WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

An Investigation of the Risk Component of Traffic Accidents in Tanzania

[1]Dr. Salum Haji Hamisi, [2]Dr. Nashir Adamu Kamugisha

[1]Department of Geography, P.O. Box 1031, Morogoro -Tanzania
[2]Department of Education, P.O. Box 1031, Morogoro -Tanzania

Abstract

Road traffic accidents are a common phenomenon in the developing country of Tanzania. Traffic accidents result from the rapid growth of the transport sector. This article examines the risk component related to road accidents in Tanzania. This paper aims to show the level of risk that the community is exposed to in traffic accidents to propose to minimize the impact on the community. The method of documentary analysis was chosen because data on road accidents are widely available. Internet sources, magazines, reports, books and conference proceedings were used extensively. There are two risk components associated with traffic accidents, namely probability and consequences. The first shows the quantitative and qualitative aspects of the traffic accident and the second is the consequential aspect of the risk qualitatively and quantitatively. Road traffic accidents have caused a significant number of fatalities and are one of the leading causes of death in Tanzania. It has been noted that traffic accidents have become a part of life in Tanzania. The following part is insignificantly researched as the accident report mainly focuses on the physical/material effects of the accident. It neglects the indirect, immaterial aspects of traffic accidents, such as the psychological and emotional impact. In general, the risk of road accidents is extremely high and the consequences are also high. Public education about the safe use of road transport must be made available to the public through all possible means of communication. Drivers need to be educated on road safety usage through training, workshops and seminars to improve, develop and enhance their skills and knowledge of road safety usage.

Key *Words: Road, Traffic, accidents, transportation, fatalities, risk, component.*

Introduction

Road accident phenomena are widespread in developing countries. It results from the rapid development of the transport sector. As researched, every development (social, political, economic and cultural) brings with it challenges. Transport ships such as motorcycles, buses, trucks and other means of transport have changed. It was found that between May 1, 2003, and May 31, 2014, 1.7 million transport vessels were registered, 55% of which were motorcycles. Renovation of transportation facilities has caused serious traffic accident problems nationwide. It was found that there were 2,722,720 traffic offences in Tanzania (NBS, 2017). These offences are classified as minor (2,718,732 or 99.9%), while serious offences account for 0.1 per cent of all reported offences. The data shows the extent and status of traffic accidents in Tanzania. On the other hand, the risk is defined as the probability that a bad event will occur. Life is full of risks. Eating, drinking water, travelling, playing, sleeping and all other human activities are all safe (risk).

Ansell and Wharton (1992) claim that risk = probability of an event occurring multiplied by the consequence of that event/hazard In other literature, they have read, risk =hazard * Vulnerability is presented as a probability or frequency that takes the context of the data and reflects the interest of the author. In other words, the probability indicates the possibility that a threatening event will occur. Frequency refers to the frequency with which a threatening event occurs in an area. It informs the public how often a bad event occurs at the site. An example of the frequency: In Tanzania, there are 3 accidents every 16 km or 3:16 km. ProbabilityRepresent the probability as a single event scenario, represented in decimal numbers ranging from 0 to 1. In the example above, the probability of a traffic accident is 0.2, or 20 per cent per 10 miles of driving. This article examines the two components of risk probability and consequences associated with traffic accidents

Road status in Tanzania

Tanzania is the largest country in East Africa. It has a very long road network. Road transport is used intensively and serves over 90 per cent of passenger and 75 per cent of freight traffic. According to TANROADS, the road network comprises 86,472 km of roads, of which 12,786 are federal roads, 21,105 km are regional roads and 52,581 are district, city and access roads under the office of the Prime Minister for Regional and Municipal Self-Government (PMO-RALG). face challenges such as insufficient funds for the rehabilitation, upgrading for routine maintenance, high accident rates on the roads due to poor road conditions, poor institutional arrangement and coordination in road traffic, and

high costs for road construction and maintenance. There are five ways to maintain roads in Tanzania; routine and recurring, periodic, selective bridge improvement, prevention and repair, and major bridge repairs (dica.logcluster.org)

The United Republic of Tanzania (URT) Traffic Report (2008) shows that 78.4 per cent (22,648 km) of the trunk and regional roads are in good condition and 21 per cent are in good and bad condition. In addition, 31,241 km (55.2%) of the municipalities' road network is in good condition and 48 per cent is in poor condition. In the municipal administration, 46,410 (82%) km are earth,9,425 (16.6%) gravel, and 790 (1.4%) are asphalted. In 2013,19 cent of national roads (6,439.29 km) and 2 per cent of district roads (1,069 km) were paved. In general, only 21 per cent of all roads in Tanzania are paved, while 79 per cent are unpaved, despite the relatively low number of registrations (521,000 cars and light four-wheelers). , 86,000 trucks and 49,000 buses in 2014), the number of road deaths in Tanzania is high with up to 4,000 deaths per year. There are also 809,000 motorized two- and three-wheelers and 55,000 other vehicles (SUMATRA, report 2017). In Tanzania, only 21 per cent of the roads are paved and 79 per cent are unpaved. This fact may justify why road accidents are high despite the small number of registered vehicles. The less-mentioned cause could be poor road standards in Tanzania.

Objectives

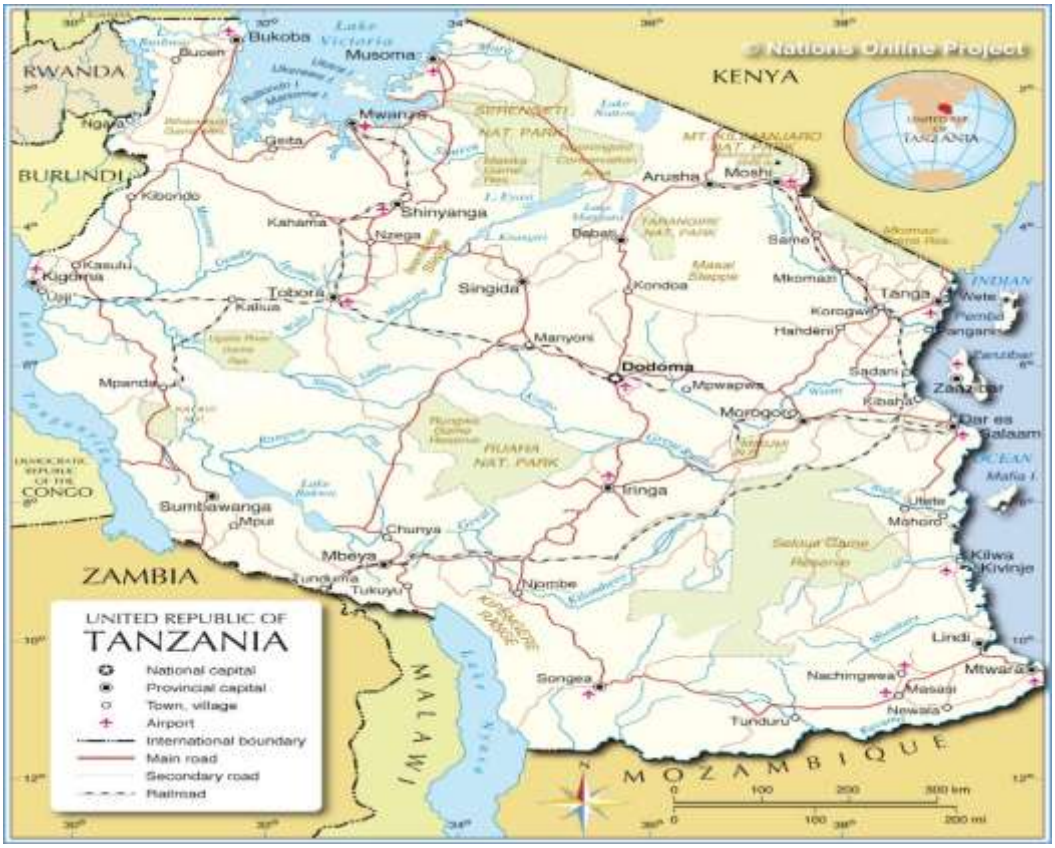
This paper aimed to examine the risk component associated with road accidents in Tanzania. To determine the extent of the risk related to road traffic in Tanzania, and to suggest ways to reduce it.

Methodology

The article used reports, data, written documents, research, newspapers, internet sources and textbooks to examine, analyze and recommend the management of risky road travel in Tanzania. The extracted information comes from secondary sources that are published, valid, reliable and credible. Based on the collected data, an analysis is performed that reflects the context of the work.

Tanzania Geographical Location

Figure; 1 Map of Tanzania showing the Boundaries and Geographical location



Tanzania results from the union of Tanganyika and Zanzibar on April 26th; 1964. It stands at 1° and 12° latitude south of the Equator, 29° and 41° longitude east of Greenwich It has an area of 945,087square kilometres. It has the following neighbours: Northern Kenya and Uganda, Western Rwanda, Burundi and Congo, Kinshasa, Southwest, Malawi and Zambia, South, Mozambique and the East Indian Ocean. Demographically, the population of Tanzania in 2012 was 45 million people from 126 tribes (NBS, 2013). The national language of this country is Swahili, which is spoken by the majority.

Status of Road Traffic Accidents globally

Road accident status worldwide

Accidents have been recognized worldwide as a public health problem. It has been found to cause deaths and injuries worldwide. The World Health Organization (WHO) (2018) claims that every year 1.35 million people die in road accidents, quantitatively 3700 people die every day in road traffic, while 20-50 million suffer non-fatal injuries that leave them disabled. Raffo and Biss (2012) claim that around 50 million people die in traffic accidents every year. It has been predicted that by 2030 road traffic accidents will be the fifth leading cause of death and the seventh leading cause of disability worldwide. while 15 to 44-year-olds are responsible for more than half of all traffic fatalities. It is estimated that more than 90 per cent of all traffic fatalities occur in low-and middle-income countries, even though 60 per cent of vehicles exist worldwide. The number of road accidents has remained at an unacceptable level. This claim negates the goal of achieving a sustainable growth rate (SGR) of 3.6 and reducing deaths by halfway through 2020. It has been confirmed that the number of vehicles has increased worldwide, while the fatality rate was 135 per 100,000 vehicles in 2000 to 64 per 100,000 vehicles in 2016

Gradual progress has been made in reducing traffic accidents around the world. It has been pointed out that traffic accidents are the eighth leading cause of death. More people are now dying from HIV/AIDS, tuberculosis and diarrhoea. The reduction in traffic accidents varies significantly between regions and countries of the world. The World Health Organization (WHO) (2018) claims that there is a strong correlation between road deaths and countries' income levels, as low- and middle-income countries have more deaths than developed countries. In low-income countries, the rate is 27.5 deaths per 100,000 inhabitants. As said, the rate in high-income countries is three times lower than in high-income countries, including Tanzania. Developing countries are more victims of road traffic than industrialized countries (Wisner et al. 2005). However, only 1 per cent of the world's motor vehicles are in low-income countries, but 13 per cent die in traffic accidents.

Road traffic accident status in the regions

In Africa, the number of road deaths is 26.6 deaths per 100,000 inhabitants. The number of road deaths in Africa is higher than the world average. In Southeast Asia, the rate is 20.7 deaths per 100,000 people. In addition, the rate is higher than the world average. In the other regions of the world, the rate is; 18 per 100,000 in the eastern Mediterranean, 16.9 per 100,000 in the western Pacific,15.6 per 100,000 in the Americas, and 9.3 per 100,000 in Europe. Europe has the lowest road fatality rate in the world, followed by America. Except for the eastern Mediterranean region, the number of traffic deaths per 100,000 inhabitants has fallen significantly as income has risen. In African, middle-income countries, the road traffic fatality rate is 23.6 per 100,000 people and 29.3 per 100,000 people in low-income countries. In Europe, the rate is 14.4 per 100,000 people in middle-income countries, three times higher than in high-income countries at 5.1 per 100,000 people (WHO, 2018).

Causes of traffic accidents

Traffic accidents are caused by several factors. In Tanzania, three factors are responsible for the traffic accident, namely; human factors, broken motorcycles and environmental factors. The human factor (84.5%) was identified as the main cause of road accidents, followed by environmental factors (8.8%) and broken motorcycles (7.3%) (CTSR, 2015). Haule and Kisiri (2016) point out that road traffic is caused by individual driver behaviour, mechanical errors and the physiological state of the means of transport. It has been found that high speed is a major cause of traffic accidents. The same argument was made by; Chiduo and Minja, 2001, and WHO, 2018. The high-speed tendencies among drivers are motivated to save time, get tips from the owner on how to arrive first at the track, appreciate the joy and the passengers and have time, to focus on the passengers. Haule and Kisiri (2016) point out other factors that cause a traffic accident in Tanzania: alcoholism and drug abuse (22%), the effectiveness of the law (37.4%), poor infrastructure (20%), such as narrow roads, potholes and no parking. It has been argued that a bad road attracts traffic accidents more than a good road. Traffic accidents are man-made hazards that affect human development.

Road Traffic Accident Likelihood in Tanzania

(i) Quantitative presentation of likelihood.

As previously described, the probability is expressed as frequency or probability. The risk of accidents on the road in Tanzania is high. According to the data presented above, the road accident from traffic accidents to injuries in 2018 were 11,543 accidents, and with a total road length of 86,472 km in the country, 1 accident per 7 km is often reported. The probability is given as 0.13 or 13 per cent. In addition, according to the same data (11,543 accidents and 366 days per year), there are 32 accidents per day nationwide. The frequency of traffic offences in 2018, both minor and serious, was 2,722,720, and the road length of 86,472 km is reported with 31 offences per 1 km or 7,400 offences per 1 km. The probability is reported as undefined. The WHO data shows a total of 16,252 deaths over a road length of 86,472 km, the frequency is 1 accident per 5 km or a probability of 0.2 or 20 per cent probability. Using the number of deaths by the number of days (16,252 incidences and 366 days), the frequency is 44 incidences per day and the probability is undefined. This is a quantitative representation of probability.

(ii) Qualitative presentation of likelihood

Coppola (2015, p. 153) states that probability is expressed through qualitative measures, using words to describe the probability of occurrence and each word or phrase representing a predetermined range of possibilities. The risk event is safe if it occurs once a year, probably after 1-2 years, possibly every 2-20 years,unlikely1 every 20-50 years, rarely1 every 50-100 years and extremely rarely1 after 100 years and more. This measurement does not fit into the Tanzanian context in which the risk hazards occur in everyday life. The modified type of qualitative measurement must be performed as shown in Table 2. Theoretically, the qualitative probability is represented as follows

Table 1. Likelihood presentation qualitative

Words	**Percentage range**	**Implication**
Certain	> 99% Ch.occ.in year	(1or more occurrences per year)
Likely	50-99% Ch.occ.in year	(1 occurrence every 1-2 years)
Possible	5-49% Ch.occ.in year	(1 occurrence every 2-20 years)
Unlikely	2-5% Ch.occ.in year	(1 occurrence every 20-50 years)
Rare	1-2% Ch.occ.in year	(1 occurrence every 50-100 years)
Extremely rare	< 1% Ch.occ.in year	(1 occurrence every 100 or more years)

Source; Coppola (2015, PP 153)

To be meaningful, the table below gives the qualitative measurement base of 10 units appropriate to the context of Tanzania. Data from the National Bureau of Statistics is used. Road accident certainly happens everywhere in Tanzania and someone gets injured every day. A fatal accident has a 40 per cent chance per day and is considered possible, while a 50 per cent chance of a fatality occurring at any time during the travel day is likely.

Table 2. Suggested likelihood presentation of qualitative measurement

	Frequency per year	Frequency per day	% 0ut 0f 10	Implication
Road accidents	3988	11	110	Certain
Fatal accidents	1449	4	40	Possible
Deaths	1912	5	50	Likely
Injured persons	4194	11	110	Certain

Quantitative presentation of the consequences of road accidents in Tanzania.

This risk component provides the impact of risks on people, buildings, property and the environment. It generally indicates the number of deaths, and destruction of structures and environments where the hazard occurs. Every hazard has its impact potential. The impact of each depends on the size and extent of the hazards suggest. The effect of an earthquake is not the same as that of a cyclone. There are three factors/issues that focus on the consequences of the risk, namely: (i)deaths/fatalities (ii) injuries (iii) costs (in cash) Tanzania is one of the most traffic accident-prone countries in Eastern and Southern Africa overall. In 2010, the country reached 22.7 per 10,000 road fatalities (Haule and Kisiri, 2016). Fatalities and injuries are easy to identify in every traffic accident in Tanzania. Investigations were carried out, in which the number of dead and injured was determined over a period of five years. Table 3 below shows the number of dead and injured in Tanzania

Table 3; Number of Road Offences, Accidents, Deaths, and Injured Persons in Tanzania 2013-2018

	2013	2014	2015	2016	2017	2018	Total	
Road Traffic Offences								
Major	24,480.00	15,420.00	8,777.00	10,297.00	6,022.00	3,988.00	68,984.00	0.6
Minor	663,722.00	1,110,252.00	1,381,705.00	2,200,442.00	2,516,976.00	2,718,732.00	10,591,829.00	99.4
Total	688,202.00	1,125,672.00	1,390,482.00	2,210,739.00	2,522,998.00	2,722,720.00	10,660,813.00	100.0

Incident								
Road Accidents	24,480.00	15,420.00	8,777.00	10,297.00	6,022.00	3,988.00	68,984.00	40.3
Fatal Accidents	3,545.00	3,106.00	2,909.00	2,840.00	2,254.00	1,449.00	16,103.00	9.4
Deaths	4,091.00	3,857.00	3,574.00	3,381.00	2,705.00	1,912.00	19,520.00	11.4
Injured Person	21,536.00	15,230.00	9,993.00	9,549.00	6,169.00	4,194.00	66,671.00	38.9
Total	53,652.00	37,613.00	25,253.00	26,067.00	17,150.00	11,543.00	171,278.00	100

Sources; NBS (2019)

The World Health Organization (WHO) (2018) reported the number of road fatalities in Tanzania in 2016 as 3256 (79% men, 21%). The WHO (ibid.) also recorded an estimated 16,252 (95%) traffic deaths in 2016. The road fatality rate in 2016 is 29.2 per 100,000 inhabitants, 99,428 heavy trucks, 58,247 buses and 7,4318 others were registered. The road fatality rate is 29.2 per 100,000 people, above the global average. It is higher than in America, Europe and higher than in the Mediterranean. The National Bureau of Statistics (NBS) (2019) also points to the general decline in traffic offences. The number of injuries fell from 21,536 in 2013 to 4,194 in 2018. Despite the overall decrease in incidence described, minor traffic offences increased sharply from 663,722 in 2012 to 2,718,732 in 2018, as shown in Table 3; MV Bukoba in Lake Victoria in May 1996, more than 600 people died, Msagali-Igandu train crash, June 2002, more than 300 people died, MVSpice Islander where 250-2000 people are said to have died near Nungwi Unguja in 2011, and a 2019 Msamvu-Morogoro oil explosion that is believed to have claimed the lives of more than 200 people. It has been found that in the Iringa region, almost 24 per cent of people suffer from disabilities and injuries as a result of traffic accidents (Haule and Kisiri 2016).

Traffic accident affects the economic development of individuals, families and the nation as a whole. The accident destroys income-generating real estates such as motorcycles, buses, trucks, cars, aeroplanes, boats or other means of transport. The state cannot levy any corresponding taxes and license fees in this context. In addition, the injured person needs treatment, the state spends a lot of money to import medicines and equipment from abroad to cover the needs of the traffic accident victim. Haule and Kisiri (2016) claim that traffic accidents cost the state up to €235 billion annually. The costs are huge and affect the delivery of services to other sectors of the country. The European Union spends 180 billion euros on treating traffic accidents. Peden et al.(2004) argue that Europe spends 3.4 per cent of its gross domestic product (GDP) on services and the impact of road transport. Miriam et al. (2013) claim that a traffic accident in Ghana costs US$6007 for the household and US$ 7625 for the employer. According to UN-Habitat (2007), more than 75 per cent of road accidents are caused by an economically active group of young adults. As I said, traffic accidents are eating away at the economies of the world. The causes of traffic accidents must be addressed by all nations worldwide.

Coppola (2015) divided the consequences into two categories: direct and indirect damage or material and immaterial damage. The two consequences also occur in every traffic accident. Examples of direct losses are death, injury, loss of income, loss of business, loss of property and medical expenses. Examples of indirect accidental damage; are mental illness, business cutbacks, repair costs of damaged property, response costs, loss of income, stress and sentimental values.

Discussions

The level of road accident risk in Tanzania is very high as the statistics show. If the traffic volume in 2018 is low at 2.7 million per year, then Tanzania has more than 7,000 traffic disruptions per day, 52,000 per week and 225,000 per month. It is a disaster situation that draws the agency's attention. Road traffic disrupts the economy because most of the victims are young people. In 2018 there were 3988 road accidents in Tanzania, which means 11 accidents per day, 77 accidents per week and 332 accidents per month. In addition, in 2018 Tanzania had 1912 fatalities from traffic accidents, 5 fatalities per day, 37 fatalities per week and 159 fatalities per month every month 5 minutes there is one fatality from a traffic accident in Tanzania, and finally, by 2018, Tanzania had 4,194 injuries from traffic accidents, 11 injuries per day, 81 per week and 350 per month. This data shows the severity of road accidents in Tanzania. The probability of a road accident in Tanzania is high and there are no signs that the situation will improve any time soon. It has been suggested that human factors are the leading cause of road accidents in Tanzania (84.5%), followed by environmental factors (8.8%) and broken motorcycles(7.3%) (CTSR, 2015). Law Enforcement and Compliance. Is a good representation of the probability of a traffic accident risk, since the probability is 0.2 0r 20% of the occurrence. In purely mathematical terms, this means a low probability of traffic accidents. It was agreed that despite a low number of vehicles, the average road accident rate in Tanzania and developing countries, in general, is 22.7 per 1000 people, which is higher than the global average of 18 per 1000. Traffic accidents will soon become a global hazard.

At best, all discussions about traffic accidents, which provide statistics on the number of dead, the number of injured and the cost of an accident, end. The component of risk consequences is neglected. The social and psychological effects of accidents; Some people lost their wifhusbandse/husband, their capital, their possessions, their income machine, and their fathers. Mother, children, friends, colleagues, employer, job and source of income. After all, people live under stress after a traffic accident. These intangibles are difficult to locate and tell, but these are the hurdles communities face. Life after the accident is not yet known, as a victim is the head of the family and the family's only source of income, what happens if they die or are injured in an accident and permanent disabilities have credit? How did two children come about who lost their parents in a traffic accident? How to make a living after the accident? What is life like after losing a wife/husband, how many become single parents as a result of

a traffic accident, and how many families become impoverished as a result of a traffic accident? These are the intangible consequences that are the hardest to tell, although they are more disturbing than the tangible consequences

Conclusion

As already mentioned, the risk of road accidents in Tanzania is very high. Serious measures must be taken to reduce the level of risk. If the problem is not solved significantly, the problem will remain and will be very difficult to control. The shipowner, the driver and the public must be brought together to discuss and decide how to proceed in traffic accidents. Road traffic regulations must be taught from elementary school. The prevention culture must be publicly promoted at the expense of the healing culture. The four approaches to modern disaster management must be taught at all levels of education in Tanzania. Transport policy must enforce laws with transparent, inclusive and Tanzanian affiliation. The government needs to reconsider the procedures for offering a driver's license through transport policy. For the driver's license to be worthwhile for the driver, there must be additional requirements. The new road must be of good quality and wide enough to prevent further accidents

The authors confirm that the data supporting the findings of this study are available within the article [and/or] its supplementary material

References

Abagale M,D., Akazali J.,Welaga P.,Dalaba M., Luu Y., Abagala S.,A., and Oduro R.A(2013).The effects of road traffic accidents on society. The case of the Kassena Nankana districts, Ghana: a quantitative survey, published online by the Navrongo Health Research centre, Navrongo, Upper East Region, Ghana

Ansel, J., Wharton, F.,(1992). Risk: Analysis, assessment, and management. John Wiley Sons, Chichester, UK

Chiduo,W.C., and Minja,P.(2001). Road safety in Tanzania: What is the Problem? Technology Transfer in Road Transportation in Africa, Arusha International Conference Centre, Tanzania, 23-25 May 2001

Coppola D. P. (2015), The Management of Disaster. Introduction to International Disaster Management, 3 additional, 225, Wayman Street, Walken, MA 02451 USA

Crime and Traffic Statistics Report (2015), from January-December 2015

Haule, E, and Kisiri, M. (2016). The impact of Road Accidents in the Community of Iringa Municipality: Challenges in Reducing Risks. International and Multidisciplinary Journal of Social Sciences, 5 (3), 253-280. Do 10.17583/rims. 2016. 1880

National Bureau of Statistics (2013). General Report. Ministry of Finance and Planning, Dar. Tanzania

National Bureau of Statistics (2017). Statistical Abstract. Ministry of Finance and Planning, Dar. Tanzania

National Bureau of Statistics (2019). Tanzania in Figures. Ministry of Finance and Planning, Dar. Tanzania

Peden, M. Et al. (2004). World Report on Road traffic injury prevention. Geneva: World Health Organization

Surface and Marine Transport Regulatory Authority (SUMATRA) (2017). Study of Road Accidents in Mainland Tanzania. Dar Es Salaam: Bureau in industrial cooperation (BICO), University of Dar Es Salaam.

Raffo, V., and Bliss, T. (2012, December). The Decade of Actions for road safety 2011-2020: Lesson from Argentina and Caribbean region (LAC). En Breve, 180

United Republic of Tanzania (2008). The Highway Code. Dar Es Salaam: Ministry of Infrastructure Development

UN-Habitant (2007). Enhancing Urban Safety and Security. London: Earth Scan

Wisner., Blaikie, P., Cannon., and Davis, I. (2005) At Risk: Natural Hazards, People`s Vulnerability and Disaster, London: Routledge.

World Health Organization (WHO) (2018). Global status Report on Road Safety, Geneva: WHO

(dica.logcluster.org).