georgia, Driftmier Engineering Center, Athens, Georgia, US; and formerly Senior Lecturer and Head, Department of Agricultural Engineering, and Associate Dean, Faculty of Agriculture, Makerere University, Kampala, Uganda. The authors thank Melissa Bishop and Dianne Stroman for their technical support. Funding from the University of Georgia International Fellowship Program is acknowledged.

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industry. Uganda has the highest fossil fuel cost in East Africa (approximately US$1.30 per litre, December 2005), which makes it more economical to use *boda-boda* where the service is available. The word *boda* comes from the English word 'border', because the service was first provided between two Uganda–Kenya border towns in the late 1980s.

In cities, the exponential growth of the *boda-boda* service has presented both employment opportunities and problems. For example, in each of the five districts of Kampala City (Capital of Uganda), officials attempted to tax the services and contracted the revenue collection to private contractors. In all cases, the contractors had neither previous experience nor any links to the *boda-boda* industry, so the *boda-boda* operators' views, opinions and fears were not taken into consideration in determining the taxation level and the collection modalities. Consequently, the implementation of the taxation structure met with disappointing results and has been abandoned in favour of collection through operator-managed associations. Furthermore, the sudden increase in the number of operators has resulted in skyrocketing road traffic-related injuries, considered to be one of the major causes of mortality, especially among economically active men, in many developing countries (Soderlund & Zwi, 1995). The passengers have been expressing safety concerns and calling for protective regulation. While the recently adopted Traffic and Road Safety Act[1] provides the legal framework within which public safety can be ensured, enforcement is slow in coming.

The purpose of this study is to provide insights into the key people (the operators) behind the emerging *boda-boda* service industry. More specifically, it aims to determine the education level of the operators, the capacity of the business to generate income for the operators, gender-related participation, and factors underlying the passengers' safety concerns and possible solutions to problems. This information is considered of value to regulatory bodies and any other stakeholders. Although *boda-boda* includes bicycle as well as motorcycle services, in this study the focus is restricted to motorcycle operators, since they provide the majority of the services in urban and peri-urban areas.

2. PARTICIPANTS, SURVEY INSTRUMENT AND DATA ANALYSIS

A *boda-boda* operator tends to work consistently from the same location or stage. Two locations in the suburbs of Kalerwe and Bwayise in the Kampala District of Kawempe (Figure 1) were chosen. They were considered representative of the most popular *boda-boda* stages as one is very close to a busy market and the other is close to a busy car taxi stop. The total estimate of operators that work both stages is approximately 50. The survey instrument was administered to 37 operators during March–April 2000 and April–May 2001. The instrument was administered on site with the responses recorded by the investigator in an interview format. This proved useful because it allowed operators who could not read or write to be included in the study. Depending on the response to specific questions, it was also possible to probe further with questions that were not in the instrument. A weakness of this approach was that interviewing on the spot tended to cause curious onlookers to gather and in some instances provide unsolicited opinions which were a distraction for both the interviewer and the interviewee.

[1] An Act was enacted by Parliament with a date of assent of 19 June 1998, to consolidate and amend the law relating to road traffic, to provide for National Road Safety Council and the Transportation Licensing Board, to revise the penalties prescribed for road traffic offences, and for other purposes connected with road traffic and road safety. The Act was published as Supplement No. 10 to the *Uganda Gazette* 40(XCI), 26 June 1998.

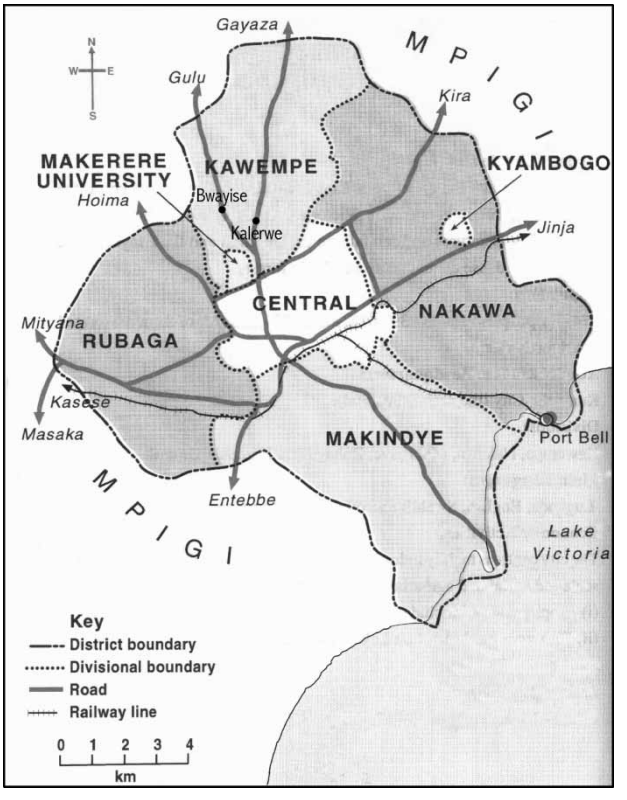

Figure 1: Kampala District map showing the study sites at Bwayise and Kalerwe

During July 2006, the sites were revisited and seven operators were interviewed to determine what changes had occurred since the initial study.

The demographic characteristics of the respondents are presented in Table 1. As shown, all operators were male, ranging in age from 16 to 35 years. Approximately half were married with children. Approximately half (49 per cent) never attended primary school or had not completed the seven years of primary education and almost all (80.6 per cent) lived in Kampala District. The sample size of 37 was calculated to be adequate for reliable results.[2] The survey instrument was composed of eight items, designed specifically to test the hypothesis that, like other low-income workers, *boda-boda* operators do not obtain genuine returns on their labour. Further questions were included to assess the gender distribution of the passengers (to study women's access to transport), safety issues from the operator's point of view, the technological specifications of the motorcycles, the type of ownership, and operators' income and expenses and their

[2]To determine the sample (n) drawn from a population of *boda-boda* operators (N) to interview, the following equation from Scheaffer et al. (1971) was used:

$$n = Npq/[(N-1)D + pq]$$

Where p is the estimate of the fraction of the operators responding with the same answer to a question of interest with a plus/minus error of magnitude B, $q = 1-p$ and $D = B2/4$. Without any prior information, p was set to 0.5. With $B = 0.5$ and $N = 50$, n was found equal 33. With a sample size of 37, the result of this survey should be reliable.

Table 1: Demographic characteristics of surveyed operators

Characteristic	Response (n)	Response (%)
Gender:		
Male	37	100.0
Female	0	0.0
Age:		
16 to 20 years	11	29.73
21 to 25 years	13	35.14
26 to 30 years	11	29.23
31 to 35 years	2	5.41
over 35 years	0	0
Marital status:		
Married	21	56.76
Single	16	43.24
Family Size:		
No children	16	43.24
1 to 3 children	17	45.95
4 to 6 children	3	8.11
7 to 10 children	1	2.7
Over 10 children	0	0
Education:		
No school education	1	2.7
Did not finish primary 7	17	45.95
Did not finish senior 4	12	32.43
Did not finish senior 6	5	13.51
Completed Senior 6	2	5.41
Residence:		
In Kampala District	29	80.56
Outside Kampala District	7	219.44

attitude toward associations. These issues were identified as important in informal pre-study conversations with operators.

Descriptive item analysis was conducted regarding the frequency of responses to all items of the survey instrument. The FREQ Procedure of the SAS program was used for the frequency analysis.

3. RESULTS AND DISCUSSION

3.1 Motorcycles

The capacity of the majority of the motorcycles used (95 per cent) was 50 cc. The next size up was 90 cc, almost double the first level. The preference for low capacity has been attributed to lower capital cost and fuel economy. The most popular motorcycle was the Yamaha Mate. The reasons given for its popularity included reliability (38.9 per cent),

availability of spare parts (30.6 per cent), durability (16.7 per cent), higher power output (8.3 per cent) and extra luggage capacity (5.6 per cent). All motorcycles encountered had had modifications made to the passenger seat and steps. The support on the passenger seat is needed to prevent passengers from falling off, especially female passengers who sit sideways, and the step is needed to help passengers climb onto the seat. Other desirable modifications included side mirrors and a front luggage basket. Approximately 50 per cent of the operators said they had used locally made spare parts to maintain their motorcycles, which indicates the broader job creation possibilities of this emerging cottage industry.

3.2 Ownership, expenses, income and creditworthiness

Only four of the 37 *boda-boda* operators surveyed were owner-operators and the rest worked for male owners. Only one owner was found with more than one motorcycle, and only two operators were found to be related to the motorcycle owner. The male domination of the industry is consistent with previous observations in peri-urban regions; however, absence of any relation between operators and owner is at variance (Iga, 1999). Years of experience were well distributed at 0 to 1 years (35 per cent), 2 to 3 years (41 per cent), 4 to 5 years (19 per cent) and over 5 years (5 per cent). Eighty-one per cent of the operators worked 10–15 hours every day, 6–7 days a week. Most of the operators working six days stayed at home one day a week for religious reasons. The three operators working less than six days a week had other jobs or obligations on the days they did not work. The shortest journey covered by operators was 1 km and the longest was 6–9 km.

The numeric averages of responses to questions about income and expenses are presented in Table 2. The responses were separated between operators and owner-operators. Despite the low number of owner-operator interviews, the sum of the operators' take home and owner payment (USh2077 + USh6508 = USh8585) compared very well to the owner-operators' take home pay (USh8250). The low and high fuel costs are also almost identical. The close agreement between these figures attests to the accuracy of these results.

Although operators are earning two to four times the Uganda per capita income of US$250, it is almost impossible for them to advance from operator to owner-operator. Most operators surveyed mentioned one operator who had managed to make the

Table 2: Average daily expenses and income in Uganda shillings (USh)[1]

	n	Low take-home pay	High take-home pay	Owner payment	Low[2] fuel cost	High fuel cost	Fair motor-cycle sale price	Taxes[3]
Operator	33	2077	4 459	6508	2389	4223	630 548	1000 or 1200
Owner/ Operator	4	8250	12 750	N/A	2250	4000	733 333	1000 or 1200

[1] USh1600 = US$1.00.

[2] Regular fuel cost was USh1350 per litre.

[3] USh500 is paid to the City and another USh500 to the company/association contracted to collect the tax on behalf of the City. USh200 is paid to the neighbouring District of Mpigi for transporting passengers to and from the district.

transition since entering the business (all mentioned the same individual). The income from the *boda-boda* is far from adequate for the well-being of operators' families, especially in an urban setting where housing, food and energy are secured from cash income. The operators work long and hard but are probably poorer than their rural counterparts, as they cannot keep the genuine return on their labour. For example, after paying for petrol, they pay 48–65 per cent of what they make to the motorcycle owners. The balance is then taxed at a rate ranging from 18 to 35 per cent, representing one of the highest taxation rates in Uganda. *Boda-boda* operators are not any better off when compared to the 1.3 billion people around the world who live on less than a dollar a day (Yunus, 1999).

In response to the question of what needs to be done to increase their income, all the operators said they wanted to own a motorcycle, the four owner-operators said they wanted to acquire a second motorcycle, two operators said they would try another business, and two wanted newer motorcycles for improved reliability. Using the average motorcycle fair market value shown in Table 2, daily payments were calculated at various annual interest rates to assess the potential for operators to own a motorcycle. The results are presented in Table 3. As shown, even at typical micro-credit interest rate of 30 per cent, the operators can pay for a motorcycle in six months if they increase their daily income by 35 per cent [(4416 – 3268)/3268]100. The average income used in this calculation is the average of the low and high take home pay reported in Table 2.

Given this highly favourable creditworthiness, the question can be asked why the operators cannot raise the necessary capital to escape poverty. The answer to this is multifaceted. First, commercial banks do not consider *boda-boda* operators creditworthy and are reluctant to deal in the small sums of money that are involved (personal communication, Dr Willibrord Okecho, General Manager, Supervision Division of Centenary Rural Development Bank of Uganda). Second, since the majority of the *boda-boda* operators did not complete primary education (Grade 7), they are considered uneducated and are intimidated by the complexities of banking, especially loan procurement processes. In fact, only one out of 11 operators surveyed had a bank account. Third, while relatives constitute an alternative source of capital, most of the *boda-boda* operators seem to come from situations where they do not have close relatives with the means to help, which is the main reason why some of them dropped out of school in the first place. Fourth, the operators seem to have no access to micro-credit, the ideal source of capital for the self-employed poor.

Table 3: Daily payment for a USh750 000 loan

Annual interest rate (%)	12 months pay period (365 payments)	6 months pay period (183 payments)	3 months pay period (91 payments)
2.5	2081	4124	8268
5.0	2106	4150	8294
10.0	2160	4203	8346
15.0	2213	4255	8399
20.0	2268	4308	8451
30.0	2379	4416	8557

Table 4: Overview of the microfinance industry in Uganda

	Name of institution	Area of operation (district/town)	No. of clients (credit)	Outstanding loan portfolio (million Ushs)	Average loan size (Ushs)	Loan interest rate (%)	Savings mobilised (million Ush)	No. of savings accounts	Average recovery rate (%)	% of agricultural loans	% of manufacturing loans	% of commerce loans	% of services loans
	Banks												
1	CRDB	14 districts (15 branches)	16 500	17 600	1 066 667	22 p.a.	47 254	220 000	91.55	15	1	73	11
	International MFIs												
2	INFEEM Action Aid Uganda	2 districts	537	104	193 669	2.5/mth	17	21	92	28	2	55	15
3	FINCA	23 districts	24 301	3 074	126 489	4/mth	2 149	2 149	100	0	52	N/A	N/A
4	PRIDE Africa	16 districts (20 branches)	25 984	3 744	144 089	30 p.a.	2 726	25 984	99.72	0	14	69	17
5	FAULU	3 districts	5 763	721	125 108	36 p.a.	421	4 953	96	0	10	60	30
6	World Vision	13 districts	7 000	360	51 429	36 p.a.	211	825	74	30	N/A	N/A	N/A
	Local MFIs/NGOs												
7	MED-NET	5 districts	6 125	833	136 077	36 p.a.	298	372	96	5	N/A	N/A	N/A
8	FOCCAS	4 districts	9 920	407	41 028	3/mth	105	11 383	95	15	5	70	10
9	Commercial Microfinance Ltd.	5 districts	5 724	1 289	225 111	36 p.a.	2 305	31 319	97				
10	ACFODE	4 districts	209	24	114 833	3/mth	–	–	90	0	0	99	1
11	ADD	8 districts	466	47	100 215	2/mth	5	21	67	5	14	50	25
12	Busia Rural Development Trust Ltd.	1 district	54	11	198 148	3/mth	17	194	97	6	0	73	21
13	ORUDE	1 district	31	10	322 581	3/mth	0.5	31					
14	UWFT	9 districts	17 323	2 428	140 166	–	950	17 323	97	0	0	80	20
15	MCDT	4 districts	1 273	77	60 705	43 p.a.	24	1 273	93	20	0	50	30
16	UGAFODE	4 districts	5 696	763	133 954	3/mth	–	–	85	0	0	77.5	9.8

(*Table continued*)

Table 4: Continued

	Name of institution	Area of operation (district/town)	No. of clients (credit)	Outstanding loan portfolio (million Ushs)	Average loan size (Ushs)	Loan interest rate (%)	Savings mobilised (million Ush)	No. of savings accounts	Average recovery rate (%)	% of agricultural loans	% of manufacturing loans	% of commerce loans	% of services loans
17	RUMECS	2 districts	1 200	55	45 833	3/mth	–	–	94.8	30	0	50	20
18	UMFU	4 districts	4 000	278	69 475	3-3.5/mth	145	4 000	100	35	5	40	10
19	UWESO	9 districts	2 547	130	51 040	3/mth	–	–	91	31	0	69	0
20	VEDCO	3 districts	1 707	195	114 236	–	128	143	95	38	0		
21	Other MFIs (Table 2)	Country-wide	4 931	769			1 078	9 187					
	Gov't programmes												
22	ECS	All districts	60 000	9 320	155 333	16 p.a.	–	–	55	73	0	17	6
23	YES	All districts	998	447	447 745	16p.a.	–	–					
24	RMSP	45 districts	31 100	2 677	86 077	22 p.a.	1 870	31 000	93	57	8	31	4
	Total		233 389	45 363			59 704	360 178					

Source: Compiled from Ministry of Finance, Government of Uganda, December survey – see footnote 3.

Abbreviations:

CRDB – Century Rural Development Bank

INFEEM – Initiative for Economic Empowerment

ACFODE – Action for Development

ADD – Action for Development and Disability

ORUDE – Organization for Rural Development

MCDT – Micro Credit Development Trust

RUMECS – Rural Micro Enterprise Credit Scheme

UMFU – Uganda Micro Finance Union

ECS – Entandikwa Credit Scheme

YES – Entandikwa Secretariat –Youth Entrepreneurs' Scheme

RMSP – Rural Microfinance Support Project

The overview of the microfinance industry in Uganda is presented in Table 4.[3] Close examination of this table reveals additional reasons for the *boda-boda* operators' lack of access to microfinance. First, only one institution (CRDB) has an average loan size consistent with the capital required to own a motorcycle. Second, all institutions have a preference for commerce at the expense of agriculture, manufacturing and service loans. Most importantly, the stated objective of these institutions is 'to provide economic empowerment to the disadvantaged population, living mainly in rural areas, through provision of sustainable financial services in the form of micro-credit and savings mobilisation, all geared towards poverty eradication' (Ministry of Finance, 2000). The target population for these micro-finance services includes women, the disabled, low-income earners and rural populations in general. *Boda-boda* operators in urban and peri-urban regions do not fit these target profiles very well.

3.3 Meeting the urban women's transport needs

On average, the urban operators who were surveyed serve six women out of every ten passengers. This agrees with the published estimate of 60 per cent in the case of *boda-boda* operators in the Western Kenya town of Kisumu (Iga, 1999). The percentage of women served is higher than the percentage of women in the population of Kampala, which is 51 per cent (Rwabwoogo, 1998). This is in direct contrast to the rural experience where men are the main users. In general, low rural female usage of motorised transport has been attributed to several factors not present in the developing country urban and peri-urban settings (Malmberg-Calvo, 1994; Sieber, 1999). First, in most sub-Saharan rural areas the majority of women's travel needs are based on activities in and around the village, which consume much time and energy but rarely generate income (Njoh, 1999). Carrying goods on their heads turns out to be the most economic solution (Malmberg-Calvo, 1994). Second, women in rural areas are more likely to be inhibited by cultural taboos such as body contact with male operators by holding them around their waists during the journey (for example, see Kato, 2000). With more than equal access for women, *boda-boda* can be considered a huge success in meeting urban women's transport needs.

3.4 Safety

Section 36, item 1 of the 1998 Uganda Traffic and Road Safety Act, states that 'No person shall drive any class of motor vehicle, trailer or engineering plant on a road unless he or she holds a valid driving permit or a valid learner's driving permit endorsed

[3]The Government of Uganda has adopted a poverty eradication strategy that, among other things, is aimed at increasing the ability of the poor to raise their incomes either by increasing their productivity or by engaging in new productive activities, so as to improve their quality of life. This strategy is laid out in the government policy document, the Poverty Eradication Action Plan (PEAP). To achieve this goal, poverty reduction calls for higher agricultural growth rates and non-farm employment, which must be increased in rural areas since this is where most poor people live. The Plan for Modernization of Agriculture (PMA), which will play a central role in poverty eradication, has thus identified 'access to rural finance' as one of its core areas for public action in agriculture. In recognition of the importance of access to rural financial services in the poverty eradication strategy, the Ugandan government is establishing a new regulatory and supervisory structure for microfinance in order to increase poor people's access to financial services. To ensure effective and efficient policy formulation and advocacy for this industry, the Private Sector Development/Capital Building section of the Ministry of Finance has undertaken the development and continuous updating of a Microfinance Institutions database. The results of the first survey were compiled in a March 2000 report (Ministry of Finance, 2000). Table 4 was compiled from the second survey of December 2000.

in respect of that group of motor vehicle, trailer or engineering plant'. Seven of the 37 operators surveyed had driving permits. However, 46 per cent of the operators said they had never had an accident, while 46 per cent said they had been involved in one or two accidents. Almost 30 per cent of the operators had taught themselves to ride while the remainder had been taught by friends. When asked why operators do not make any effort to obtain driving permits, one of the operators said the cost is prohibitive: USh5500 for three months for the provisional licence and USh60 000 for the driving permit. In total the cost represents two to four weeks of income, an amount that operators who live in a hand-to-mouth fashion find difficult to save. Failure to enforce the law strictly and prosecute traffic law violators contributes to poor safety. For example, it is not unusual for *boda-boda* operators to ride in the opposite direction to normal traffic flow to take a short cut and save money by reducing petrol and time for the trip.

Causes of accidents were ranked in the following order: speeding, poor riding skills, careless car or truck drivers, careless pedestrians and poor road conditions. To reduce the number of accidents, the top three suggestions by the operators were, in order of importance: proper or formal training, obeying the speeding laws, and enforcing driving permit requirements. It has been demonstrated elsewhere that motorcycle education may be a promising intervention for preventing injuries in situations where safety measures and enforcement are lacking (Swaddihiwudhipong et al., 1998). Approximately 50 per cent of the operators surveyed reported having been attacked by thieves. To reduce these attacks, the operators suggested the following (in order of importance): avoiding working at night, training in self-defence and severe punishment for thieves when caught.

3.5 Operators' associations and other needs

Thirty-five of the 37 operators agreed that it would be beneficial to belong to a *boda-boda* association. The two most common benefits identified were access to credit and legal assistance. Concerns included the misuse of their dues or getting nothing in return, and unchecked taxation. This concern was not surprising, given their recent experience with the tax collection contractors who claimed to represent the interests of the operators when in reality they were exploiters.

At the end of the interview, the survey instrument gave operators an opportunity to ask questions or comment on anything they thought was important but had been left out or not well addressed. A substantial proportion of the operators came back to issues of help with capital to enable them to buy their own motorcycles and to help with obtaining drivers' permits. They expressed a need for education and were displeased with the lack of any benefit from all the payments they were making to the city. It was surprising that no single operator expressed a concern about the exploitative nature of the motorcycle owners that is evident in Table 2. This may be because the motorcycle owner is perceived as a saviour: without the motorcycle the operator would be jobless.

All the operators who worked at one corner in Kalerwe belonged to both a formal association for tax collection purposes and an informal brotherhood organisation designed to protect their corner from other non-member operators. Through this brotherhood, they also helped each other in other ways. For example, if one of them lost his motorcycle they would let the jobless operator make money by using other operators' motorcycles

during lunch breaks. This way he could generate income till he found another owner to drive for. The term used to describe this generosity is *kibaluwa*.

Such a positive experience with brotherhood associations should facilitate organising *boda-boda* operators into a larger and possibly more beneficial cooperative organisation. In Kisumu, *boda-boda* operators have been successfully organised. The Kibos Cycle Taxi Association of Kisumu has been reported by Iga (1999) to defend riders involved in accidents and compensate passengers for injury or loss. It operates a registration scheme, giving all operators numbered plaques clearly identifying them as cycle taxi operators and enabling them to be identified in case of a complaint or dispute.

3.6 Changes that have occurred since the research was conducted

The Kampala suburbs of Kalerwe and Bwayise were revisited during July 2006. A total of seven operators were informally interviewed with the goal of assessing major changes that had occurred since the needs assessment survey was conducted in 2000 and 2001. Briefly, the number of operators who worked from the two locations had increased from 50 to 83, and the majority of motorcycles used now had capacities greater than 90 cc and were mainly new ones imported from India. Surprisingly, despite the higher motorcycle capacity the average income had not changed. The income level has been independently confirmed (*The Economist*, 2006), which attests to the validity of this study's original economic analysis and the resulting conclusions. Attempts to independently collate the estimated number of 10 500 operators (*The Economist*, 2006) in Kampala were unsuccessful because public records were unreliable. Safety and Operators' Association needs were still echoed by all operators interviewed. The fuel cost had gone up from USh1350 to USh2200 and the US dollar exchange rate had gone up from USh1600 to USh1800.

4. CONCLUDING REMARKS AND FUTURE RESEARCH

The results reported herein are consistent with experiences with similar modes of transport in other parts of the world, especially in Asia (*tuk-tuks and rickshaws*)[4] and in this case provide preliminary evidence in support of the notion that it is difficult for *boda-boda* operators to make substantial improvements in their incomes, not because they are lazy or uneducated, but because they cannot keep the genuine returns on their labour. The results also represent a first step in studying *boda-boda* operations in urban settings and are important in that they can be used to identify and prioritise areas for further detailed investigations. For example, as demonstrated elsewhere (Sieber, 1996), *boda-boda* operations should promote trade, improve access to public transport and communication and create jobs. However, there are no reliable figures with which to gauge the extent of use by the public and the impact of the industry on the economy. It is also known that exhaust from the motorcycles used can have undesirable effects on the urban air quality and consequently on public health. The public health and economic impacts of *boda-boda* data need to be assessed at the national level.

The two most important needs expressed by the operators were access to credit and education to enhance safety. Eighty-one per cent of the motorcycle owners were

[4]See http://en.wikipedia.org/wiki/Auto_rickshaw Accessed 17 September 2006; *The Economist*, 2006.

self-employed businessmen. The survey instrument did not elicit details of their business type and size. It is possible that providing capital to the operators could adversely affect the current motorcycle owners. Interactions with the operators in the field helped the researchers recognise their enthusiasm, their work ethic, their knowledge of the business and their overwhelming desire to improve their lives. The main reason for their lack of access to credit seems to be the absence of empirical data in support of their creditworthiness. In the light of their desire to improve their lives, a case can be made for further study to conclusively establish or rule out their creditworthiness.

To quickly achieve improvements in public safety, the national government should amend the Traffic and Road Safety Act to ease the financial burden of obtaining drivers' permits and strengthen traffic law enforcement. The City could adjust the taxation rate to be in line with that of other workers with similar incomes. These changes can easily be achieved if *boda-boda* operators organise and form a sound advocacy group to represent their interests.

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