

IMPACT OF AUTO-RICKSHAW (BAJAJ): A COMPREHENSIVE STUDY ON POSITIVE AND NEGATIVE EFFECTS ON BURAO SOCIETY, SOMALILAND

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Abstract

Background: in Somaliland, Auto-rickshaw became very popular transportation in all main cities and now it is the choice of many citizens when it comes to speed and reaching destinations in time. However, Burao city community is not satisfied with the service provided by Auto-Rickshaw sector and most of the community complain is about the drivers of Auto-Rickshaw. Therefore, the aim of this study was to evaluate positive and negative effects of Auto Rickshaw on Burao society.

Methods: this study was survey research design, convenient sampling was used to select participants from seven villages in Burao (sha,ab, Mohamed Ali, Plaza, Hodan Qaylo, Uqubo, German, and Saylada). A total of 175 Questionnaires were distributed to Auto-rickshaw drivers and 18 persons (14 Auto-rickshaw passengers, 3 hospital directors, and 1 traffic police officer) were interviewed.

Results: The study revealed that 100 % of Bajaj drivers are males and the study showed that drivers generate an average gross income of Sl.sh 145,885 per day, but the per-day average net income was Sl.sh 48,274. The type of Auto-Rickshaw used In Burao was designed to take 3 passengers at a time, but, according to this study, 64% of the Auto-rickshaw drivers carry 4 persons per trip, 35% carry 5 persons per trip and only 1% of the drivers carry 3 persons per trip. The data were analyzed using SPSS version 20.

From the interview data, the study revealed that Auto-rickshaws have some positive and negative effects on Burao community. Negative aspects of Auto-Rickshaws includes Regular accident, Violating traffic rules and regulations, Over-speeding and Overloading, Hijacking passengers and raping girls and Lack of respect for passengers and community. Positives effects of Bajaj on Burao community are Quick and Regular service, Income generation and cheap fare.

Conclusions: our study found out that there are many Disadvantages of this sector includes regular accidents, over speeding, and Overloading, Hijacking passengers and raping girls and Lack of respect for passengers and community. Whereas, advantages includes quick and regular service, income generation, and cheap fare. Thus, Auto-Rickshaw sector is very useful for the community and these negative effects needed to be minimized through implementation of the current study's recommendations.

Recommendations: it's suggested that the ministry of motor vehicles and transportation should train Bajaj drivers on driving skills, and Police and other security forces should set a mechanism to ensure Bajaj's passengers safety.

1. Introduction

The meaning of the word Rickshaw is “Human-Powered Vehicle” which was first used in 1887 and originated from Japanese language (Basri, Khatun, Reza and Khan 2014). The first form of Rickshaw was two or three wheeled passenger vehicle that was known as pulled rickshaw and was dragged by one man, additionally two or more passengers used to ride at time (Basri et al., 2014.). In Bangladesh, Rickshaw was one of the modes of transportation that people began earlier in 19th and it created job opportunity for many male workers before people got alternatives later when cars, tempo, laguna, baby taxi and some other new vehicles were made accessible (Basri et al., 2014.) Furthermore, Rickshaw has gone through a long process of development: there have been different types such as pulled-rickshaws, cycle-rickshaw, Auto-Rickshaw and electronic rickshaw (Basri et al., 2014.) This research is studying Auto-Rickshaw which has three wheels: one in front and the other two at the backside, and can carry four passengers at a time with maximum speed of 60km/h (Majumdar & Jash, 2015). In addition to that, the fuel tank has storage capacity of about 15 liters to 20 liters which also varies with the vehicle model (Majumdar & Jash, 2015). Auto-Rickshaw is becoming very important transportation system in even big cities like Mumbai which hosts more than 12 million people (Shlaes, 2013).

In Somaliland, Auto-Rickshaw was first used in 2009 in Audal region which is located in western part of Somaliland and has border with Japuti and Ethiopia. It is believed that Audal region adopted Auto-Rickshaw transportation earlier because of its proximity to Ethiopia and Japuti where Auto-Rickshaw transportation was started very earlier. Later, Auto-Rickshaw became very effective local transportation in all main cities of Somaliland and now it is the choice of many citizens when it comes to speed and reaching destinations in time. In Burao city, Auto-Rickshaw sector is growing fast and it is about to replace other means of transportation like Buses. Although local government and traffic officers are putting higher pressure on Auto-Rickshaws to limit their expansion, many local inhabitants prefer Auto-Rickshaw service instead of riding Buses. On the other hand, there are some people who do not like Auto-Rickshaw because of its higher vulnerability to risks. However, this study will evaluate positive and negative effects of Auto-Rickshaw on Burao community.

Transportation systems are generally divided into five different modes which are: road transport, railway transport, water transport, air transport and pipeline transport. International communities use these modes for the transportation of people and cargo. Effectiveness of a given transportation system may depend on many factors such as reliability, driver characteristics, safety, quality of the carrier (e.g vehicle), quality of the route/path and availability of traffic supervision service. Therefore, a transportation system should be good in all of these aspects in order to serve public in an efficient and effective manner by which people and freight can reach their destinations magnificently. This paper focused on Auto-Rickshaw/Bajaj transport system in Burao city where people are highly depending on Auto-Rickshaw for their daily movement within the city. Auto-Rickshaw transport system must be decent and reasonable in all of the above mentioned aspects. For example, characteristics of Auto-Rickshaw drivers are very important in here since young and irresponsible drivers may always dominate this sector. In this regard, Auto-Rickshaw drivers must be accountable and alert in order to protect their passengers who are always liable to encounter accident in anytime. Auto-Rickshaw drivers should also abide by traffic rules and respect other Vehicles.

However, Burao city community is not satisfied with the service provided by Auto-Rickshaw sector and most of the community complain is about the drivers of Auto-Rickshaw. For example, majority of the drivers are very young school dropouts and sometimes you may see 13 years old boy driving Auto Rickshaw with 5 passengers, further, most of them do not have driving license and they simply drive when they buy an Auto-Rickshaw. Additionally, because of their age and lack of sufficient formal education, many Auto-Rickshaw drivers are irresponsible, impolite and rude people, and for that reason they drive in a very risky manner. Since they do not attend formal driving course, they do not know how to drive on the highways that many vehicles are using and they could not even understand road symbols and rules. Thus, all these things caused some of the society and traffic police officers to develop negative perceptions towards Auto-Rickshaw drivers and their service. If this problem is not solved, Burao community cannot benefit from this efficient technology (Auto-Rickshaw) which would have affected the community very positively if the sector had been regulated properly. The current study combined quantitative and qualitative research methods and its aim was to evaluate positive and negative effects of Auto Rickshaw on Burao society through studying 175 Auto Rickshaw drivers, 14 Auto-Rickshaw riders and the commander of Togdher Traffic police and 3 Hospital directors.

2. Literature

In this section, findings of the relevant literature will be presented so that the existing knowledge of this area will be grasped. This literature section will be based on the three objectives of the study which are to determine positive effect of Auto-Rickshaw, to evaluate negative influence of Auto-Rickshaw and to describe personal characteristics of Auto-Rickshaw drivers.

Negative effects of Auto-Rickshaw

Auto-Rickshaw has both positive and negative influences on the communities in the world, among the negative effects of the Auto-Rickshaws includes its higher accident rates. Accident is unexpected event which is associated with injury and lost or harm(Manglam, Sinha, Praharaj, Bhattacharjee, & Das, 2013). Auto-Rickshaw is unstable and seen as liable to turn turtle or “over turn” since they lack scientific design, thus, vehicle itself is seen as dangerous and drivers also over load their vehicle (Badami & Harding, 2016). Harding (2016) also stated that lack of doors and safety belts cause passengers to be thrown onto road when accidents occur. Auto-Rickshaw accidents are caused by many factors such as driver’s poor level of education and substance use(Alcohols) (Manglam et al., 2013). Manglam et al. (2013) also stated that age of Auto-Rickshaw drivers does no influence the Auto-Rickshaw accidents.

To reduce injury risks and increase safety of Auto-rickshaw, velocity must be reduced, because drivers who over speed the limits, break rules, and carry extra persons are prone to accidents(Khalid, Berthelson, Prabhu, & Jones, 2017).Accidents who occur in developed countries such as Europe are comparatively smaller than in developing countries because of city planning and urban infrastructure (Khalid et al., 2017).

Apart from the accidents, It has been seen that Auto-Rickshaws is contributing to traffic jam or congestion(Badami & Harding, 2016). What is more, what causes congestion firstly is how Auto-Rickshaws are parked, because drivers park their vehicles in the middle of the street and wait for passengers(Badami & Harding, 2016). The second thing which is thought to cause congestion is connected to their increasing number in the cities(Badami & Harding, 2016). Additionally, there are other disadvantages of Auto-rickshaw such as overcharging, rude behavior of drivers, lack of

continuous availability in some villages, safety concerns, poor suspension and its higher susceptibility to rain (Shlaes, 2013). It is also seen that drivers are potential threat to women and it is believed that 92% of the women feel unsafe on urban streets at night, thus, Auto-rickshaw drivers are significant cause of sexual crimes (Badami & Harding, 2016).

Positive effects of Auto-Rickshaw

Although Auto-Rickshaw sector has the above different disadvantages, the sector has several benefits for the Society. According to Hossain & Susilo (2011) majority of people use Auto-Rickshaws to commute to work, shopping and getting children to and from school. Furthermore, cheapness, convenience, speed and door to door services are the main reasons people choose to use Auto-Rickshaws (Hossain.M., 2011). The income of Auto-Rickshaw drivers is higher than that of Rickshaw pullers and they generate monthly average income of Tk 11,625 which is about \$ 150 (Basri, Khatun, Reza and Khan, 2014). Moreover, because of its comfort, affordability and availability, Auto-Rickshaw is highly preferred by many social groups such as middle class people, females and older people (Hossain.M., 2011). Additionally, this sector generates a large revenue per year, so it must be considered as an inspiring group with a huge potentiality of generating revenue that can affect the whole economy positively (Dhanuraj, 2010).

Personal characteristics of Auto-Rickshaw drivers

Conceiving personal characteristics of Auto-Rickshaw drivers is one of the objectives of this study. To this end, how previous researches described driver's characteristics was summarized. Age group of Auto-Rickshaw drivers is between 21 and 40 years old (Badami & Harding, 2016; Dhanuraj, 2010). Moreover, this age group has ability to work more because of their physical strength (hardling, s.*, M.G. Badami, C. Reynolds, 2016). Most of the Auto-Rickshaw drivers are school dropouts and are from poor families with limited opportunities (Dhanuraj, 2010). 30 % of Auto-Rickshaw drivers are illiterate, 12.5% have primary school certificate, 45 % have Secondary school certificate and 12.5 % have knowledge higher than these levels (Basri, et al., 2014). 52.5% Auto-Rickshaw drivers are owners while 47.5% drive rented vehicles (Basri, et al., 2014). Furthermore, Auto-Rickshaw drivers spend most of their time in polluted, dangerous and noisy environment that expose them to harmful pollutant gas such as carbon monoxide and sulfur dioxide which contribute to respiratory problems such as asthma, breathlessness and chest pain (Adhikari & Gupta, 2018). The respiratory problems are quite high among Auto-Rickshaw drivers and there are number of risk factors contributing for developing respiratory symptoms such as smoking, years of service, and duration of work per day (Adhikari & Gupta, 2018).

Moreover, Auto-rickshaw drivers are at more risk of developing cardiovascular disease because of the working environment and their harmful lifestyle such as smoking habits, insufficient sleep, and stressful occupational conditions (Gupta & Adhikari, 2018). Additionally, drivers work normally in 25 days per month and 10 to 11 hours daily in every major city (Badami & Harding, 2016).

Manglam et al (2013) pointed out that Auto-Rickshaw drivers use illegal substances specifically Alcohols. Some studies tried to reveal why Auto-Rickshaw drivers use illegal substances. For example, Manglam et al. (2013) stated that most Auto-Rickshaw drivers use tobacco products to reduce stress, to be awake or to remove nervousness. In contrast, Dhanuraj (2010) pointed out that majority of Auto-Rickshaw drivers use Tobacco in their relaxation time while waiting their

passengers. It has been seen that back pain and aural disorders are the main common factors that push drivers out of the profession at relatively early age of the late forties (Dhanuraj, 2010).

3. Research methodology

This section presents the methodology used in the study such as research design, data collection methods, samplings methods, tools for data analysis and sources of data. This research will use survey research design which is organized efforts of gathering information, habitually from individuals, to describe and explicate the believes, perceptions, values and conduct of the under investigation people (Gray, Williamson ,Karp, & Dalphin,2007.) Additionally, the study will collect quantitative data by using a questionnaire and qualitative data through using interviews, therefore, this study will use a mixture of qualitative and quantitative approach to study the impact of Auto-Rickshaws on Burao community.

The population of this research is all of those who interact within the Auto-Rickshaw sector who are Auto-Rickshaw drivers, Auto-Rickshaw passengers or riders, traffic police officers and directors of major city Hospitals. In Burao city, there are about seven Auto-Rickshaw stations in which inhabitants of some villages are served and five villages (Auto-Rickshaw stations) will be selected randomly. Quota sampling method was applied in order to recruit participants from the selected seven villages and 25 Auto-Rickshaw drivers were selected from each village with an assumption that there is same number of Auto-Rickshaws in each village. Similarly, 14 participant passengers were equally divided among the seven villages and each village got 2 interviewee passengers. Moreover, one traffic police officer and 3 Hospital directors were also be interviewed. Hospital directors were interviewed so as to know the injury and death cases caused by Auto-Rickshaws.

As mentioned above, this research employed two types of data collection instruments: questionnaire for Auto-Rickshaw drivers and interview for Auto-Rickshaw riders, traffic police officers and Hospital directors. Questionnaires were distributed among 175 Auto-Rickshaw drivers, further, 14 passengers, one traffic police officer and 3 Hospital directors were interviewed to evaluate positive and negative influence of Auto-Rickshaw sector on the community.

Two methods of data analysis were used: quantitative method for the questionnaire data and qualitative method for the interview data. To do so, statistical data analysis methods such as visual presentation tools, description of data nature, measures of central tendency and inferential statistics were employed for the quantitative data with help of SPSS, further, thematic framework was applied when it comes to analyzing the interview data.

4. Data analysis

This chapter covers analysis of both of the interview and questionnaire data. First section covers demographic data of the respondents, second section presents descriptive statistics of the main research variables while section three consists of relationship between the research variables. The fourth section encompasses analysis of the interview data.

4.1 Demographic information of the respondents

This section presents analysis of the demographic variables such as gender, age, education level, marital status, village, family size and some additional information like drug addiction information and ownership of the Bajaj.

4.1.1 Distribution of the Respondents by Gender

The study indicated that 175(100%) of the respondents were male while there were no female respondents in the study. This means all of the of Auto rickshaw drivers in Burao city were men as shows in the below table-4.1

Table-4.1 gender of the respondents

Gender	Frequency(f)	Percentage (%)	Cumulative percentage
Male	175	100%	100.0
Female	0	0%	0.0
Total	175	100	100

Source: primary data, 2019

4.1.2 Distribution of drivers by Age

Table 4.2 shows that 45(25.7%) of the respondents were between 11-20 years, 87(49.7%) were between 21-30 years, 32(18.3%) were between 31-40 years, 11(6.3%) were between 41-50 while above 50 years had not included the respondents in the study. Therefore, the majority of the respondents in the study were in between the ages of 21- 30 years. This means most of Auto-Rickshaw drivers in Burao city were between 21 and 30 in age.

Table 4-2: ages of the drivers

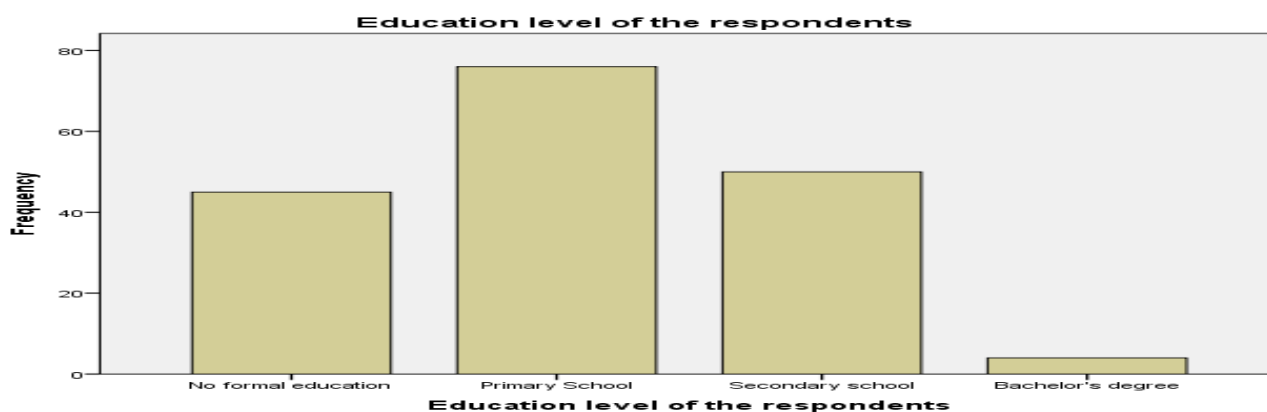
Age	Frequency	Percent	Cumulative Percent
11-20years	45	25.7%	25.7
21-30years	87	49.7%	75.4
31-40years	32	18.3%	93.7
41-50years	11	6.3%	100.0
Total	175	100.0	---

Source: primary data, 2019

4.1.3 Distribution of Auto-Rickshaw drivers by education level

The below figure-4.1 shows the education level of the respondents and the result indicated that 45(25.7%) of the respondents had not taken any formal education, 76(43.4%) were primary level, 50(28.6%) had secondary certificate while 4(2.3%) had Bachelor's Degree. From the findings of the study, it can be said that the most Auto rickshaw drivers in Burao city had secondary certificate.

Figure 4-1: education level of Auto-Rickshaw drivers

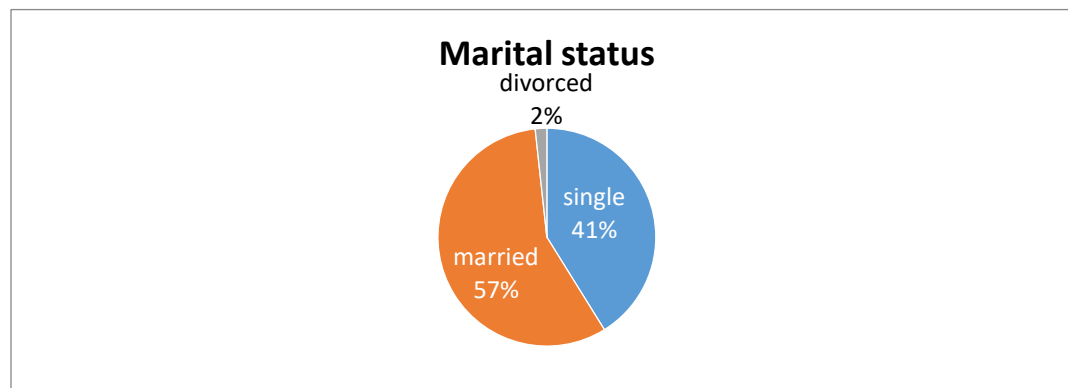


Source: primary data, 2019

4.1.4 Marital status of the drivers

In this study, 72(41.1%) of the respondents were single, 100(57.1%) of the respondents were married and 3(1.7%) of the respondents were divorced. Therefore, it can be said that the majority of the respondents were married as shows in the below figure 4-2.

Figure 4-2: marital status of drivers



Source:
primary data,
2019

4.1.5 Driving license of the drivers

As shown in the table below-4.2 , 78(44.6%) of the respondents indicated that they have driving license while 97(55.4%) of the respondents indicated that they have not any driving license. Therefore, it can be said that the majority of the respondents did not have driving license.

Table-4.3: driving license of the drivers

Do you have driving license?	Frequency	Percent	Cumulative percent
Yes	78	44.6	44.6
No	97	55.4	55.4
Total	175	100.0	100.0

Source: primary data, 2019

4.1.6 Family size of the drivers

The respondents were asked to indicate their family size as shown by below table-4.3. Around 27(15.4%) of the respondents had a family of 1-3 members, 57(32.6%) had a family of 4-6 members, 39(22.3%) of the respondents had a family of 7-9 persons, 37(21.1%) of the respondents had a family of 10-12 members while 15(8.6%) of the respondents had a family of 13-15 members. Therefore, majority of the respondents had a family members of 4-6.

Table-4.4: family size of Auto-Rickshaw drivers

Family size of the respondents	Frequency	Percent	Cumulative percent
1-3 members	27	15.4	15.4
4-6 members	57	32.6	48.0
7-9 members	39	22.3	70.3
10-12 members	37	21.1	94.1
13-15 members	15	8.6	100.0
Total	100.0	100.0	

Source: primary data, 2019

4.1.7 Drug abuse of the drivers

The below table-4.4 shows that 88(50.1%) of the drivers addicted to some drugs while 87(49.9%) of the drivers were not druggie. Consequently, respondents who had addicted to drugs were more than those who were not druggie.

Table-4.5: drug abuse of Auto-Rickshaw drivers

Are you addicted to any drug?	Frequency	Percent	Cumulative percent
Yes	88	50.1	50.1
No	97	49.9	100
Total	175	100.0	

Source: primary data, 2019

4.1.8 Types of drugs that Auto-Rickshaw drivers are addicted to

As indicated by table-4.5, 14(8 %) of the respondents had habit of smoking cigarettes, 31(17.7%) of the respondents had habit of chewing Kat and 43(24.6%) of the respondents had the habit of chewing Kat and smoking cigarettes.

Table-4.6: Types of drugs that Auto-Rickshaw drivers are addicted to

Which type of drug are you addicted to?	Frequency	Percent	Cumulative percent
Cigarette	14	16	16
Kat	31	35	51
Cigarette and Kat	43	49	100
Total	88	100	

Source: primary data, 2019

4.1.9 Ownership of the Auto rickshaws

As illustrated in the below table-4.6, 129(73.7%) of Auto-Rickshaws were owned by drivers while 46(26.3%) of Auto-Rickshaws were rented. Therefore, the majority of Auto rickshaws that operate in Burao city were owned by auto rickshaw drivers.

Table-4.7: Ownership of the Auto rickshaws

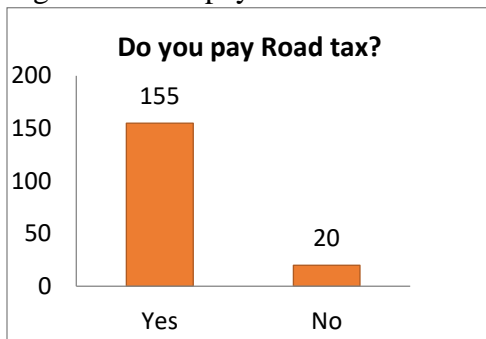
Ownership of the vehicle	Frequency	Percent	Cumulative percent
Personal	129	73.7	73.7
Rented	46	26.3	26.3
Total	175	100.0	100.0

Source: primary data, 2019

4.1.10 Tax payment of the Auto-Rickshaw drivers

Figure-4.3 is presenting information about road tax payment. It was seen that 155(88%) of Auto-rickshaw drivers paid road tax every six months. On the contrary, 20(12%) Auto-rickshaw drivers replied that they did not pay any road tax at all. This indicates that the majority of rickshaw drivers pay road tax on time.

Figure-4.3: tax payment Auto-Rickshaw drivers

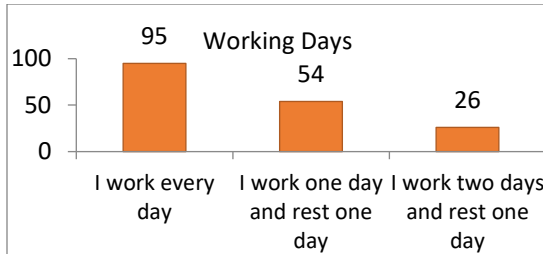


Source: primary data, 2019

4.1.10 Working days of Auto-Rickshaws

According to below figure-4.4 , 95(54.3%) of the Auto-rickshaw drivers in Burao city work every-day while 54(30.9%) of them work one day and rest one day. The rest which is 26(14.8%) work two consecutive days and rest one day. This shows that the majority of Auto-rickshaw drivers work every day.

Figure-4.4: Working days of Auto-Rickshaws

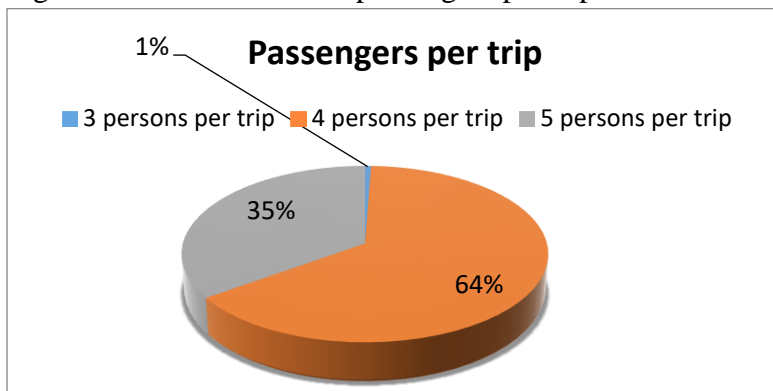


Source: primary data, 2019

4.1.11 The number of passengers per trip

The below figure-4.5 shows information about the number of passengers per trip. Normally, the Auto-rickshaws in the Buao city were designed to take 3 passengers and the driver per trip. However, according to the respondents, 64% of the Auto-rickshaw drivers carry 4 persons per trip while 35% carry 5 persons per trip and only 1% of the drivers carry 3 persons per trip. This signifies that only 1 % of the drivers take three passengers per trip which the right number is regarding to capacity of the Auto-Rickshaws.

Figure-4.5: The number of passengers per trip



Source: primary data, 2019

4.1.12 Working hours and the number of trips per day

According to the below table-4.8, the working hours per day of Auto-rickshaw drivers ranged from 6 hrs to 18 hrs per day and the mean of the working hours was 12hrs per day. This indicates that the majority of drivers wake up early in the morning and work until night. The study also revealed the number of trips of Auto-rickshaw per day and the minimum and maximum trips per day for Auto-Rickshaw drivers were 5 and 100 respectively. With a mean of 14 trips per day.

Table-4.8: Working hours and the number of trips per day

	Minimum	Maximum	Mean
Working hours	6hrs	18hrs	12hrs
Trips	5.00	100.00	14.00

Source: primary data, 2019

4.2 Descriptive statistics

The below table-4.8 shows descriptive statistics of the main research variables such as Income per-day, Auto-Rickshaw cost per-day, Daily expenses for food and refreshment, Rent cost per-day, Cooperative fee per-day, per-month Repairing cost, Road tax payment, bribe and net income per day.

As shown in the above table-4.7, the per-day income of Auto-Rickshaw drivers was between Sl.sh 60,000 and Sl.sh 340,000 with an average per day income of Sl.sh 145,885. The findings of the study showed that the cost per day of Auto-Rickshaw drivers varies between Sl.sh 5,000 and Sl.sh 84,000 while the average cost per day was Sl.sh 38,782. This daily cost was mainly fuel expenditure of the Auto-Rickshaw. Apart from these daily fuel costs, Auto-Rickshaw drivers use a large portion of their income for the daily food and refreshment. For this purpose, they spent average expenses of Sl.sh 35,082 per-day with a minimum and maximum expenditure of Sl.sh 5,000 and 100,000 respectively. Furthermore, the average rent of Auto-Rickshaw was 62,500 per day while minimum and maximum rents were Sl.sh 40,000 and 80,000 respectively. Moreover, the study investigated cooperative fee payment of the drivers and the result shows that drivers pay an average of Sl.sh 9,029 per day with minimum and maximum values of Sl.sh 6,000 and 15000 respectively. What is more, drivers spend some of their income on repairing and maintenance of Auto-Rickshaws. In this regard, drivers allocate an average of Sl.sh. 204, 608 per month with a minimum and maximum values of Sl.sh 56,000 and 800,000 respectively. Auto-rickshaw drivers pay six months road tax ranging from Sl.sh 60,000 to Sl.sh 120,000 with mean of Sl.sh 72,819.

Among other costs, bribe was one of them, and it is given to queue controllers. The minimum and maximum amount of bribe were Sl.sh 1,000 and Sl.sh 30,000 respectively while the average mean value of the bribe was Sl.sh 10,294. Finally, the net income which represents the profits or the amount of money remains of the drivers was assessed and the result shows that the average net income was Sl.sh 48,274 per-day, where the minimum and maximum income of Auto-rickshaws were Sl.sh -85,000 and Sl.sh 250,000 respectively.

Table-4.8: descriptive statistics of the main research variable

Somaliland Shilling (Sl.Sh)	Minimum	Maximum	Mean
Income per-day	60,000	340,000	145,885
Auto-rickshaw cost per-day	5,000	84,000	38,782
Daily expenses for food and refreshment	5,000	100,000	35,082

Rent cost per-day	40,000	80,000	62,500
Cooperative fee per-day	6,000	15,000	9,029
Repairing per-month cost	56,000	800,000	204,608
Road tax cost	60,000	120,000	72,819
Bribe	1,000	30,000	10,294
Net income per-day	-85,000	250,000	48,274

Source: primary data, 2019

4.3 factors affecting daily net income of Auto-Rickshaws

In this section, factors affecting daily net income of Auto-Rickshaws will be assessed and concentration will be put on family size, education level and drug use.

4.3.1 Effect of family size on daily net income of Auto-Rickshaws

A one-way ANOVA was conducted to reveal if daily net income was different for respondents with different family size. Family size groups of the participants were five: 1-3($n = 26$), 4-6 ($n = 58$), 7-9 ($n = 39$), 10-12 ($n = 37$) and 13-15 ($n = 15$). There were no outliers, as designated by boxplot; data was normally distributed as shown by Kolmogorov p -value of 0.086 ; and the data met homogeneity of variances assumption, as indicated by Levene's test of homogeneity of variances ($p = .0986$). Data was presented as mean \pm standard deviation and there is difference among the means of the respondents with different family size groups, but as can be seen from the below table 4-9, these differences are not statistically significant, $F(5, 169) = 0.298$, $p = 0.914$. This result also shows that the hypothesis that family size significantly affects tax evasion attitudes has been rejected since there is no statistical difference between the age group means.

Table-4.9: Effect of family size on daily net income of Auto-Rickshaws

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3785293168.889	5	757058633.778	.298	.914
Within Groups	429893541116.825	169	2543748764.005		
Total	433678834285.714	174			

Source: primary data, 2019

4.3.2 Effect of education level on daily net income of Auto-Rickshaws

A one-way ANOVA was run to expose if whether daily net income was different for respondents with different education level. Education levels of the participants were five: no formal education ($n = 45$), elementary school ($n = 76$), secondary ($n = 50$) and Bachelor's degree ($n = 4$). There were no outliers, as designated by boxplot; data was normally distributed as shown by Kolmogorov p -value of 0.086 ; and the data met homogeneity of variances assumption, as indicated by Levene's test of homogeneity of variances ($p = 0.683$). Data was presented as mean \pm standard deviation and there is difference among the means of the respondents with different education level and as shown by the below table 4-8 , these differences are statistically significant, $F(3, 171) = 3.625$, $p = 0.014$. This means, those with higher education level such as secondary and Bachelor's degree generated higher average daily net income compared to those with lower education level. This

result also shows that the hypothesis that family size significantly affects tax evasion attitudes has been supported since there is statistical difference between the age group means. Data values

Table 4-10: Effect of education level on daily net income of Auto-Rickshaws

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25929163233.083	3	8643054411.028	3.625	.014
Within Groups	407749671052.632	171	2384501000.308		
Total	433678834285.714	174			

Source: primary data, 2019

4.3.3 Effect of drug abuse on daily net income of Auto-Rickshaws

An independent-samples t-test was run to ascertain whether there were differences in daily net income between drivers who addicted to any drug and those who do not. The data did not have outliers as indicated by a boxplot, daily net income values were normally distributed as shown by Kolmogorov p-value of 0.086; and there was homogeneity of variances, as revealed by Levene's test for equality of variances ($p = 0.388$). The average daily net income of those who were addicted to drugs was 35,689.6 552 and average daily net income of those who were not addicted to any drug was 60,715.9091, further, this difference was significant as indicated by the result of the independent-samples t-test: $t(173) = -3.416$ 0.842, $p = 0.001$. The result of the tests are summarized in the below table 4-9. This implies that being druggie influences daily net income of Auto-Rickshaw drivers since there is significant statistical difference between average daily net income of druggies and average daily net income of non-druggies.

Table-4.11: Effect of drug use on daily net income of Auto-Rickshaws

	Levene's Test for Equality of Variances		t-test for equality of means						
	F	Sig	t	df	Sig.(2-tailed)	Mean difference	Std. error difference	95 confidence interval of the difference	
								Lower	Upper
Equal variances assumed	0.750	0.388	-3.416	173	0.001	-25026.3	7326.7	-39487.4	-10565.1
Equal variances not assumed			-3.419	169	0.001	-25026.3	7319.7	-39476.1	-10576.4

Source: primary data, 2019

4.4 Analysis of the interview data

Part of the data was collected by using interviews in which two interviewees were selected from each village of the seven villages that had been targeted and chosen interviewees were regular passengers of the Auto-Rickshaws. Moreover, three hospital directors and the commander of the

togdher traffic policy were interviewed. In total, 18 interviewees were interviewed and out of these 18 respondents, 7 were female while 11 were male, further, the interviewees were between 20 and 65 in age. Interviewees were asked to mention the positive and negative impact of Auto-rickshaw on Burao community. The below themes were produced after analyzing the interview data.

4.4.1 Negative effect of Auto-Rickshaws on Burao community

The interviewees of the study pointed out some negative effect of the Auto-Rickshaw on Burao community generally and particularly passengers. The followings are points mentioned by the interviewees.

Regular accident

Overwhelming majority of the interviewees agreed that Auto-Rickshaws are always involve in road accidents such as collision, overturning and hitting pedestrians. Most of the interviewees claimed that these accidents are caused by a higher irresponsibility and lack of driving skills of the Auto-Rickshaw drivers. Moreover, interviewees stated that Auto-Rickshaw drivers escape when they hit a pedestrian and animals or collide a car. The below quotes are evidences for the above arguments of interviewees about the negative effect of Auto-Rickshaws on Burao community. “Auto-Rickshaws constantly involve in accidents and my wife broke her leg after an Aut-Rickshaw overturned” Mr.A. “Auto-Rickshaws are prone to have a higher number of accidents like overturning and many people lost their organs and others died for these accidents” Mr. B. “ Auto-Rickshaws hit pedestrians and then scape to not compensate the people for the injury” Mr. I. “Per month we receive 14 cases of injury caused by Auto-Rickshaw accidents and most of these injuries are bone fractures” Ms. M a director of a hospital. “80 % of the injuries we receive are caused by Auto-rickshaw accidents and on average we treat 35 cases of injuries per month” Mr. N. “The number of injuries of Auto-Rickshaw accident that we experience per month is 40 cases on average” Ms. A. The commander of Togdheer traffic police was also interviewed in this study and he mentioned that “90 % of the monthly accidents are those of Auto-Rickshaws, further, we observe about 100 Auto-Rickshaw accidents per month. As shown by these views of the interviewees, the most serious problem of Auto-Rickshaws is their endless accidents that cause different injuries and death in sometimes.

Violating traffic rules and regulations

The interviewees also argued that Auto-Rickshaw drivers are not compliant with traffic rules and regulations: the drivers do not know road signs, when and how to pass cars, how to park in a suitable place and how to cross road intersections. Further, interviewees contended that Auto-Rickshaw drivers are irresponsible and careless regarding to complying with traffic rules and regulations. The below quotes show how the interviews reflected their perceptions towards driving skills of Auto-Rickshaw drivers.

“Auto-Rickshaws are driven by irresponsible youngsters who do not know or ignore traffic rules and regulations, they drive on wrong side which is belong to other cars”.Mr F. “We see four Auto-Rickshaws competing on the road while people and others cars are using the road, they park on the middle of the road, then they hinder other vehicles to use the road” Mr. G . “Auto-Rickshaws

are driven by irresponsible young people who do not know or disregard traffic and vehicle rules and regulations and they seem to not understand the system that roads are used” Ms. E. “Driving skills of the Bajaj drivers is very low and this causes drivers to use the road in however they want”. Toghder Traffic police commander. They(drivers) stop the Bajaj immediately without checking the backside and youngsters involved in Bajaj get off and get on their while Bajaj is moving with speed” Mr. K.

As most of the interviewees contended Auto-Rickshaw drivers do not know traffic rules and regulations and this is serious problem which can cause many damages and distractions on people and properties around roads.

Over-speeding and Overloading

The interviewees also agreed that Bajaj drivers always over speed the vehicles in a very incredible way which shows how careless they are. Apart from driving with high speed, interviews proclaimed that Auto-Rickshaws are overloaded with passengers and materials. The following are Speech marks of the interviewees talking about high speed and overloading problems of Auto-Rickshaws. “Drivers of Bajaj are reckless teenagers who drive with high speed and the hit pedestrians and escape”.Ms. J. “Auto-Rickshaws are driven by youngsters who overload it in an illogical way, they take a lot of teenagers in one time” Ms.L. “Drives drive Auto-Rickshaws speedily and their consciousness is very low”. Ms. H Auto-Rickshaws transport more people who are beyond its capacity sometimes they transport 5 people while it is designed to take three passengers and driver per trip” Mr.B.

Overspeeding and the overloading are also two other aspects from which one can understand problems of the Auto-Rickshaw sector.

Hijacking passengers and raping girls.

Interviewees contended that Auto-Rickshaw are used to kidnap passenger and rape girls specifically at night when movement of cars and people is low. The below quotes are presented below to be evidence the above argument.

“At the night, Auto-Rickshaws Hijack youngsters specifically girls and to rape or loot” Ms.H. “Auto-Rickshaws cannot be trusted specifically at nights because they may take mobile phones of women” Ms.E. “One of the problems of the Auto-Rickshaws is that they scape with girls at nights and rape them” Mr. K. Auto-Rickshaws are place where girls and boys meet in which they are liable to make bad actions”Ms.I.

As interviewees pointed out, Auto-Rickshaws are not trustworthy at nights due to above mentioned complications, further, this can affect the market and income of Auto-Rickshaws.

Lack of respect for passengers and community.

Some of the interviews argued that Bajaj drivers do not respect passengers with whom they make daily interaction. Lack of respect for passengers could be perceived from the loud music that they listen to and overspeeding. Interviewee’s pure and direct words in which they concentrated on this topic are presented below. “Drivers listen to loud music without consideration of feeling of passengers” Mr.F. “Drivers of Auto-Rickshaws turn on music which most of the passengers do

not like” Ms. G. “One of the weaknesses of Auto-Rickshaws is the loud music that they listen to”. Ms. H.

As Music is forbidden in Muslims, some of the interviewees made complaints against Bajaj drivers for the music and songs.

4.4 .2 Positive effect of Auto-Rickshaws on Burao community

Apart from the above stated negative effects of Auto-Rickshaws on Burao community, interviewees also mentioned that the sector has positive effect on the community as well. The below points are those stated by the interviews regarding to positive effect of Auto-Rickshaws on Burao community.

Quick and Regular service

Interviewees argued that Auto-Rickshaws provide society regular service which connects all corners of the city together, further, they contended that Bajaj service is very quick and time saving compared to other local transportation systems like Buses. The respondents underlined that Bajaj service is available day and night and waiting time is less. The below are words of the interviewees reflecting their opinions about the Rickshaw service.

“Auto-Rickshaws are vehicles with good service which you can get whenever you need” Ms.E. “Auto-Rickshaws are vehicles which facilitate mobility of the people from one location of the city to another and you can get its service in any place and in any time you need” Mr. G. “You can get Auto-Rickshaw whenever you need for example, I work for constructions companies and sometimes sun sets while we are working in the corner of the city, then i take Auto-Rickshaw to reach my home or other destinations that I need” Mr.F. “You can get Bajaj in anytime you need its service and also it saves your time by reaching your destination on time” Ms. H. “ The service of Auto-Rickshaws is quick and patients take it to go to hospitals or homes”. Mr. K. “Auto-Rickshaws provide rapid service for instance you can do the home activities like cooking and at the same time go to downtown for shopping since you can immediately come back” .Ms.L

Income generation

The third advantage of the Auto-Rickshaws is that it is stable source of income for many youngsters and their families as has been realized during analysis of the numerical data that had been collected through questionnaire. The result of the numerical data showed that Auto-Rickshaws generate SL. Sh 48,274 of net income per day, further, the minimum and maximum per day net incomes were SL. Sh-85000 and 250000 respectively. This is evidence for Auto-Rickshaw’s role in job creation and its positive impact on economics and living standards.

Cheap fare

Interviewees attested that Auto-Rickshaw’s fare is very cheap when quickness and regularity of its service are taken into account. Respondents made clear this arguments through the below quotes.

“The fare of the Auto-Rickshaws is cheap and its availability is high” Ms.A “The fare of the Auto-Rickshaws is cheap for both people and transportation of materials” Ms. H. “price of their service is cheap both when you are normal passenger and when you take it to a specific destination” Mr.G. “The price of their service is very cheap which most of the people can afford” .Ms.E.

This is also another factor which touches the basic life of the society since transportation is very indispensable for the mobility of the people and material.

5. Discussion, Conclusion and Recommendation

5.1 Discussion

This section is a summary of the major findings of the study and relates to the findings of previous studies when it possible. The objectives of this study were to evaluate negative and positive effects about Auto-rickshaw and describe characteristics of the Auto-rickshaw drivers.

The results of this study indicate that 49.7% of age group of Auto-rickshaw drivers was between 21-30 years old, and 25.7% were only between 11-20 years old whereas, 6.3% are the age group of 41-50 years old. Moreover, 18.3% were between 31-40 years. However, these findings are consistent with that of previous studies on Badami & Harding, (2016); Dhanuraj, (2010) who confirms the age group of Auto-rickshaw drivers is between 21 and 40 years old, this age group has the ability to work more because of their physical strength.

The distribution of Auto-rickshaw drivers by their academic qualifications were as follows. Majority of Auto-rickshaw drivers were primary school leavers which consist of 43.4%. The study also found that 28.6% had secondary school certificate in education while 25.7% did not take any formal education. Moreover, 2.3% had bachelor's degree in education. Therefore, these results reflect those of Basri, et al.(2014) who also found that 30% of Auto-rickshaw drivers are illiterate, 12.5% have primary school certificate, 45% have secondary school certificate and 12.5% have knowledge higher than these levels.

The marital status of Auto-rickshaw drivers in the study shows that 41% were single and 57% were married and only 2% were divorced. In accordance with the present results, previous studies on Badami & Harding, (2016); have demonstrated that most of drivers have a wife and at least two children.

It has been noted that 73.7% of Auto-rickshaw are owned by Auto-drivers while 26.3% of Auto-rickshaws that operate in the city are not owned by an Auto-driver. However, these findings broadly support in our literature on Basri, et al.(2014)that 52.5% of auto-rickshaw drivers have their own auto-rickshaw and 47.5% are used on rented basis.

The types of drugs among Auto-rickshaw drivers was found that 6.9% of the drivers had habits of smoking cigarettes, 17.7% had customs of consuming khat and 24.6% had the routine of chewing khat and smoking cigarettes simultaneously. However, these results are consistent with those of Manglam et al.(2013) who stated that majority of Auto-rickshaw drivers use tobacco products to reduce stress, to be awake or to remove nervousness.

The family size of the Auto-rickshaw drivers play an important role as an income determinant since if the family size is large the drivers tries to earn more money. Most of auto rickshaw drivers consist of 7-9 members of their family size. However, this finding is contrary to previous studies on Basri, et al.(2014) which have suggested that most of Auto-rickshaw drivers have 3 or 4 members in their family.

In this study it has been found that Auto-Rickshaws are always involve in road accidents such as collision, overturning and hitting pedestrians as indicated by the interview 90 % of the monthly accidents are those of Auto-Rickshaws. This result supports the findings of other researchers such as (Badami& Harding, 2016). Harding& Harding (2016) also stated that lack of doors and safety belts cause passengers to be thrown onto road when accidents occur. Similarly, Manglam et

al.(2013) tried to discover factors affect Auto-Rickshaw accidents and they found that accidents are caused by many factors such as driver's poor level of education and alcohols.

The study also shows that Auto-Rickshaw drivers are not compliant with traffic rules and regulations, further, the study indicated Auto-Rickshaw drivers over-speed and overload the vehicles in a very incredible way which shows how careless they are. This result is consistent with findings of those Khalid, Berthelson, Prabhu, & Jones, (2017) who stated that accidents are prone to drivers who over speed the limits break rules, and carries extra persons. Furthermore, it has been seen that Bajaj is contributing to traffic jam and congestions which later causes accidents (Badami& Harding, 2016).

This study discovered that Auto-Rickshaw drivers used to kidnap passenger and rape girls specifically at night when movement of cars and people is low. These results are in line with those of previous studies on Badami& Harding, (2016) as stated that Auto-rickshaw drivers are potential threat to women and it is believed that 92% of the women feel unsafe on urban streets at night. Thus, Auto-rickshaw drivers are significant cause of sexual crimes. However, Auto-Rickshaws are not trustworthy at nights due to above mentioned complications, further; this can affect the market and income of Auto-Rickshaws.

On the other hand, this study indicated that Auto-Rickshaws provide society regular service which connects all corners of the city together, further, the study have shown that Bajaj service is very quick and time saving compared to other local transportation systems like Buses. However, these results are in line with those of previous studies of Hossain&Susilo (2011);Asri, Khatun,Reza &Khan(2014) who stated that cheapness, affordability, availability, convenience and speed are the main reasons people choose to use Auto-rickshaws. Over loading is one of the problems of Auto-Rickshaws and the current study discovered that 64% of the Auto-rickshaw drivers carry 4 persons per trip while 35% carry 5 persons per trip and only 1% of the drivers carry 3 persons per trip. However the type of the Bajajs that are used Burao was designed to take three passengers per trip. Moreover, the current study revealed that there are some other positive aspects of Auto-Rickshaws such as cheap fare and income generation. Interviewees of the study who was the regular passenger of the Auto-Rickshaws claimed that one of the most important benefits Auto-Rickshaws is their cheap fare by which you can take them from one corner of the city to one other. Both normal fare and contract payments for specific destinations are cheap compared to other vehicles, further, its speed and suitability to narrow roads and other areas that cars cannot go, causes its fare and contract payments to be seen as cheap. This is great opportunity for the society because before Auto-Rickshaws came to the city transportation was very restrictive and irregular, for example before ten years the average price of tax was \$ 10.

Finally, the study indicated that Auto-Rickshaw sector an important source of income from which many families generate their subsistence income, for example, the result showed that drivers get a net receipt of S Sh. 48000 per day which they spend daily life of their families. Therefore, this sector should not be underestimated since it is a vital pillar of the city's economy.

The current study investigated the effect of family size, education and drug abuse on the daily net income of the Auto-Rickshaw drivers. The study revealed that family size does not have significant effect on the daily net income of the Auto-Rickshaw drivers. This does not match the result of some of the relevant literature, for example, Basri, Khatun, Reza and Khan (2018) stated that the drivers with large family size generate higher income than those with less family size. Similarly, Badami & Harding (2016) pointed out that there is positive relationship between family size and income of the Auto-Rickshaw drivers. The current study also examined the influence of education on income of the Auto-Rickshaw drivers and the result indicated that there is positive relationship

between education level and daily net income. This result is in line with the findings of the Basri, Khatun, Reza and Khan (2018) who claimed that education affects Auto-Rickshaw income positively. Furthermore, the study tested whether drug abuse has impact on daily net income of the drivers and the study revealed that being druggie has influence on the daily net income in a way that druggie drivers have lower average daily net income than those who are not druggie. These results are in line with those of previous studies such as (Manglam et al,2013; Dhanuraj, 2010).

5.2 Conclusion and recommendation

5.2.1 Conclusion

This study investigated both negative and positive influences of Auto-Rickshaw (Bajaj) on Burao community, further, personal characteristics of drivers were described. In this regard, the study had three objectives: to evaluate negative effect of Auto-Rickshaws on Burao community, to assess positive influence of Auto-Rickshaws on Burao community and to describe characteristics of the Auto-Rickshaws drivers.

The study revealed that 100 % of Bajaj drivers are males as this is tough work which females cannot do and Islamic religion does not allow women to do activities beyond home. 25.7% of the drivers were between 11 and 20 in age, 49.7% of drivers were in the age group of 21-30 years old, years old, age group of 18.3% of the drivers was 31-40 years while age group of 6.3% of the drivers was 41-50 years old while. This shows that age of about 75 % of the drivers is below 31 years old. Further, the study indicated that 25.7% of the drivers had no formal education, 43.4 % of the drivers were primary school level in education, and 28.6% of them were secondary level while 2.3% had bachelor's degree. This signifies that nearly 70 % of the drivers had education level of primary school or had no formal education at all. Moreover, marital status of the respondents was investigated and 41.1% of the respondents were single, 57.1% of the respondents were married and 1.7% of the respondents were divorced. Therefore, it can be said that the majority of the respondents were married. The study also indicated that Bajaj sector is a notable source of tax revenue for the government and 88 % of the drivers that they pay an average tax of Sh 72,819 per six months. Furthermore, the study showed that drivers generate an average gross income of Sh 145,885 per day, but the per-day average net income was Sh 48,274. The type of Auto-Rickshaw used in Burao was designed to take 3 passenger at a time, but, according to this study, 64% of the Auto-rickshaw drivers carry 4 persons per trip, 35% carry 5 persons per trip and only 1% of the drivers carry 3 persons per trip.

The study also discovered that Bajaj sector has many advantages and disadvantages for the society. Disadvantages of the sector includes regular accident, Overspeeding, and Overloading, Hijacking passengers and raping girls and Lack of respect for passengers and community. These were drawbacks that interviewed regular passengers mentioned. On the other hand, this research exposed that the sector has many benefits for Burao community. These advantages includes quick and regular service, income generation, and cheap fare. Thus, this research realized that the Bajaj sector is very influential and needs to be regulated by concerned Authorities so that its drawbacks could be minimized.

Finally, the study tested the influence of family size, education level and drug abuse and it was revealed that family size of the drivers does not influence daily net income while daily net income has positive relationship with education level. On the other hand, drug abuse affects daily net income and drivers who are druggie have lower average net income than those are not.

5.2.2 Recommendations

This study is recommending the following points to be made so that problems revealed by the study will be solved.

- 1.** The ministry of motor vehicles and transportation should train Bajaj drivers on driving skills and give them formally issued driving licenses. Apart from driving skills training, Bajaj drivers must be trained on driving ethics in order for them to respect other vehicles and pedestrians, be able park in a suitable places, use the roads in a right way, honor passengers and comply with traffic rules and regulations.
- 2.** In order to control both the speed and load (number of passengers and material) of the Bajajs, traffic police department must come up with strict policy by which traffic police soldiers in the streets can regulate Bajajs using roads of the city.
- 3.** Police and other security forces should set a mechanism by they can ensure that Bajajs drivers do not abuse their passengers at nights specifically girls.
- 4.** Since Auto-Rickshaw sector is very useful for the society and the economy, their challenges must be minimized. For example, roads of the villages that Bajajs operate must be suitable roads as Bajajs cannot move sandy areas.

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