Published by :
http://www.ijert.org

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 02, February-2021

# Analysis of Travel Pattern of A University Community in A Rural Area: A Case Study of South Eastern Kenya University

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***Abstract*:- Travel pattern is a key element in transportation planning and policy formulation. Modal share analysis can provide useful information of university travel demand which is important in the development of transport policies. There is no existing research on travel pattern of university communities in kenya. This prompted analysis of transport pattern of SEKU using descriptive statistics. This study seeks to understand the travel behaviour of a university community in a rural area. Data was collected through online administration a structured questionnaire using an internal mail system. Comparison of travel pattern of students and university staff was undertaken based on mode choice and mode choice determinants. The results show a significant difference in travel behaviour of students and staff. Most staff prefer using cars (57.4 percent) while most students (50 percent) use public transport. Staff consider travel time to be the most important factor in choosing transport mode while students are mainly influenced by trip cost. This study provides knowledge on the transport behaviour of a rural university community in Kenya. This study was limited to descriptive analysis and can be improved through modelling and increasing sample size.**

***Keywords: Travel pattern, mode choice, university community, determinants of mode choice***

## 1 INTRODUCTION

Transportation modal split gives an estimate of the level of usage of available transportation modes such as public transport, bicycle, walking, motorcycles, and cars. It forms one of the key components of transportation systems useful in transportation planning and policy formulation. Universities are major trip generators (Olawole & Olapoju, 2016). University communities represent a significant proportion of the overall population in the areas and urban centres where they are situated. The travel behaviour of university community affects the immediate neighbourhood and is most significant if the university is located within urban area (Romanowska, Okraszewska, & Jamroz, 2019). Commuters travel to universities for work, study, or for general enquiries. The university has diverse commuter population comprising students, staff, business community and non-university labourers. This makes the travel pattern of the university commuter population complex and unique. The number of trips and modal share of university communities can provide valuable information about university travel demand which is important in the development of transport policies. Understanding the travel behaviour of the university can help universities in making policies and infrastructure that encourage use of sustainable and environmentally friendly modes such as walking, use of bicycles, and public transport.

This study builds on existing research on understanding travel behaviour of university communities and modal split among the various transport modes. This study was carried in South Eastern Kenya University (SEKU), a public university located in a developing country and situated in a rural area.

Little attention has been given on transport behaviour of universities in rural areas. Rural universities have unique features making them have distinctive travel patterns compared to urban universities. This study seeks to understand the travel behaviour of a university community in a remote area away from cities and urban centres. The objectives of the study were to determine the modal share of different transport modes and the factors influencing the choice of transport mode in SEKU.

## 2 LITERATURE REVIEW

Several studies have been carried out on determining travel patterns and choice of travel of universities in developing and developed countries. The travel pattern differs depending on location of the university, the continent, the socio-economic development, motor vehicle ownership community behaviour and the size of the university (Romanowska et al., 2019). Most of these studies have focused on students who are the largest group among the university community [Das, Vishal Kumar, Prakash, Dharmik, & Subbarao, 2016; Guzman & Diaz ,2005; Nguyen-Phuoc, Amoh-Gyimah, Tran, & Phan,2018; Olawole & Olapoju ,2016; Nasrin, 2020].

Previous studies have investigated the modal split of university students in urban areas. Danaf, Abou-Zeid, & Kaysi (2014) found out that 62.8%, 10.4% and 26.8% of students at The American University of Beirut (AUB) used private cars, bus, and Jitney, respectively. The university is in a rich neighbourhood and the dominant use of cars was attributed to high percentage of car ownership. In a similar study, cars were found to have the largest mode share of more than 40% of trips by university students in urban campuses in Virginia (Khattak, Wang, Son, & Agnello, 2011). In university of California, biking or walking was found to have the least modal share (24%) while cars (over 40%) had the highest modal share(Zhou, 2016). In china, most university students prefer public transport (71%) while cycling accounts for 16.6% and 12.4% of commuters prefer walking (Zhan, Yan, Zhu, & Wang, 2016).

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 02, February-2021

In a university in a developing country where car ownership is low among university students, the modal share differs significantly from that of developed countries. In Nigeria, most of university students in Obafemi Awolowo university living off-campus commute using bus(84.28%) while on-campus students prefer walking (81.64%) (Olawole & Olapoju, 2016). Similar findings were reported among private university students in Dhaka city, Bangladesh by Nasrin, (2020) whereby most students commuted by bus while walking was the least used mode. In Danang, Vietnam, motorcycle was found to be the most used transport mode by university students to travel to school (Nguyen-Phuoc et al., 2018) accounting for 50%. The second most used mode was walking (33%), 10% used bicycles while Tuk-tuk and bus had a share of 2% and 2.6% respectively (Nguyen-Phuoc et al., 2018). The mode shares pattern is different for students living within campus and off-campus because of the travel distance involved. For instance, 10.3% of students living off-campus use cars while only 0.2% of the on-campus students use cars in Obafemi Awolowo university, Nigeria (Olawole & Olapoju, 2016).

The modal share in rural universities differs from urban university. There is a high dependency of motorized modes in rural universities (Romanowska et al., 2019). Limanond, Butsingkorn, & Chermkhunthod (2011) reported that the car was the most used mode of transport by students at a rural university in Thailand, while walking and use of bicycles was the least (less than 15%). Further the study found out that, car usage among the vehicle owners was 70-80% and 40-50% among non-vehicle owners. The travel behaviour differs significantly between the students and staff. For instance, Romanowska, Okraszewska, & Jamroz, (2019) established that public transport is predominantly sued by students (59%) while staff commute using cars (57%).

Factors influencing the choice of transport mode among university commuters mainly by students has also been extensively undertaken. Guzman & Diaz (2005) found out that car ownership, travel time, monthly student income, travel cost and convenience are the main factors influencing the choice of transport mode among university students in metro manila. Similarly, Das, Vishal Kumar, Prakash, Dharmik, & Subbarao (2016) reported that the mode of choice of students residing off-campus is greatly influenced by travel time, travel cost and vehicle ownership. These factors are similar to the ones reported by Romanowska, Okraszewska, & Jamroz, (2019) which consist of car availability, the location of trip origin and individual trip requirements such as cost, quality, and ecology. According to Olawole & Olapoju (2016), distance to academic areas, health/fitness and cheapest means of transport have the highest influence on the choice of transport mode among university students in Nigeria. The students living off-campus were found to be most influenced by distance, heavy load, safety, quality of service and service frequency in their choice of transport mode. Students attributes like age, gender and income have a significant impact on decision of mode choice. More recently, Nasrin (2020) found out that cost, time, comfort and car availability are the main factors influencing choice of different transport modes for private university students' education trip. Further, the study echoed that comfort was the most significant attribute considered in choice of travel mode for students in private university in Dhaka City, Bangladesh.

The above literature highlights that universities have diverse commuter communities which would be difficult to capture elsewhere. This permits study of travel patterns among university communities (Olawole & Olapoju, 2016) . Travel behaviour and determinants of mode choice among university community in kenya is non-existent. This study provides knowledge on the transport behaviour of a rural university community in Kenya.

## 3 METHODOLOGY

### *3.1 Area of Study*

The study was carried out in South Eastern Kenya University (SEKU) main campus. It is located at approximately 1°22'35.8"S, 37°47'51E in Kitui County, Kenya. SEKU is approximately 18km from the nearby market, Kwa-Vonza market. SEKU main campus has administrative and academic blocks, student hostels, staff quarters, recreation centre and research centre within its premises. The academic and administrative sections have 8 schools that house a total of 26 departments. The administrative and academic blocks, student hostels, staff quarters, guest house, procurement blocks, security blocks, transport block, catering and accommodation services block, medical clinic block, laboratories, workshops, recreation centre and research areas are connected by road network. The transport infrastructure is composed of roads, pedestrian walkways, car parks, delineation marks, design speed limit signs, speed bumps, rumble strips and zebra crossings. This main campus is connected to Kwa-Vonza market by a paved bitumen road. The university staff and students residing outside campus use buses, *matatus*, motorcycle, university vehicles, own cars and walking to commute to and from the campus.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 02, February-2021

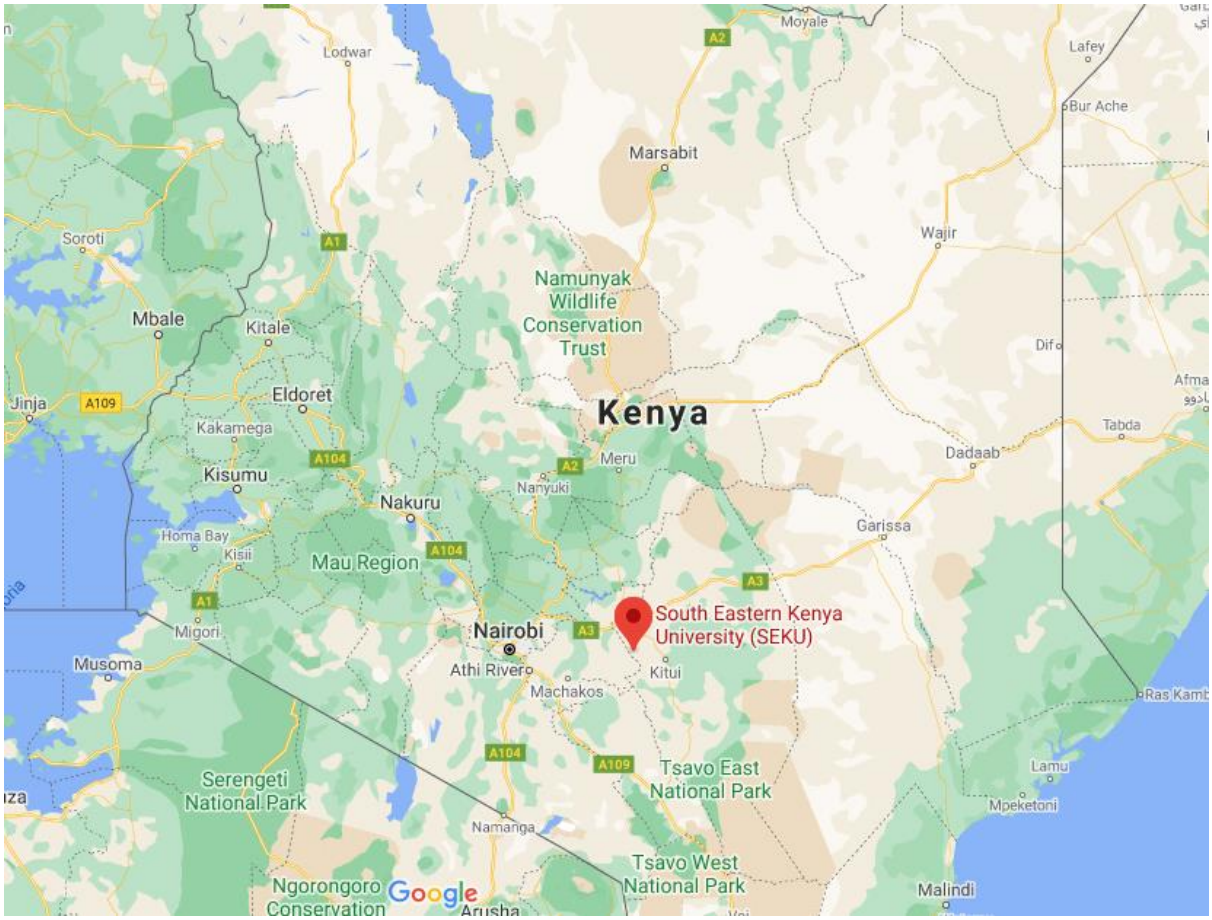


Figure 1. Location of SEKU main campus

### *3.2 Data collection*

Data was collected using web based structured questionnaires. The questionnaires were administered online using an internal mail system to e-mail addresses of all staff and students. The questionnaire was divided into three sections. Section one had six questions on socio-economic and demographic characteristics which includes age, gender, level of income, place of residence and the reasons of travelling. Section two consisted of four questions on trip frequency, trip cost, mode choice and trip distance. The determinants of mode choice and adequacy of transport infrastructure were assessed in section three. Data on the status of transport infrastructure in the university was collected using observation method.

Table 1. Questionnaire outline

| Section | Type of questions | Information obtained |
|---|---|---|
| Socio-economic and demographic characteristics | Gender, age, residence location, income, trip purpose, status (student or staff) | Individual characteristics |
| Trip attributes | Frequently used transport mode, trip frequency, average daily trip cost, average daily trip distance | Travel characteristics to and from the university |
| Mode choice determinants | Factors that influence choice of transport mode | Most influential determinant in choosing transport mode<br>Level of importance of individual determinants in choosing transport mode |

### *3.3 Sampling*

Random sampling method was used. Constant reminders were made via email to avoid non-response. The pilot survey was carried out in October and November 2020.

A total of 165 responses were considered for this pilot study after removing invalid responses. The SEKU population at the time of the study was 8,612 made up of 486 staff members and 8,126 students.

### *3.4 Data analysis*

The data was analysed through descriptive statistics. The descriptive statistics on variables was done using Ms Excel. The results were presented in form of bar charts based on percentage of respondents. A bar chart relating mode choice to individual status (student/staff) was drawn. Also, bar charts relating mode choice determinants to the respondent's status (student/staff) and modal share was drawn.

International Journal of Engineering Research & Technology (IJERT)
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Vol. 10 Issue 02, February-2021

# 4 RESULTS & DISCUSSION

## *4.1 Socio-economic and demographic characteristics*

Table 2. Socio-economic and demographic characteristics

| Variable | Category | Percentage | Total number of samples |
|---|---|---|---|
| Gender | Male | 71.5 | 118 |
| | Female | 28.5 | 47 |
| Residence location | On campus | 20.0 | 33 |
| | Off campus | 80.0 | 132 |
| Status | students | 30.3 | 50 |
| | Staff | 69.7 | 115 |
| Monthly income level | KSh. 20,000 and below | 32.7 | 54 |
| | KSh. 21,000- 40,000 | 5.5 | 9 |
| | KSh. 41,000- 60,000 | 9.7 | 16 |
| | KSh. 61,000- 80,000 | 9.7 | 16 |
| | KSh. 81,000-100,000 | 6.1 | 10 |
| | Above KSh. 100,000 | 36.4 | 60 |
| Age | 25 and Below | 30.3 | 50 |
| | 26-50 | 57.6 | 95 |
| | 51 and above | 12.1 | 20 |
| Trip purpose | Work | 62.4 | 103 |
| | Study | 29.1 | 48 |
| | Both work and study | 8.5 | 14 |
| infrastructure adequacy | Yes | 67.3 | 111 |
| | No | 32.7 | 54 |

Table 3. Socio-economic characteristics by modal share

| Variable | | Transport mode | | | | |
|---|---|---|---|---|---|---|
| | | Car (Own/Taxi) | Public Transport | Motorcycle | Walking | Total sample size |
| Gender | Male | 44.1 | 43.2 | 3.4 | 9.3 | 118 |
| | Female | 51.1 | 46.8 | 2.1 | 0.0 | 47 |
| Residence location | On campus | 18.2 | 42.4 | 12.1 | 27.3 | 33 |
| | Off campus | 53.0 | 44.7 | 0.8 | 1.5 | 132 |
| Status | Students | 20.0 | 50.0 | 10.0 | 20.0 | 50 |
| | staff | 57.4 | 41.7 | 0.0 | 0.9 | 115 |
| Income level | KSh. 20,000 and below | 18.5 | 53.7 | 9.3 | 18.5 | 54 |
| | KSh. 21,000- 40,000 | 33.3 | 55.6 | 0.0 | 11.1 | 9 |
| | KSh. 41,000- 60,000 | 25.0 | 75.0 | 0.0 | 0.0 | 16 |
| | KSh. 61,000- 80,000 | 43.8 | 56.3 | 0.0 | 0.0 | 16 |
| | KSh. 81,000-100,000 | 40.0 | 60.0 | 0.0 | 0.0 | 10 |
| | Above KSh. 100,000 | 80.0 | 20.0 | 0.0 | 0.0 | 60 |
| age | 25 and Below | 18.0 | 52.0 | 8.0 | 22.0 | 50 |
| | 26-50 | 56.8 | 42.1 | 1.1 | 0.0 | 95 |
| | 51 and above | 65.0 | 35.0 | 0.0 | 0.0 | 20 |
| Trip purpose | Work | 56.3 | 42.7 | 0.0 | 1.0 | 103 |
| | Study | 18.8 | 52.1 | 10.4 | 18.8 | 48 |
| | Both work and study | 64.3 | 28.6 | 0.0 | 7.1 | 14 |
| Infrastructure adequacy | Yes | 37.8 | 50.5 | 3.6 | 8.1 | 111 |
| | No | 63.0 | 31.5 | 1.9 | 3.7 | 54 |

The results of socio-economic and demographic characteristics are presented in table 2. The Male respondents were 118 accounting for 71.3 percent of the total number of the respondents while females were 47 corresponding to 28.5 percent. During the time of the survey, 80 percent of the correspondents resided off-campus while 20 percent resided within campus. The staff make up the biggest percentage of the respondents accounting for 69.7 percent while students accounted for 30.3 percent. The study was undertaken when learning institutions had closed as a directive from the president of the republic of Kenya to contain the spread of corona virus. The students were not in session and most of them do not check their emails when they are on break. Therefore, this contributed to their low response rate. We can attribute the high response rate of the staff to the fact that they were still working either from home or on campus and therefore accessed their emails more often.

An individual can travel to the university to study, work or both study and work. From the results, 62.4 percent of the respondents travel to the university to work. Majority of the respondents (57.6 percent) are aged between 26 and 50 years, 30.3

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 02, February-2021

percent are 25 years and below and 12.1 percent are aged 51 years and above. The income levels among the respondents differ greatly because it comprises both the staff and the students. The largest proportion of the respondents (36.7 percent) have a monthly income of Ksh. 100,000 percent (US$ 917.43) and the second largest group (32.7 percent) fall in the category of the least monthly income earners having a monthly income of Ksh. 20,000 (US$ 183.48) and below. According to economic survey by kenya bureau of statistics in 2017, a monthly income of Kshs 23,670 (US$ 217.15) and below is categorised as low income, middle income is monthly income raging from Kshs 23,671 to Kshs 119,999 (US$217.16-1100.90) and high income is a monthly income of Ksh.120,000 (US$ 1100.91) and above as high income. From the results, majority of the respondent who are the staff are middle income earners. According to 67.3 percent of the academic community, the transport infrastructure within the university was adequate and a few (32.7 percent) reported that the transport infrastructure was inadequate.

Table 3 relates the proportions of cars, public transport, motorcycle and walking to the socio-economic and demographic characteristics of the respondents. Both males and females prefer use of cars to commute. More females (51.1 percent) use cars than male (44.1 percent). Females do not walk to the university while a small portion of males (9.3 percent) walk to the university. Females are less likely to travel to university by motorcycle (2.1 percent) compared to males (3.4 percent). These results are consistent with finding of previous studies on mode choice by university students (Nguyen-Phuoc et al., 2018).

The location of the residence has an influence on the choice of transport mode. Majority of people living on campus use public transport (50 percent) while those residing off campus prefer using cars (53 percent). More people residing on campus walk (27.3 percent) compared to the ones living off campus. The people earning more than Ksh.100,000 per month mostly use cars (80 percent) while the ones with a monthly income less than Ksh. 20,000 per month prefer public transport (53.7 percent). Public transport is the most affordable mode for the least income earners (Ksh. 20,000 and below). Individuals with an income above Ksh.60,000 do not walk to the university instead they use either cars or public transport. Older commuters (50 years and above) mostly use cars (80 percent) while young commuters mostly use public means (56 percent). Walking is highest among young people with a proportion of 22 percent of the commuters aged 25 years and below reported to walk to the university more than using cars (18 percent). SEKU is accessed mainly for study, work or both study and work. Commuting by cars is higher for work purposes (56.3 percent) than study (18.8 percent). Furthermore, the use of cars is highest among the people who access the university for both study and work (64.3 percent). Most of the commuters who feel that the current transport infrastructure is inadequate use cars (63.0 percent) while majority of the commuters who find the transport infrastructure adequate (50.5 percent) use public transport.

### *4.2 Trip attributes*

Table 4. Trip attributes

| Variable | Category | Percentage | Total number of samples |
|---|---|---|---|
| Trip frequency | Daily | 58 | 35.2 |
| | Once a week | 21 | 12.7 |
| | Twice a week | 14 | 8.5 |
| | Thrice a week | 26 | 15.8 |
| | Four times a week | 14 | 8.5 |
| | Five times a week | 24 | 14.5 |
| | Six times a week | 8 | 4.8 |
| Trip distance | 20km and below | 46 | 27.9 |
| | 21-40km | 57 | 34.5 |
| | 41-60km | 22 | 13.3 |
| | 61-80km | 16 | 9.7 |
| | above 80km | 24 | 14.5 |
| Trip cost | less than 100 | 31 | 18.8 |
| | 100-500 | 82 | 49.7 |
| | 501-1000 | 23 | 13.9 |
| | 1001-2000 | 14 | 8.5 |
| | above 2000 | 15 | 9.1 |

The trip attributes entail the trip frequency, distance covered and trip cost. SEKU is in a remote location about 18 km away from the nearest Kwa-Vonza shopping centre. Consequently, most of the university community make a single trip to and from the university in a day. Based on results, 35.2 percent of the correspondents make daily trips to the university while the minority 4.8 percent travel six times per week. The trip distance is the total length covered in one-way trip. The trip distance covered depends on trip origin. Most of the respondents live in the nearby urban centers which include Kwa-vonza, Mulutu, Kyua and Katangi areas that are situated less than 40km from the university. 34.5 percent cover an average daily trip distance of 20-40km, 27.9 percent cover 20km and below,13.3 percent cover 41-60km, 9.7 percent cover 61-80km and 14.5 percent cover 80km and above.

Trip cost is the cost incurred in terms of fare paid or the cost of fuel for the car users. Most of the commuters (49.7 percent) use an average of Ksh100 - 500 (US$ 0.91-4.58) for every single trip made. The least trip cost below Ksh.100 (less than 1 US dollar) was incurred by 18.8 percent of the commuters. This is the amount of fare paid for public transport. Most of the public transport vehicles charge an affordable amount of Ksh.30- 50 (27-45 US dollar cents) for one-way trip between Kwa-vonza and SEKU a distance approximately 17km. Only 9.1 percent of commuters use transport cost above Ksh. 2000 (US$ 18.35). This amount is mostly incurred by car users.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 02, February-2021

### *4.3 Modal share*

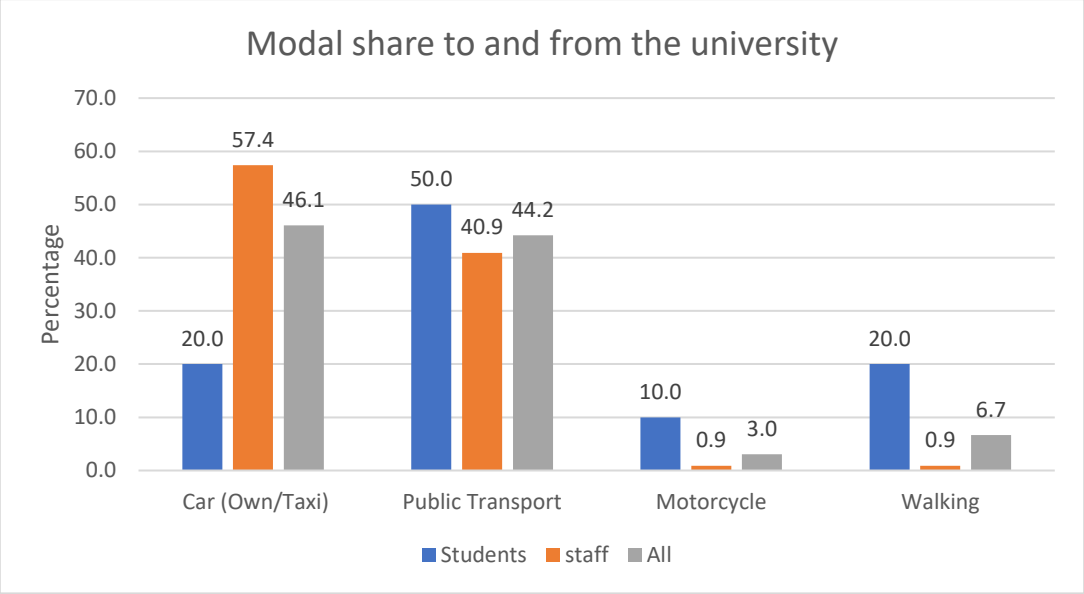


Figure 2: Modal share

The car is the predominantly used mode by the staff (57.4 percent) while only 20 percent of the students use the car. Most students commute by public transport (50 percent) which is second most used mode by the staff (40.9 percent). A similar transport pattern was found by Romanowska et al. (2019) among commuters of universities in North Poland where staff mostly commute by car (57%), students mostly use public transport (57 %) and only 28 percent of the staff use public transport. Also, Olawole & Olapoju, (2016) reported that 84.28 percent of students living off-campus in Obafemi Awolowo university, Nigeria commuted using bus. The public transport consists of *matatus* and buses. It is the most affordable motorised mode of transport charging between Ksh.30-50 for one-way trip. Students prioritize transport mode affordability hence they mostly use public transport.

Use of non-motorised transport modes is not attractive in universities located in remote areas because of large distances covered. More students (20 percent) walk to the university than staff (0.9 percent). The few residential areas near the school are used by the students while the nearest off-campus resident location where most of the staff reside is located at Kwa-vonza about 18km away discouraging walking. The commuters who walk only manage to walk to the university main gate and then use motorised transport modes to commute from the main gate to the university facilities (tuition blocks, hostels, administration blocks) that are located 8.5 km away from the main gate. A similar travel pattern at a rural university in Thailand, Asia was reported where only 15 percent of students use bicycles and walking to commute to the university (Limanond, Butsingkorn, & Chermkhunthod, 2011). Commuting using motorcycle is more dominant among the students (10 percent) than staff (0.9 percent). Overall, 46.1 percent of the commuters use cars, 40.9 percent use public transport 3percent use motorcycle and 6.7 percent walk to the university. Commuters prefer use of cars because it is the most convenient mode of the transport among the others. The public transport vehicles do not have a scheduled departure and arrival time and only operates on demand. This makes it inconvenient and discourages the commuters from using it since its departure and arrival time is unpredictable. Walking is the least preferred mode of transport among the university community because of the long distance covered. According to Romanowska et al. (2019), the acceptable walking distance varies from 0.4 to 1 kilometre based on the travelling group and trip purpose.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 02, February-2021

### *4.4 Determinants of mode choice*

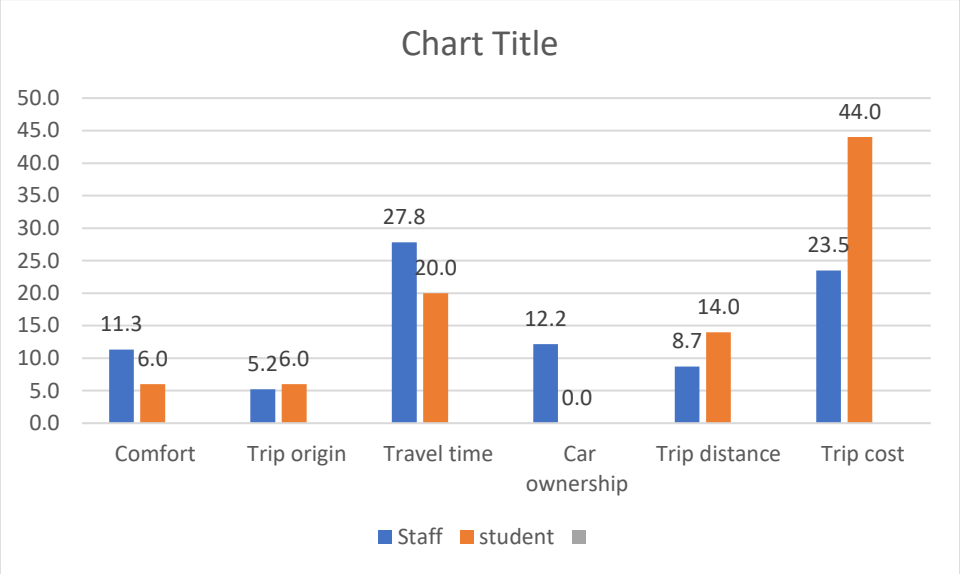


Figure 3. Mode choice determinants

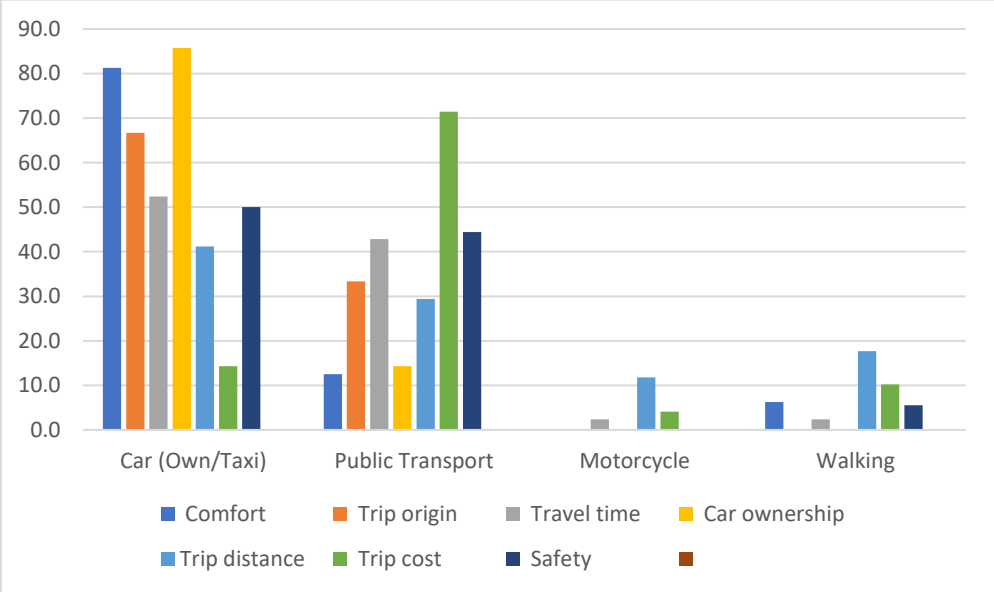


Figure 4. mode choice determinants by transport mode

There are various factors that influence an individual choice of a transport mode. The students and staff were asked to choose the factor that mostly influenced their choice of transport mode among many factors obtained from literature (Das et al., 2016; Guzman & Diaz, 2005; Nasrin, 2020; Olawole & Olapoju, 2016;Romanowska et al., 2019). The results presented in figure 2 show that, travel time (27.8 percent), trip cost (23.5 percent) and comfort (11.3 percent) are considered the strongest determinants by the staff. The staff prefer modes that have a short travel time that is why most of them (57.6 percent) prefer using cars which are the fastest among the other modes. Students on the other hand consider trip cost (44.0 percent), to be the key determinant in choice of transport mode. Most of the students (94 percent) are low-income earners with a monthly income of 20,000 and hence cost of transport has a higher influence on their mode choice. Students prefer using the cheapest transport mode because it is affordable to them. Other important mode choice determinants by students are travel time (20.0 percent) and trip distance (14.0 percent). students prefer modes that take short time.

The determinants of mode choice vis-à-vis the modal share are presented in figure 3. Car ownership is a key determinant for 85.7 percent of the car users. In addition, a proportion of car users consider comfort (81.3 percent), trip origin, (66.7 percent) and travel time (52.4 percent). Similarly, Nasrin (2020) found comfort to be more significant than travel time in choice of car. Individuals who own cars are more likely to prefer commuting using cars as compared to other modes. In similar studies, car ownership was also found to increase the probability of use of car to commute to the university by students ((Guzman & Diaz, 2005; Romanowska et al., 2019).Choice of public transport is mostly influenced by the trip cost. 69.6 percent of the commuters

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 02, February-2021

who use public transport are influenced by the trip cost. Public transport is the cheapest mode among the others, and this makes it attractive to mostly students and some staff. similarly, Romanowska et al. (2019) reported that university students who use public transport value transport choice. These results contradict the findings of Nasrin (2020),who reported that private univesity students in Dhaka city who use bus (public transport) choose it because it is more comfortable than the other modes. The difference in findings can be attributed to location of university and advancement of public transport. Comfort is the least considered determinants in choice of public transport. The public transport which consists of buses and matatus are always crowded and uncomfortable. The public transport is chosen mostly because its affordable.

Commuters using motorcycle consider it because of distance (11.8 percent) and travel time (2.4) Motorcycles are most preferred for shorter distances of 20km and below. Long distance translates to high costs making motorcycle less attractive for long distances. Motorcycle in SEKU is the least used mode by both the students and the staff. similar studies in Nigeria, reported travel distance and time to have negative impact on use of motorcycle (Olawole & Olapoju, 2016). In Danang, Vietnam, the travel cost was found to have no significant impact on motorcycle because it is the most dominated mode of transport by university students (Nguyen-Phuoc et al., 2018) . The findings of this study show that 17.6, 10.2 and 5.6 percent of the commuters walking to the university consider trip distance, trip cost and safety respectively as the main reasons for choosing to walk to the university. Long distances discourage walking, hence the longer the distance the lesser the commuters that will choose walking. There is no trip cost incurred in walking, hence increase in transport of the other motorised transport modes can lead to more commuters walking due to lack of alternatives. There is separation of motorised and non-motorised transport making walking unsafe. Nguyen-Phuoc et al. (2018) reported different reasons which are considered in choosing by students in Vietnam which are comfort, reliability, and ease of access.

## 5 CONCLUSIONS

This study was undertaken to assess the travel behaviour and the main factors that influence mode choice of a rural SEKU. Comparison of travel pattern of students and university staff was undertaken in terms of mode choice and mode choice determinants. Universities are large trip generators, and their travel patterns are often not captured in travel studies of other groups. Studies on travel pattern of academic institutions in rural areas in developing countries are limited. Understanding travel behaviour of academic institutions can help universities to develop transport policies and infrastructure that encourage use of sustainable modes and shift from car use which is environmentally unsustainable. Sustainable modes include cycling, walking and use of public transport. The following findings can be deduced from this study:

- The factors that influence choice of transport mode are trip cost, distance, travel time, comfort, safety, car ownership.
- The main factors that influence mode choice of staff are travel time, trip cost and comfort.
- The mode choice of students is most influenced by trip cost, travel time and trip distance.
- The car is the predominantly used mode by the staff (57.4 percent) while public transport is the most preferred mode by students (50 percent).
- Non-motorised transport modes are the least preferred in universities located in remote areas because of large distances covered.

The travel pattern was obtained through pilot survey. A lesser sample was obtained. An extensive survey will be done and modelling of results undertaken to provide in-depth understanding of the travel pattern.

## AUTHOR CONTRIBUTIONS:

Paul C.K. Kioko. conceived the research idea, initial draft and correction of the draft manuscript. Faith. M. Muema. devised the methodology, carried out data analysis, interpreted the results and prepared the manuscript.

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