



Contribution of a Bodaboda Transport Business to the Level of Income: A Case of Bodaboda Riders in Dodoma City-Tanzania

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study assessed the contribution of the bodaboda business to income improvement among riders in Dodoma City Council found in the central part of Tanzania. The focus was to identify the level of income of bodaboda riders after employing themselves in this transport business. The study adopted a cross-sectional research design, and structured questionnaire to interview 73 bodaboda business riders in the study area. Analysis of data was done using Statistical Product and Service Solution (SPSS) software Version 20. A simple descriptive analysis was done to show the characteristics of respondents. Paired Sample T-test was conducted to test whether there was a substantial change in levels of income among riders before and after becoming bodaboda riders. The eta squared statistic indicated a large effect size in the level of income brought about by the

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bodaboda transport business in the study area, the activity also enabled riders to initiate new income-generating activities and strengthen the already existing ones. The study concludes that bodaboda transport business activity increased significantly the level of income for the riders and helped to reduce unemployment in the study area, especially among youth. The study recommends the City Council of Dodoma to create enabling environment to reduce the negative effects of the bodaboda transport to allow more youth to engage in business as a way to minimize the unemployment rate among them and improve individual as well as the national economy.

Keywords: Motorcycle transport; bodaboda transport business; income-generating activities.

1. INTRODUCTION

The use of motorcycles as personal and public transport has been on the rise in the world. More than 200 million motorcycles are used in different places in the world [1]. People in the world have different reasons for using this means of transport, for example in developing countries, motorcycle transport is used widely as an alternative means to the weak and inefficient transport systems in these countries [2]. Nonetheless in developed countries motorcycle transport is used on personal grounds such as for recreation purposes. Motorcycles started to be used widely after 1910, especially by the armed forces in the First World War. After the Second World War in the 1950s, larger and heavier motorcycles were used mainly for touring and sports competitions. Whether relied upon as a primary means of transportation, used to provide weekend recreation, or soaped up and spend along for racing [3].

The arrival of the automobile in the 20th century further accelerated the centrifugal impact of transport on city form, creating sprawl and introducing unintended impacts on environmental quality and social integration. Although the motorcycle is not as safe a vehicle, its convenience and economy have made it very popular; it is widely used for pleasure riding, racing, and years as a result of the development of inexpensive, lightweight motorcycles, manufactured chiefly in Asia [4].

In Sub-Saharan Africa, the use of motorcycle transport has been growing fast and in most cases is used for commercial purposes to transport goods and people both in rural and urban areas [5,2]. Motorcycle transport in Africa saves similar purposes but has different names in different countries. For example, it is known as Zemidjan in Benin, bendskin in Cameroon, Okada in Nigeria, kabu-kabu in Niger, and Oleyia in Togo to mention but a few [1]. In Tanzania, the motorcycle used for transport (tax) business is

known as bodaboda and this is the term that has been used throughout this paper. The commercial motorcycle transport business in Africa has brought about several benefits. For example, has to a large extent contributed to the creation of employment for youths, facilitated the growth of businesses, and the source of income, and lessened the cost of transporting goods and people [6].

In East Africa bicycles started operating as taxis for the transportation of people and smuggling goods across the Kenya-Uganda border (border-to-border) in 1960, hence named 'bodaboda'. From the 1990s – light-engine motorcycles (50-80 cc) gradually replaced bicycles. This kind of transport in this region is relatively inexpensive, quick, evades traffic jams, can use narrow paths in peri-urban areas, and is available during the day and night. More than 3,500,000 people in east Africa are involved in the bodaboda business as a source of income [7].

The influx of thousands of bodaboda businesses in Tanzania started in 2009 when the government licensed them alongside the three-wheelers commonly known as "Bajaj" to carry passengers in a bid to reduce transport problems, especially in urban areas but also in rural areas. Most people who are unskilled and semiskilled engage in this industry as an alternative economic opportunity to attain their livelihoods after experiencing negative rewards from agricultural activities and other economic activities for several years [8].

In Tanzania, a larger proportion of the population uses public transport, unfortunately, the performance of all forms of government-organized public transport is ineffective and is in decline [9]. This situation has forced people to find alternative solutions to address daily travel needs hence a resort to motorcycles for personal mobility in addition to public transport. The operations of the bodaboda business have helped to provide much-needed jobs for

unemployed and low-skilled individuals among Tanzanians. In addition, they have helped to improve access and mobility in areas devoid of service coverage by other public transport modes (Peter, 2009).

In the case of Dodoma City Council, people especially youths have been diversifying their income from their normal commercial activities such as shopkeepers, carpenters, and becoming motorcycle riders because it has shown to have great benefits, particularly the business has provided employment opportunities to youth migrating from rural areas to urban [10]. This study was important to be conducted because it assessed the contribution of the business to livelihood diversification, especially on the improvement of the income level of the operators in Dodoma City. It also intended to provide a platform for policymakers and decision-making bodies to set policies and strategies on the ways and means for improving income generation among people through this business.

1.1 The Study Issue

Recently bodaboda transport business has been growing rapidly in different parts of Tanzania following the government approval for bodabodas as a means of public transport. Many people especially, youths seem to engage in this business which may be an indication that they are earning income instead of staying idle at home and jobless. However, some of those employed in the bodaboda business are still stuck with poor living standards and low income. According to Household Budget Survey 2017-18, about 36% of bodaboda riders experience low-income earnings that exacerbate the poor standard of living despite engaging in the bodaboda business in Dodoma City, [11]. Proportionally, in Dodoma City, about 9.3% percent of working men are employed in the bodaboda business [12]. Therefore, despite the increasing number of individuals engaging in the bodaboda business, there was little knowledge of how much income is earned and if the earnings were significant enough to contribute to the improvement of livelihood. That gave the purpose of the study to know the contribution of the bodaboda business to income improvement among riders in the study area.

1.2 Theoretical Review of the Study

The current study utilized the rational choice theory in explaining the contributions of the

bodaboda business to improving income among people. The review of the theory and its justification in analyzing the contributions of the bodaboda business to improving income among people is explained in the following subsection.

1.3 Rationale Choice Theory

The rational choice theory developed by Dr. William Glasser in 1998 is based on the description of human behaviour. Glasser explains that our life is about our conduct and that our behavior is driven by the need to fulfill our basic human needs [13]. The underlying assumption of rational choice theory is that the behaviour of individual actors in society is a reflection of the choices they make as they attempt to minimize costs and maximize their benefits. This means that people compare the costs and benefits of different courses of action before making decisions about how they should act, which results in patterns of behaviour within society. The theory emphasizes the specific actors and their specific interests as a starting point, and the theory emphasizes that institutions and societal change can be explained as stemming from the actions and collaborations of individual actors. This theory holds that particular players weigh different options and choose the option that they anticipate will yield the best results.

The rational choice theory was vital in informing the study on the significance of stakeholders in making the choice to engage in the bodaboda business and resulted in a success or a failure. Because of the high unemployment rate in Tanzania, some people especially youth decide to become bodaboda riders as a means to help them get earnings and improve their livelihoods. The theory helps the study to explain the beliefs, actions, and reactions of players in the bodaboda business. The bodaboda riders must act in a rational way to achieve the goal of improving their earnings through the business. If the choices and decisions are made on a rational basis, it is expected that individuals normally benefit from their actions. However, it is not always the case, some individuals decide on matters because they see others doing it, in such instances, the theory may not be relevant and may not help to give an explanation of why the bodaboda business may contribute significantly to some riders while others remain in the same situation as before engaging in the business as evidence shows in this study.

2. EMPIRICAL LITERATURE REVIEW

During the mid of 1990s, there was an emergence of motorcycle transportation in both rural and urban areas of developing countries which attracted many people since it did not require high skills in operating. In most cases, the bodaboda business is successful among users because of its ability to satisfy the demand for trips that are not covered by other public transport modes. It is a rapid mode because it avoids the congestion and operating constraints that affect shared taxis and conventional buses, such as the generally fixed nature of routes or the need to wait until the vehicle is full before starting.

The study conducted in Uganda on the bodaboda transport business found many low-income men earning a livelihood from the bodaboda business operation [14]. In this business it is common for young men to either work for a daily wage or to hire a motorcycle from its owner on a daily or weekly basis, paying the hire charges out of their earnings. As such, the bodaboda business is increasingly becoming important as a new paradigm for livelihood diversification. They are now the most vehicles on some rural spokes in Colombia, Indonesia, Nepal, and sub-Saharan Africa. Motorcycles can operate on poor roads, passing roadblocks caused by mud, water, or landslides. Rural bodabodas carry men, women, and children, and their goods, to link poorly served villages to conventional transport services on main roads. Bodabodas in rural communities benefit women, children, and disadvantaged people through emergency and routine transport to health care and other services [15]. Bodaboda business offers young men attractive livelihoods while stimulating employment in supply and maintenance services. Livelihood is stimulated by the economic benefits of passenger mobility and marketing opportunities since bodabodas enable some entrepreneurs and local vendors to travel rapidly to and from markets due to their frequent availability of it [16]. Although bodaboda transport offers certain transport advantages in the form of easy accessibility to travel on poor roads, and demand responsiveness, commercial motorcycle service growth has also led to an increase in road accidents, traffic management problems, pervasive noise, and increases in local air pollution and greenhouse gas emissions. Government efforts to regulate the market have had the contrary impact of compounding the

problem by distorting the market structure (Kumar, 2014).

2.1 The Economic Impact of Motor Motorcycle

The bodaboda business has impacted significantly the economy of different countries. For example, one important positive impact in Nigeria is the provision of employment to millions of people [17]. Indeed, many unemployed peoples and retired people have found gainful engagement in the commercial motorcycle business. Some of those who are employed in government service still engage in motorcycle operations known as Okada business either as owners or renters to improve their regular income with whatever they can earn in Okada business. Some state governments in the country have also used motorcycles as a poverty alleviation scheme by procuring and distributing motorcycles to the unemployed in their states as part of a poverty eradication programme. Also in 2019, the Borno State Government procured and distributed 5000 motorcycles to its citizens to boost public transportation and alleviate poverty [17]. The study which was conducted in Arusha city northern part of Tanzania focused on how the bodaboda business help youths to improve their livelihoods and concluded that among other things, the business helped youth to improve their financial status [18]. This evidence suggests that the bodaboda business contributes to all aspects of life for the riders.

3. RESEARCH METHODOLOGY

3.1 The Location of Study Area

Dodoma City is located in the central zone of the Country and operates under the City Council of Dodoma administration. It is bordered by the Chamwino district in the East and Bahi district in the West. It lies between Latitudes 6.000 and 6.300 South, and Longitude 35.300 and 36.020 East. It is 456 Km from Tanzania's major commercial city of Dar es Salaam. About 75% of people's income in the City is from entrepreneurship with 25% of the population engaging in petty businesses such as retail shops, carpentry, and food vending [19]. The study was specifically carried out in the Majengo ward found in the city because it has a higher number of registered bodaboda business riders than other areas. The data was collected from 3 Mitaa of Fitini, Mausi, and Mtenga [20].

3.2 Research Design, Data Types and Sources and Data Collection Methods

The study adopted a cross-sectional research design because it is flexible for data collection methods. It employs more than one data collection technique which allows for the collection of a rich and detailed set of data. The use of cross-section methods can provide options for the researcher to provide narration and explanations of the phenomena [21]. Both qualitative and quantitative data were collected from both primary and secondary sources. The primary source was registered bodaboda riders and the secondary source was official development documents or reports in Ward Executive Officer's Office which have information related to the study. The study employed various methods for primary and secondary data. The required data were collected through methods and tools. The methods which were employed included interviews, whereby the researcher employed a structured interview to solicit information from respondents to get the required information. The questionnaire was used as a tool to collect data from respondents. Also, a semi structured-interview was used to collect data from key informants with the aid of the interview guide. The documentary review was also used to collect secondary data by reviewing information from published and unpublished documents related to the study.

3.3 Data Analysis

Analysis of data was done using Statistical Product and Service Solution (SPSS) software Version 20. Data were analyzed using descriptive statistics and the results obtained were presented in tables in terms of frequencies and percentages. On the other hand, Paired Sample T-test was conducted to test the significance of the difference of variables that were involved in the situation before and after engaging in the bodaboda business. To ensure the reliability and validity of the results from paired sample T-test, the data on the income of bodaboda riders were carefully collected to disaggregate income from other sources before engaging in bodaboda business, and other income-generating activities carried out parallel with the bodaboda business. Income solely gained from the bodaboda business was also disaggregated. Therefore, only income before involving in the business, and income resulting from the bodaboda business were compared to

learn the contribution from the bodaboda business.

4. RESULTS AND DISCUSSION

4.1 Demographic Characteristics of the Respondents

In any social science research, determining demographic characteristics is important because they are helpful in further analysis. Therefore, the researcher thought it was necessary to establish the age, sex, educational background as well as experiences of the respondents which gave the general picture of the study population. Thus, this part is considered to be valuable in creating the validity of the study findings.

4.2 Age Category of the Respondents

The age of the respondents was taken into consideration to determine different age categorizations in the sampled respondents. The results in Table 1 show that 83.6% of the total respondents were aged below 40 years while 16.4% of the total respondents were aged above 41 years. That indicates the majority of study participants (bodaboda riders) were youth whereby a large group of riders was aged between (25-35) years which takes a higher percentage (38.4%) compared to other age groups in the study area, which was because of unemployment problem which faced most of them and led them to decide to be bodaboda business riders as a livelihood option. That was similar to other information found in other sources such as the YDS- report (2020) which reveals that in most of Tanzania regions, especially in city centers most of the young people were engaged in running a bodaboda business and they were not well educated which made them have no other alternatives for their survival and took bodaboda business as a livelihood option for ensuring their life sustainability such as getting earnings to conduct their lives and other social welfare.

4.3 Sex of the Respondents

One of the key demographic variables was the sex of the respondents. The results show that the bodaboda business is dominated by males (98.6%) rather than females (1.4%). This may be because of social, cultural, and environmental factors, especially in Tanzania where males are

more responsible to provide for the family which makes them engage more in various economic activities such as the bodaboda business. Also, most females had no better skills in riding motorcycles which is one of the factors that hinder them to run bodaboda for business. That conforms to other studies in the field, for example, a work by Rollason [5] which found that males are more involved in operating the bodaboda business.

4.4 Educational Background of Respondents

The educational background of respondents was another factor that was established to get a clear picture regarding the educational background of the respondents who participated in the study. Findings in Table 2 show that 49.3% of the total respondents had primary education, 43% had secondary education and 6.8% had a post-secondary certificate education. Those results indicate that most bodaboda riders had a low level of education which makes them face unemployment and influenced them to engage in the bodaboda business as a livelihood option. The youth development report states that the engagement of youth in the bodaboda business

was generally caused by a low level of education. The majority had a primary education level while others had dropped out of school before completion [16]. The findings imply the level of education is not an obstacle to expansion of the business, it can accommodate all energetic young people including those with a low level of education or who did not attain any formal education [8].

4.5 Experience of Respondents

The number of years one has worked within the bodaboda business gives an understanding of the inner workings of the respondents. In that regard, the researcher collected and analyzed data on the work experience of the participants. As indicated in Table 3 show 9.6 % of the total respondents had a work experience of below 1 year and 76.7% of the total respondents had a work experience between 2 years up to 10 years while 13.7% of the total respondents had an experience of above 11 years. The findings in Table 3 show that majority of respondents had an experience of 2 to 5 years. Such experience provides fertile ground for this particular group to perform their activities effectively and efficiently to increase their earnings for a better life.

Table 1. Age of the respondents

	Frequency	Percent
Below 18 years	3	4.1
18– 24 years	17	23.3
25 – 35 years	28	38.4
36-40 years	13	17.8
41-50 years	12	16.4
Total	73	100.0

Source: Field Data (2021)

Table 2. Education background of respondents

	Frequency	Percent
Primary education	36	49.3
Secondary education	32	43.8
Post-secondary education	5	6.8
Total	73	100

Source: Field Data (2021)

Table 3. Working experience of respondents

	Frequency	Percent
Below 1 year	7	9.6
2-5 years	32	43.8
6-10 years	24	32.9
11-15 years	9	12.3
16-20 year	1	1.4
Total	73	100

Source: Field Data (2021)

4.6 Ownership Status of Bodabodas among Riders

The respondents were asked whether they run a business using their bodaboda or their bosses. Hence Table 5 provides the summary of the study findings as obtained from the field. The majority of respondents (54.8%) run bodaboda businesses for their bosses' because most of them are youth with a low financial ability to afford the cost of buying their own bodabodas for running a business. Some other research such as that by Naddumba [22], also observed a similar situation. He argued that the majority of bodaboda riders were not owners of bodabodas used in business and therefore they hire or sign contracts for running bodabodas [18]. Worth noting that the focus of this study was not on the ownership of the boda-boda, but rather on how the business contributes to individual income.

4.7 Income amount of Bodaboda Business Rider Earned per Day after and before Engaging in Business

The findings show that before engaging in the bodaboda business, 42.5% of the riders used to earn less than 10,000 TZS (4.3 US dollars) per day, and 57.5% earned between 11,000TZS– to 20,000 TZS (4.7-8.5 US dollars) per day from different sources. The amount did not suffice the desire of having better economic conditions for a better future especially, for urban life. That elaborates on the presence of the low-income generation among riders before being involved in the bodaboda business. Other researchers such as Itodo [17], found that most African bodaboda riders especially in sub-Sahara and central African countries, before engaging in the bodaboda business had low-income generations. They struggled to get suitable economic activities that would enable them to get enough income for their needs and hence decided to engage in the bodaboda business as a livelihood option.

The study findings further show that the income level had improved among the riders after engaging in the bodaboda business. The majority (34.2%) had reported earning an amount of income of between 31,000 TZS to 40,000 TZS (13.29 to 17.15 US dollars) per day. Some of them managed to earn a higher income ranging between 41,000TZS to 50,000TZS (17.58 to 21.44 US dollars) per day and only 13% earned less than 20000TZS (8.5 US dollars) per day. The findings were similar to those obtained earlier in the study done in Rwanda which found

that the economic situation of motorists had improved [5]. The majority of them were able to develop savings, start a new business and access social needs, for example, school fees and paying house rent timely compared to the condition they had before. Other researchers such as Grayth (2020), had a similar conclusion that the income of bodaboda riders in sub-Saharan African countries, had increased to a level that satisfied their needs after involving in the bodaboda business.

4.8 Difference between Amounts of Income Earned by Bodaboda Riders per Day before and after Engaging in Bodaboda Business

The difference in income earned before and after engaging in the bodaboda business was sought to find out whether the business had any contribution to the level of income among bodaboda riders. This was the major objective of the study and the description in paired sample statistics in Table 5 shows an increased mean income after engaging in the business compared to the mean income before. Then, Table 6 shows the result of tested statistical significance between the income level of bodaboda business riders earned per day after and before engaging in a business whereby the results revealed that there was a statistically significant increase in the level of income from Time 1 ($M = 11376.7$, $SD = 4955.9$), to Time 2 ($M = 31315.1$, $SD = 10304.9$), $t(72) = 20.8$, $p < .0005$ (two-tailed). The mean increase in the income level was 19,938.4 with a 95% confidence interval ranging from 18,023.7 to 21,852.0. The findings are supported by evidence from other similar studies in Tanzania such as that done in Moshi municipality [18], and elsewhere in Africa such as that done by [17]. The implication of the findings is that despite the challenges facing the business such as fatal accidents, bodaboda transport business may be a solution to unemployment among youth if well managed because it shows the ability to contribute significantly to the level of income among the riders.

4.9 The Effect Size for Paired-Samples T-test

The effect size was calculated to show the magnitude of the difference in income earned by the bodaboda riders before and after engaging in the bodaboda business. The effect size is commonly measured using the *eta squared* statistic. Since this statistic is not directly

produced by SPSS, it was calculated from the output obtained in Table 6. The *eta squared* statistic was found to be 0.86 which indicates a large effect, with a substantial difference in the amount of income earned before and after engaging in the bodaboda business. The statistic, if expressed in percentage stands to mean that the change in the income of bodaboda riders is attributed to the bodaboda business by 86%. This may imply that the business can effectively empower individuals economically as was found in other places such as Arusha Tanzania and in Kigali Rwanda [18,5].

4.10 Other Income-Generating Activities of Bodaboda Business Riders

Results indicate that majority of the bodaboda riders had only one (97.3%) income-generating activity before engaging in the bodaboda transport business as Table 7 shows. However, after engaging in the bodaboda business 35% of them abandoned other activities and

concentrated on the bodaboda transport business. On the other hand, 30% of them kept operating one income-generating activity apart from the bodaboda transport business. Findings further show that some few bodaboda riders had increased the number of income-generating activities from one to three (11%). Most of those activities were categorized as small businesses such as small shops and food centers. Respondents reported that other income-generating activities were a result of the bodaboda business which symbolizes an important role played by the bodaboda business. The results were similar to other research works in the field of study, for example, that of Jassan (2019), which found that the majority of people who were involved in the bodaboda business had other income-generating activities that resulted from the bodaboda business. Also, a report on bodaboda motorcycle transport and security challenges in Kenya had similar findings showing the role of cheap transport in accelerating other economic activities [1].

Table 4. Ownership status of a bodaboda

Owner of the bodaboda	Frequency	Percent
Yes	33	45.2
No	40	54.8
Total	73	100

Source: Field Data (2021)

Table 5. Paired samples statistics description of income earned before and after engaging in business

	Mean	N	Std. deviation	Std. error mean
Amount earned per day after being a bodaboda business rider	31315.0685	73	10304.90271	1206.09763
Amount earned per day before being bodaboda business riders	11376.7123	73	4955.90334	580.04461

Source: Field Data (2021)

Table 6. Difference between income amounts of bodaboda business riders earned per day after and before engaging in business

	95% Confidence interval of the difference					
	Mean	Lower	Upper	t	df	Sig. (2-tailed)
Amount earned per day after being a bodaboda business rider - Amount earned per day before being a bodaboda business rider	19938.36	18023.73393	21852.9784	20.759	72	0.000

Source: Field Data (2021)

Table 7. Number of income-generating activities before and after b engaging in the bodaboda business rider

Number of income-generating activities before bodaboda business rider		
	Frequency	Percent
One	71	97.3
Two	2	2.7
Total	73	100.0
Number of income-generating activities after bodaboda business rider		
	Frequency	Percent
Zero	26	35.6
One	22	30.1
Two	17	23.3
Three	8	11.0
Total	73	100.0

Source: Field Data (2021)

After engaging in the bodaboda business, riders gained the ability to establish other economic activities such as food centers and soft drinks shops which led them to report earning income. According to Nassar (2019), although there was income generated from other income activities the bodaboda transport business contributed more compared to the amount gained in other income activities. This situation indicates the presence of improvement on income generation among riders after involving in the bodaboda business.

5. CONCLUSION AND RECOMMENDATION

The findings of this study show that the level of income of the riders before involving in the motorcycle business was worse compared to the income level after being in business which implies that the business had a significant contribution to the income level of the riders. The study also found that all respondents had another income-generating activity. Most of the riders had one to three income-generating activities including small businesses like shops and food centers. They also confirmed that those other activities resulted from bodaboda business earnings. Income-generating activities contributed some amount of income, though lower than the amount of income generated from running bodabodas. In regard to findings, discussion, and conclusion, this study recommends that the Government through the City Council of Dodoma should improve and strengthen policy and strategies concerning the improvement of the bodaboda business environment to enable it to work efficiently because it seems to be a viable livelihood option for most of the youth and unemployed people in

society. This will help to minimize the negative effects accompanying the business such as armed robbery and accidents as reported in the study done in Kenya. A similar study covering a wider area and a higher number of participants need to be conducted in bodaboda groups to allow for wider generalization of the findings to the whole region or a country.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Opondo VO, Kiprop G. Bodaboda motorcycle transport and security challenges in Kenya, National Crime Research Centre: Fighting Crime through Research, Nairobi; 2018.
2. Starkey P. The benefits and Challenges of increasing motorcycle use for rural access. Research for Community Access Partnership (ReCAP), UK: International Conference on Transport and Road Research 15th-17th March 2016/Whitesand Hotel, Mombasa, Kenya; 2016.
3. Dickson T. Motorcycle handling and chassis design. Tony Foale Designs. 2016;4-1. ISBN 978-84-933286-3-4
4. Mill MA. An appraisal of motorcycle as a commercial passenger transport mode

- in Port Harcourt Metropolis. *Journal of Transport Studies*. 2012;2(1): 77- 89.
5. Rollason W. Youth development success amongst motorcycle taxi drivers in Kigali. Preliminary report of Research carried out under MINEDUC permit No MINEDUC/S&T/0074/2012, in affiliation with the National University of Rwanda, Brunel University, London; 2012.
 6. Oyesiku GN. Motorcycles as an emerging business for the poor in transport industry and sustainable development in modern Kenya; 2014.
 7. Maseno R. Bodaboda bicycle taxis and their role in urban transport systems: Case studies of Nakuru and Kisumu, Kenya, 30th Southern African Transport Conference: Africa on the Move, Pretoria; 2019.
 8. Salum H. The importance of trans-spatial economic and social networks in households. unpublished master's thesis, Faculty of Natural Sciences, University of Bern; 2015.
 9. Kumar D. The socio-economic impact of non-motorized transport in Africa, Institute of Transport and Development Policy; 2018.
 10. IFAD. Bodaboda Business and Income: Tanzania. DFID Transport Resource Centre Scheme Press; 2016.
 11. HBSS. Household Budget Surveys report on household income improvement in national 2019/2020: Government of Tanzania; 2019.
 12. CCD. City council dodoma report on social economic development trend, 2020-2021. Dodoma; 2020.
 13. Glasser K. Evaluation in Rational Choice Theory. Oxford London; 1998.
 14. Howe J, Davis A. BodaBoda-Uganda's rural and urban I-capacity transport services; 2019.
 15. Porter K. Cycling at the crossroads of poverty alleviation and sustainable transport. Interface for Cycling Expertise; 2015.
 16. IRF. Critical success factors in the motorcycle Bodaboda business in East Africa, Kenya. Unpublished, Master's Thesis, University of Nairobi; 2018.
 17. Itodo K. Impact of bicycle/bodaboda services (Bodaboda) on women's travel needs in Tanzania mainland. (in) Priyanthi Fernando and Gina Porter (Eds) Balancing the load: women, gender and transport. London, The International Forum for Rural Transport and Development. (Zed Books) (Forthcoming); 2019.
 18. Livinga CK. The contribution of Bodaboda transport business on the livelihood of youth in Arusha Tanzania; Tengeru Community Development Journal. 2021; (1821-9853).
 19. PECOD. Determinants of earnings among commercial motorcycle operators in Tanzania. International Journal of Economics and Management Sciences. 2020;2(2):11-1.
 20. WEO. Majengo ward Social and Economic Profile Report, 2020-2021. Dodoma City Council; 2021.
 21. Creswell P. Research Design and Methodology. Santa Press Paris; 2019.
 22. Naddumba GY. The role of commercial motorcycles in the rural economy: A case study of Laikipia East Sub-county Kenya (Unpublished MA Thesis University of Nairobi); 2019.

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