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Students' Perception of on Campus Transit System; Case Study of the Bulldog Transit System

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STUDENTS PERCEPTION OF ON CAMPUS TRANSIT SYSTEM CASE STUDY OF THE BULLDOG TRANSIT SYSTEM

Strictly as per the compliance and regulations of:



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I. GENERAL INTRODUCTION

a) Introduction

According to the Alabama Agricultural and Mechanical University (AAMU) Campus Master Plan (CMP) of 2014, the Alabama A&M University campus is bounded approximately by Moore Mill Road to the east, Chase Road and J.F. Drake State Technical College to the south, Memorial Parkway to the west, and Industrial Drive to the north.

AAMU secured over 2 million dollars grant from the Federal Transit Authority (FTA) which was used to improve the University's transportation system by creating new parking, re-striping, identify lots, controlled access gates and shuttle service (AAMU CMP, 2014). This aimed at ensuring that people are safe and to reduce accidents on campus (AAMU CMP 2014).

The Bulldog Transit System (BTS) is owned by AAMU Transport Department. Its objective is to make students movement life easier by busing them around the university beautiful campus (AAMU Transport Department Website). The BTS has 15 Bus stops, 8 Bus Stops with Shelter and 1 Transfer Station dotted across campus and residential halls (AAMU Transit Map). The BTS operates five days a week from 7:30am to 10:30pm on Monday through Thursday and 7:30am to 6:30pm on Fridays (AAMU MP 2014). Its movement is scheduled every 15 minutes at each of the bus stops (AAMU MP 2014). The BTS provides special service to the mall and Wal-Mart on Friday afternoon. This research study therefore aims to assess AAMU students' perception of the BTS operations on campus.

b) Literature Review

Public transport should be encouraged to promote sustainable transport system – they should have a high quality service to attract and satisfy a wide range of passengers (Aydin *et al.*, 2021). Kim and Shaban (2016) conducted research into the influence of bus service satisfaction on university students' mode of choice and revealed that three factors such as bus stop service, bus service, and bus drivers services positively influences mode of choice. They concluded that bus stops that have air condition provide little space that cannot accommodate more than five students on the bench. This makes waiting for bus at the station difficult during summer time when temperature is over 40°C. The students opt for other alternatives instead of using the bus.

University students have a low satisfaction level towards the bus service due to the bad quality of facilities of the buses and bus stations (Hasimah *et al.*, 2021). There has been a decrease in public transport ridership and a significant shift to private transport and other transport modes (Erik & Matej, 2020; Abdallah *et al.*, 2020). Many people use a family car as their predominant source of transportation and only few people use public transportation mode (Marisa *et al.*, 2020).

Campus public bus system has become an important part of university campus transportation system and many universities in their current MPs restrict private vehicular access to campus core and establish Pedestrian Priority Zones that can only be accessed by campus bus system (Clemson University CMP, 2017; Radford University CMP 2020; North Carolina State University CMP, 2023). It is in this particular that the BTS operates on campus to facilitate students and university staff mobility on campus.

c) Purpose

AAMU students have an option of using the campus BTS to facilitate their mobility on campus. The purpose of this study is to explore students perception about the operations of the campus BTS. The finding will aid students and AAMU transport department to look into the operation of the BTS to adjust its operation policies to maximize operation to better serve the student on and around campus.

i. Research questions

To understand what the perception of students on BTS is, the research will attempt to find answers to the following research questions.

1. What is the main transport mode of students?
2. How do students perceive the efficiency and effectiveness of the BTS operations?
3. What service(s) do students need the BTS to change or add in its operation?
4. What is the relationship between Students BTS Efficiency Rating and Drivers Behaviors/Conducts?

Along with other statistical analysis, hypothesis testing of variable will be done to establish relationships to achieve the purpose of this research.

ii. Hypothesis Testing

1. The null hypothesis states there is no relationship between student ratings of the BTS efficiency and drivers friendly behavior. i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$
2. There is no relationship between student ratings of the BTS efficiency and drivers knowledge of Department of Transportation (DOT) safety regulations. i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$

3. There is no relationship between students' ratings of the BTS efficiency and drivers excellent communication skills. i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$
4. There is no relation between students' ratings of the BTS efficiency and drivers excellent driving skills. i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$

II. METHODS

a) Introduction

This chapter introduces us to the methods and procedures to be followed in conducting the research. This study employed the quantitative research method in the collection and analysis of data. Descriptive statistics such as simple frequency distribution, percentages, mean, mode, variance & standard deviation, cross tabulation, graphs and charts will be used in the study. Also correlation and regression analysis will be used to establish relationships between students rating of the BTS efficiency and 4 categories of drivers behaviors.

b) Target Population

The target population of this study involved the entire undergraduate and graduate students of the university. The total students' enrolment for the fall 2023 semester will be listed to get the sample frame of the study.

c) Sampling Method

Simple random sampling was employed in the distribution of the questionnaires. This would ensure a greater reliability of data since every student has equal chance of being selected to answer questionnaire.

d) Data Collection Techniques

Data collection questionnaire tool was designed using Google forms. It was designed to contain closed ended questions to enable respondents make a choice from variety of alternatives. A link to the questionnaire was shared among students through student platforms such as WhatsApp and emails.

e) Data Analysis

Statistical Package for Social Sciences (SPSS) and excel was used for the data analysis. In order to make the analyzed data meaningful and easy to interpret, frequency tables, charts, graphs and figures will be used to present the information. Percentages will also be computed to enhance easy understanding of the collected data.

III. DATA PRESENTATION AND STATISTICAL ANALYSIS

a) Introduction

This aspect of the research deals with analysis of data and presentation of results.

b) Demographic Characteristics of Respondents

This aspect deals with the analysis of gender, age category and educational level of the respondents. The results are presented in the table below

Table 1: Gender of respondents

Gender	Frequency	Percent
Female	13	40.6
Male	19	59.4
Total	32	100.0

Table 2: Respondents age category

Age Category	Frequency	Percent
Not Responded	1	3.1
15 – 20	16	50.0
21 – 25	1	3.1
26 – 30	10	31.2
31 – 35	1	3.1
36 – 40	1	3.1
46 – Above	2	6.2
Total	32	100.0

Table 3: Respondents Level of Education

Education Level	Frequency	Percent
Doctorate	5	15.6
Freshman	15	46.9
Masters	11	34.4
Sophomore	1	3.1
Total	32	100.0

c) Residence and Transport Mode Choice of respondents

This part of the analysis represents the relationship between the off-campus and on-campus residential students in relation to their mode of transport to campus. The results are presented in the bar chart below.

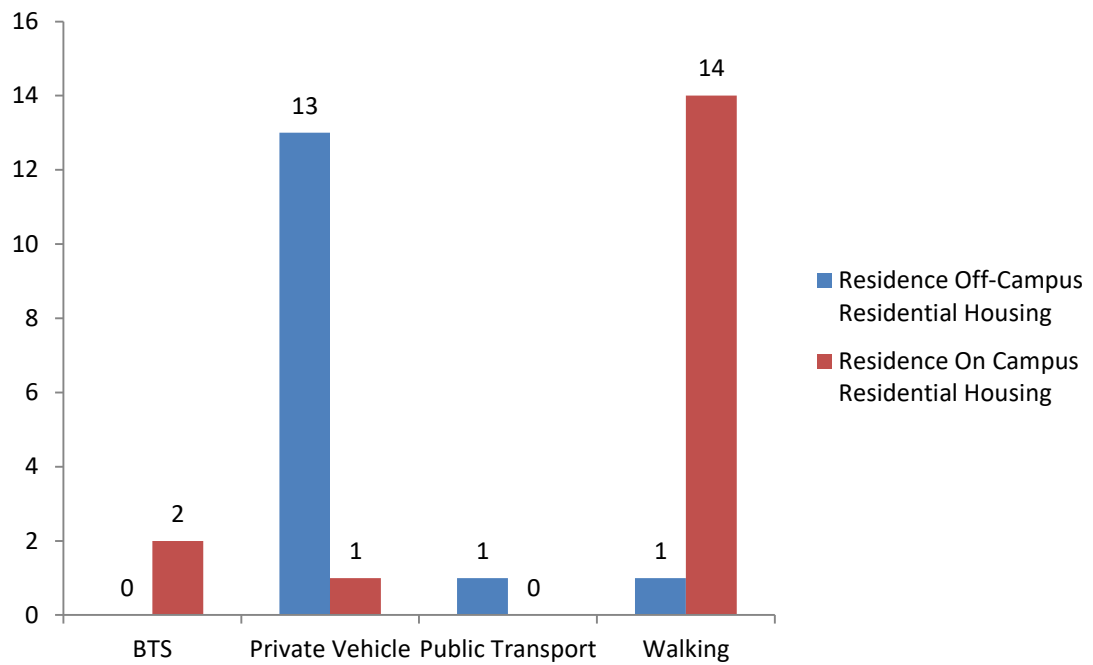


Figure 1: Residence and Transport Mode Choice of Respondents

d) *Transport Mode and Education Level Cross tabulation*

The part analyses the comparison of students' level of education against their mode of transport to campus. The results is presented in the table below

Table 4: Students Transport Mode and Level of Education

Transport Mode	Education Level				Total
	Doctorate	Freshman	Masters	Sophomore	
BTS	0	1	1	0	2
Private Vehicle	5	1	8	0	14
Public Transport	0	0	1	0	1
Walking	0	13	1	1	15
Total	5	15	11	1	32

e) *Reasons for Transport Mode*

This part of the analysis is concerned with understanding the reason why respondents use the transport mode in the above analysis.

Table 5: Reason for Transport Mode

Reasons for Transport Mode	Frequency	Percent
It is cost effective	1	3.1
It is fast and convenient	12	37.5
It is fast and convenient; It is cost effective	2	6.2
It is readily available	5	15.6

It is readily available; It is fast and convenient	4	12.5
It is readily available; It is fast and convenient; It is cost effective	2	6.2
It is readily available; It is fast and convenient; It is the only option I have. I have no other option	1	3.1
It is readily available; It is the only option I have. I have no other option	1	3.1
It is the only option I have. I have no other option	4	12.5
Total	32	100.0

f) *Respondents' Choice of Transport Mode and their Reason*

The section analysis seeks to understand why participants use the particular mode of transport to school. The result is presented in the table below.

Table 6: Reason for the Choice of Transport Mode

Reason for Transport mode choice	Transport Mode				Total
	BTS	Private Vehicle	Public Transport	Walking	
It is cost effective	0	0	1	0	1
It is fast and convenient	1	7	0	3	11
It is fast and convenient; It is cost effective	0	2	0	0	2
It is fast and convenient; It isn't really convenient but the BTS can be quite slow	0	0	0	1	1
It is readily available	0	0	0	5	5
It is readily available; It is fast and convenient	0	2	0	2	4
It is readily available; It is fast and convenient; It is cost effective	0	1	0	1	2
It is readily available; It is fast and convenient; It is the only option I have. I have no other option	0	1	0	0	1
It is readily available; It is the only option I have. I have no other option	0	0	0	1	1
It is the only option I have. I have no other option	1	1	0	2	4
Total	2	14	1	15	32

g) *BTS Effectiveness*

This section attempts to gauge students thinking about the BTS serving its purpose effectively. The question was asked as follows "The BTS goal is to ensure students' safety and to make students' lives on

campus easier by busing them around the university's beautiful campus. *Do you think the BTS is serving its purpose effectively?*" The results of the responses are presented below in a line graph

BTS Effectiveness

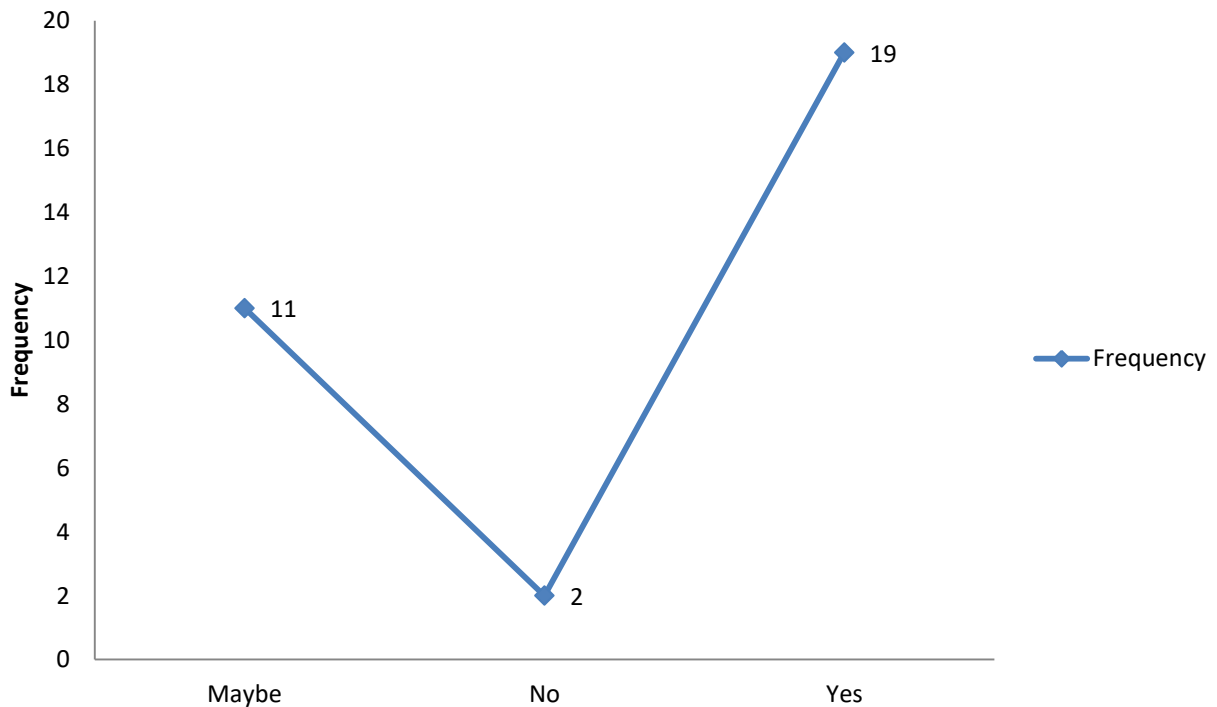


Figure 2: Students perception about the BTS serving its purpose effectively

h) *Rating of the Efficiency of the BTS*

Students were asked to rate the efficiency of the BTS operations on a scale of 1 to 5 where; 1 means

strongly efficient, 2 means fairly efficient, 3 means I am neutral, 4 means fairly inefficient, and 5 means strongly inefficient. The result is presented below.

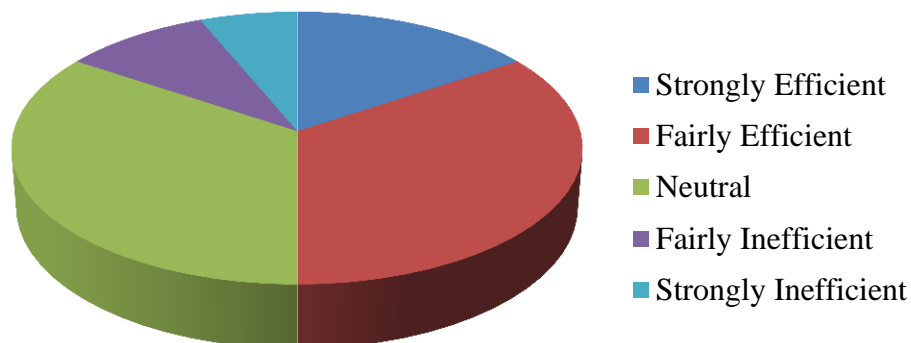


Figure 3: Students Rating of the Efficiency of the BTS Operations

i) *BTS Improvement Recommendation*

Students were asked to recommend areas that they think need to improve in the BTS operations. A set

of possible recommendations were given for them to select and the results is presented in the table below.

Table 7: Respondents' Recommendation for improvement in the BTS operations

Recommendation	Frequency	Percent
Develop app for students to track bus daily schedule	10	31.2
Establish more Stations, and create new routes	6	18.8
Provide regular off-campus services	8	25.0
Reduce the waiting time at the station	4	12.5
Renovate Bus Stations with Shelter	4	12.5
Total	32	100.0

j) *Students' Recommendation for BTS Improvement Based on their Residence*

The analysis further explored to understand how students will recommend for the BTS operation

improvement based on their place of residence – i.e. those residents on campus and off-campus housing using cross tabulation. The result is presented in the table below.

Table 8: Students Recommendation for BTS Improvement based on their residence

Recommendation	Residence		Total
	Off-Campus Residential Housing	On Campus Residential Housing	
Develop app for students to track bus daily schedule	4	6	10
Establish more Stations, and create new routes	0	6	6
Provide regular off-campus services	7	1	8
Reduce the waiting time at the station	1	3	4
Renovate Bus Stations with Shelter	3	1	4
Total	15	17	32

k) *Students Rating of BTS Drivers' Behavior/Conduct*

On a scale of strongly agree, Agree, Neutral, Disagree, and strongly Disagree, students were asked to rate the BTS drivers behavior/conduct on variables

including Drivers are Friendly, Know DOT safety regulations, Have excellent communication, and Have excellent driving skills.

Table 9: Students Rating of BTS drivers' behavior/conduct

Driver behavior	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Drivers are Friendly	18 (56.2%)	7 (21.9%)	6 (18.8%)	1 (3.10%)	0 (0.0%)	32 (100%)
Drivers know DOT safety regulations	17 (53.1%)	8 (25.0%)	7 (21.9%)	0 (0.00%)	0 (0.00%)	32 (100%)
Drivers have excellent communication skills	14 (43.8%)	8 (25.0%)	10 (31.2%)	0 (0.00%)	0 (0.00%)	32 (100%)

Drivers have excellent driving skills	19 (59.4%)	9 (28.1%)	4 (12.5%)	0 (0.00%)	0 (0.00%)	32 (100%)
Total	68 (53.1%)	32 (25.0%)	27 (21.1%)	1 (0.8%)	0 (0.00%)	128 (100%)

l) *Regression Analysis of Students BTS Efficiency Rating Based on Drivers Behavior*

This section uses regression analysis and Analysis of Variance (ANOVA) to test hypothesis and

determine the relationship between Students BTS Rating (X) based on their perception of the Drivers behavior (Y). Using excel to run the statistical analysis, the results is presented in the table below.

Table 10: Regression Statistics of Students BTS ratings (X) and Drivers are friendly (Y)

Regression Statistics	
Regression coefficient (r)	0.589999
Coefficient of Determination (r ²)	0.348099
Coefficient of non-determination	0.651901
Standard Error	0.735210
Intercept(a)	0.428571
Slope (b)	0.491289
Observations (N)	32
Regression equation model	$\hat{Y} = 3.71 + 0.41x$

i. *Hypothesis Testing of Drivers Friendly behavior (Y)*

The null hypothesis states there is no relationship between student ratings of the BTS

efficiency and drivers friendly behavior i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$.

Table 11: ANOVA Summary Table for drivers' friendly behavior data

	df	SS	MS	F	Significance F
Regression	1	8.66	8.66	16.02	0.00037932
Residual Error	30	16.22	0.54		
Total	31	24.87			

Table 12: Regression Statistics of Students BTS ratings (X) and Drivers knowledge of DOT safety regulations

Regression Statistics	
Multiple Regression Coefficient (r)	0.461341146
Coefficient of Determination (r ²)	0.212835653
Coefficient of Non-determination	0.787161347
Standard Error	0.7400913
Intercept (a)	0.785714286
Slope (b)	0.351916376
Observations	32
Regression Equation Model	$\hat{Y} = 0.79 + 0.35X$

- ii. *Hypothesis Testing of Drivers DOT Safety Knowledge Behavior (Y)* knowledge of DOT safety regulations i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$.

Null Hypothesis: there is no relationship between student ratings of the BTS efficiency and drivers

Table 13: ANOVA Summary Table for drivers' road safety knowledge data

	df	SS	MS	F	Significance F
Regression	1	4.442944251	4.442944251	8.111482188	0.007868
Residual	30	16.43205575	0.547735192		
Total	31	20.875			

Table 14: Regression Statistics of Students BTS ratings (X) and Drivers' communication skills(Y)

Regression Statistics	
Regression Coefficient (r)	0.087552871
Coefficient of Determination (r^2)	0.007665505
Coefficient of non-determination	0.992334495
Standard Error	0.953750467
Intercept (a)	1.428571429
Slope (b)	0.076655052
Regression Equation Model	$\hat{Y} = 1.43 + 0.08X$
Observations	32

- iii. *Hypothesis Testing of Drivers Excellent Communication Skills* communication skills i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$.

There is no relationship between students' ratings of the BTS efficiency and drivers excellent

Table 15: ANOVA Summary table for Drivers Excellent Communication Skills

	df	SS	MS	F	Significance F
Regression	1	0.210801394	0.210801394	0.231741573	0.633728395
Residual	30	27.28919861	0.909639954		
Total	31	27.5			

Table 16: Regression Statistics of Students BTS ratings (X) and Drivers' excellent driving skills

Regression Statistics	
Regression coefficient (r)	0.436078899
Coefficient of Determination (r^2)	0.190164806
Coefficient of non-determination	0.809835194
Standard Error	0.65655809
Intercept (a)	0.785714286
Slope (a)	0.290940767
Regression Equation Model	$Y = 0.79 + 0.29X$
Observations	32

iv. *Hypothesis Testing of Drivers Excellent Driving Skills*

There is no relation between students' ratings of the BTS efficiency and drivers excellent driving skills i.e. $r = 0$ whereas the research hypothesis says that $r \neq 0$.

Table 17: ANOVA Summary table for Drivers Excellent driving Skills

	df	SS	MS	F	Significance F
Regression	1	3.036694251	3.036694251	7.044574296	0.012595765
Residual	30	12.93205575	0.431068525		
Total	31	15.96875			

IV. DISCUSSIONS

a) *Introduction*

This part of the research discusses the findings of the analysis and results in the data presentation and statistical analysis sections.

b) *Discussion of Demographics*

The table 1 indicates that majority of respondents representing 19 (59.4%) are males while 13 (40.6%) are females. Also, in the age category on table 2, half (modal class) of the respondents representing 16 (50%) are between the age 15-20 category, followed by 26-30 with 10 respondents representing 31.2%. age 46 and above had 2 respondents representing 6.2% while the rest of the age groups had 1 respondent representing 3.1% each for 21-25, 31-35, and 36-40. It is also worth noting that 1 respondent did not respond to this question. The table 3 presents the level of education of the respondents. It showed that majority of students representing 15 (46.9%) are freshmen, 11 (34.4%) are masters students, 5 (15.6%) respondents pursue doctorate while 1 student representing 3.1% is a sophomore. No respondent were in junior or senior level.

c) *Discussion of the Residence and Transport Mode Choice of Respondents*

In the figure 1 bar chart, it could be seen that 14 students representing 44% who stay on campus residential apartments prefers to walk to campus, only 2 representing 6% uses the BTS while one respondent uses Private vehicle. On the other hand majority of off campus residential students 13 (41.1%) generally uses private vehicle to campus, one uses public transport while only 1 student walk to campus. It can there be concluded students who stay on campus refers walk than to use the bus system to campus. On the other hand off-campus students prefer using private means to campus to the public transport. The on campus students mode of transport choice could mean increased active mobility on campus which help prevent creating heat islands on campus as fewer vehicles are used. This could support in achieving active mobility objectives in the 2014 campus master plan of the university and the net zero policy of the Huntsville city plan.

d) *Discussion of the Transport Mode and Education Level Cross tabulation*

From the table 4, it could be seen that a majority (13 out of 15) representing 87% of the freshmen walk to campus as against only 1 (7%) student each who uses the BTS and private vehicles to campus. Interestingly, no doctorate student uses any other mode apart from private vehicles and almost 73% representing 8 out of 11 masters' students uses private vehicles. Only 1 (9%) master's student each uses the BTS, public transport and walking. The only sophomore respondent walks to campus. It can be concluded that freshmen mostly walk to campus while high levels such as doctorate and masters prefer using private vehicles.

e) *Discussion of the Reasons for Respondents' Transport Mode*

With a selection of possible reasons, in the table 5 above, majority of 12 (37.5%) students indicated they use their current mode of transport because it is fast and convenient and 5 (15.6%) students indicated readily available. 4 (12.5%) students use their mode choice because it is readily available; fast and convenient, and 4 (12.5%) they use their current transport mode because they have no other option. Also 2 (6.2%) students selected for each category of "it is fast and convenient; It is cost effective" and "It is readily available; It is fast and convenient; It is cost effective".

f) *Discussion of Respondents' choice of Transport Mode and their Reason*

From the table 6, it can be deduced that the only 2 respondents who use the BTS; 1 indicated that they have no other option – it is their only option and stated it is fast and convenient. Also out of the 14 students who use private mode of transport; 7 (47%) think it is fast and convenient, 2 (13%) further added it is cost effective, and another 2 (13%) think it is readily available in addition. The only student who uses the public transport thinks it is cost effective. Also majority of 5 (33%) of the students who walk think it is readily available while 3 (20%) think it is fast and convenient. 1 student who walks indicated it is faster than the BTS. Therefore, the research found that students prioritize fast movement and convenience in selecting their transport mode to campus giving a perception that the BTS is quiet slow.

g) *Discussion of Student Perception of BTS Effectiveness*

In the figure 2, with options of yes, no and maybe, 19(59.38%) of the students indicated yes the BTS is serving its purpose effectively, 11(34.38%) indicated maybe, while only 2(6.25%) indicated no it is not serving its purpose effectively. Therefore it can be deduced that students perceived the BTS to be serving its purpose effectively.

h) *Discussion of Students' Rating of the Efficiency of the BTS*

From the figure 3, 11(34.4%) think the BTS operations is fairly efficient, while another 11(34.4%) indicated they are indifferent. 5(15.6%) think its operation is strongly efficient. Only 5 disagree and indicated it is fairly inefficient (9.4%) and strongly inefficient (6.2%). Therefore, this finding suggests that students think generally the BTS operation is efficient.

i) *Discussion of BTS Improvement Recommendation*

From the table 7, majority of the students comprising 10(31.2%) students says the BTS management should develop an app for students to track bus daily schedule and movement while 8 (25%) of the students wants BTS to provide regular off-campus services. 6(18.8%) of the students wants the BTS management to establish more stations and create new routes. 4(12.5%) students each want management to reduce the waiting time at the stations and renovate the bus stations with shelter. The research can assert that students want management to develop app to track the buses movement schedules and provide off-campus regular services.

j) *Students' Recommendation for BTS Improvement Based on their Residence*

From the table 8, it is revealed that 46.7% (7) of the 15 students who stay off campus recommend that the BTS should provide regular off-campus services, 26.7% (4) recommend that BTS should develop an app for students to track the buses daily movement schedule, 20% (3) recommend renovation of bus stations with shelter, while only 6.7% (1) recommend reducing the waiting time at the station. On the other hand, 35.3% (6) each on campus residential students recommended developing an app to track to track bus daily movement schedule and establish more stations and create new routes. 17.6% (3) of the on campus residential students also recommended reducing the waiting time at the stations while only 5.9% (1) recommend providing off campus services and renovation of bus stations with shelter.

In this analysis, we could see off campus students recommending for off campus regular services could mean that majority of them use their private means (refer to figure 1) because there is no reliable off campus regular services. Most of the students who stay

on campus housing will want more service stations and routes and an app to track its movement. Majority of the on-campus residential housing students maybe walking because; they cannot track buses whereabouts, and so will rather walk than to wait and miss their schedules if the buses do not appear on time.

k) *Discussion of Students' Rating of BTS Drivers' Behavior/Conduct*

The table 9 reveals the students perception on various variables. For "Drivers are friendly" variable 56.2% of the students strongly agree, 21.9% agree while only 18.8% stayed neutral. 3.10% of the students disagree however; none strongly disagree with the statement.

For the drivers' knowledge about the DOT safety regulations, 53.1% strongly agree, 25% agree, while 21.9% stayed neutral. Again, no student disagreed or strongly disagreed to the statement. Furthermore, for "drivers have excellent communication skills" variable, 43.8% strongly agree, 25% agree while 31% selected neutral. However, no student disagrees or strongly disagrees with the statement. Drivers have excellent driving skills, 59.4% strongly agree, 28.1% agree, and 12.5% opted for neutral. Generally 53.1% of the responses strongly agree, 25% agreed, 21.1% stayed neutral while only 0.8% responses disagree with the statements of the variables.

The foregoing analysis found that students generally agree that drivers are friendly, know safety regulations, and have excellent communication and driving skills.

l) *Discussion of Regression Statistics of Students BTS ratings and Drivers are friendly*

The r value of 0.60 (rounded) in the table 10 implies a strong positive correlation between drivers being friendly and students rating of the BTS efficiency. The coefficient of determination (r^2) implies 35% of the variance in drivers friendly behavior is explained by the students' ratings of the BTS operation efficiency. Also coefficient of non-determination of 65% implies the variance in "drivers are friendly" that is not explained by students' ratings of the BTS operation efficiency. This 65% residual could be a result of other factors concerning the drivers such as excellent communication skills, excellent driving skills, and knowledge of the DOT safety regulations.

m) *Discussion of Hypothesis Testing Results of Drivers Friendly Behavior (Y)*

From the table 11, the calculated F value (16.02) is far greater than the critical value, indicating that independent variable (students' ratings of BTS efficiency) explains a significant variance in students' perception of the BTS drivers being friendly. This explains why there is a strong correlation between the two variables. Therefore we accept the research

hypothesis that there is a relationship between students' perception that the drivers are friendly and their rating of the BTS operation efficiency.

n) Discussion of Regression Statistics Results of Students BTS Ratings (X) and Drivers Knowledge of DOT Safety Regulations (Y)

The r value (0.46) in the table 12 indicates a moderate positive correlation between drivers' knowledge of DOT safety regulations and students rating of the BTS efficiency. The coefficient of determination (r^2) implies 21% of the variance in drivers safety knowledge is explained by the students' ratings of the BTS operation efficiency. Also coefficient of non-determination of 79% implies the variance in drivers' road safety knowledge that is not explained by students' ratings of the BTS operation efficiency. The huge 79% variance not explained could be the reason why the correlation is not strong though positive.

Furthermore, the intercept (a) implies that we can expect students who did not rate the BTS efficiency, i.e. X equal zero, will give driver's knowledge of safety regulations (\hat{Y}) $a=0.79$ ratings. Also, the slope (b) implies that for each student's rating of the BTS efficiency, a student tends to give 0.35 more rating of the drivers knowledge on safety regulation.

o) Discussion of Hypothesis Testing Results of Drivers DOT Safety Knowledge Behavior

From the table 13, the calculated F value (8.11) is far greater than the critical value of F at the 0.05 and 0.01 Significance Levels (4.17), indicating that independent variable (students' ratings of BTS efficiency) explains a significant variance in students' perception of the BTS drivers knowledge of road safety regulations. Therefore we accept the research hypothesis that there is a relationship between the variables. That is students perception that the drivers knowledge of road safety rules influence on how they rate the BTS operation efficiency.

p) Discussion of Regression Statistics of Students BTS ratings (X) and Drivers' Communication Skills (Y)

Table 14 indicates a positive weak correlation (0.09) between students BTS efficiency ratings (X) and drivers' communication skills (Y). The r^2 of 0.76% implies the variance in drivers' excellent communication skills that are explained by the students' ratings of the BTS operation efficiency. Also coefficient of non-determination of 99.23% implies the variance in drivers' excellent communication skills that is not explained by students' ratings of the BTS operation efficiency. Also the huge standard error of 95.37% implies non-representation of the results.

q) Discussion of Hypothesis Testing results of Drivers Excellent Communication Skills

From the table 15, the calculated F value (0.23) is less than the critical value of F at the .05 and .01

Significance Levels (4.17) or in other words Significance F (0.63) is greater than the calculated F value, indicating that independent variable (students' ratings of BTS efficiency) explains an insignificant variance in students' perception of the BTS drivers knowledge of road safety regulations. This further affirms the weak correlation between the two variables.

Therefore, we accept the null hypothesis that there is no relationship between students perception of the efficiency of the BTS operation and drivers communication skills.

r) Discussion of Regression Statistics of Students BTS ratings (X) and Drivers' Excellent Driving Skills

The r value of 0.44 in table 16 implies a moderate positive correlation between students' ratings of BTS efficiency and drivers' driving skills. The 0.19(19%) of the r^2 implies the variance in drivers driving skills that are explained by the students rating of the BTS efficiency. In other words 19% of the error in predicting students' perception of the drivers driving skills is reduced by taking into account, the students' ratings of the BTS operations efficiency. Also coefficient of non-determination of 0.81 or 81% implies the variance in drivers' excellent driving skills that is not explained or accounted for by students' ratings of the BTS operation efficiency. 66% standard error represents the error discrepancy in establishing the relationship between the students BTS ratings and drivers driving skills.

s) Discussion of Hypothesis Testing Results of Drivers Excellent Driving Skills

From table 17, the calculated F value of 7.04 greater than the critical value of F at the .05 and .01 Significance Levels (4.17). It is outside the null hypothesis acceptance zone; therefore we accept the researcher's hypothesis that there is a relationship between students' ratings of the BTS efficiency and drivers driving skills even though it is a moderate relationship.

t) Summary of Research Discussion Findings

1. Students who stay on campus majority of whom are freshmen prefer to walk than to use the bus system to campus. However, off-campus students usually made of masters and doctorate students prefer using private means to campus to the public transport.
2. Students prioritize fast movement and convenience in selecting their transport mode to campus giving a perception that the BTS is quiet slow even though they perceived the BTS to be serving its purpose effectively and operates efficiently.
3. Students want management to develop app to track the buses movement schedules and provide off-campus regular services because majority of off-campus students use their private means because there is no reliable off campus regular services.

4. Students generally agree that drivers are friendly, know safety regulations, and have excellent communication and driving skills.
5. There is a strong positive relationship between students' perception that the drivers are friendly and their rating of the BTS operation efficiency.
6. Students' perception that the drivers' knowledge of road safety rules has an influence on how they rate the BTS operation efficiency – there is a moderate positive relationship.
7. However, the analysis found no relationship between students perception of the efficiency of the BTS operation and drivers communication skills.
8. There is a moderate positive relationship between students' ratings of the BTS efficiency and drivers driving skills.
9. Even though there are somewhat relationships the standard predictor errors were high suggesting that the data used in the analysis may not be a sufficient representation of accurate predictions.

u) Conclusion

Students generally have a positive perception about the BTS operations even though many of them do not use it to move around campus. Also, students agree that drivers are friendly, know road safety regulations, and have excellent communication and driving skills. The predictions established positive relationships with varying degrees of strength – though with high standard errors among these dependent variables and the students rating of the efficiency of the bus system. This influences how they perceive efficiency and effectiveness of the bus system.

LIST OF ABBREVIATIONS

AAMU.....	Alabama Agricultural and Mechanical University
CMP.....	Campus Master Plan
FTA.....	Federal Transit Authority
BTS... ..	Bulldog Transit System
DOT.....	Department of Transportation
SPSS.....	Statistical Package for Social Sciences
ANOVA.....	Analysis of Variance

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APPENDIX

Appendix 1: Data for Regression Analysis and Hypothesis Testing

Students BTS rating(X)	Drivers are friendly	Students BTS rating(X)	Drivers know DOT safety regulations (Y)	Drivers have Excellent Communication Skills (Y)	Students BTS rating(X)	Drivers have Excellent Driving Skill (Y)	Students BTS rating(X)
3	1	3	1	3	3	1	3
2	1	2	1	1	2	2	2
3	3	3	3	3	3	3	3
3	2	3	2	1	3	2	3
1	1	1	1	1	1	1	1
3	2	3	1	1	3	2	3
2	3	2	3	3	2	3	2
2	2	2	2	3	2	2	2
2	1	2	2	1	2	1	2
3	3	3	3	3	3	1	3
2	1	2	1	1	2	1	2
2	1	2	2	1	2	1	2
2	2	2	2	3	2	2	2
3	3	3	3	3	3	3	3
4	2	4	2	1	4	2	4
5	4	5	2	1	5	2	5
1	1	1	1	1	1	1	1
3	1	3	1	1	3	1	3
1	1	1	1	3	1	1	1
1	1	1	1	1	1	1	1
4	1	4	1	1	4	1	4
3	3	3	3	3	3	1	3
2	1	2	1	1	2	1	2
2	1	2	1	1	2	1	2
3	1	3	1	1	3	1	3
2	1	2	1	1	2	1	2
1	1	1	1	1	1	1	1
5	3	5	3	3	5	3	5



4	2	4	3	1	4	2	4
3	1	3	1	1	3	1	3
3	2	3	2	1	3	2	3
2	1	2	1	1	2	1	2

Appendix 2: Participant Consent Letter

Dear Sir/Madam,

I am Imoro Nuhu Yahaya, a Graduate student of Master of Urban and Regional Planning (MURP). I am writing a technical research paper on *the Perceptions of Students on Campus Transit Systems; Case study of the Bulldog Transit System*. This is necessary as part of my course requirements for the fall 2023 Semester.

I would like to ask for your consent and cooperation to answer the following questionnaire completely, accurately and as honest as possible. You are assured that information provided will be used for only academic purpose and their confidentiality is highly assured.

Thank you

Sincerely,

Appendix 3: Questionnaire

Please select your gender:

Male

Female,

Others,

Prefer not to answer

Level of Education

Freshman,

Sophomore,

Junior,

Senior,

Masters,

Doctorate

Which of the following mode of transport do you use to enter campus?

Walking,

BTS,

Private Vehicle.

Why will you use the transport mode above?

- It is readily available
- It's fast and convenient
- Cost effective

The BTS goal is to ensure students' safety and to make students' lives on campus easier bybusing them around the university's beautiful campus. Do you think the BTS is serving its purpose effectively?

Yes

No

Please rate the efficiency of the BTS operation on scale of 1-5 where; 1 = strongly efficient, 2=fairly efficient, 3 = I am neutral, 4 = fairly inefficient, and 5 = strongly inefficient

Which part of the BTS service will you recommend to improve?

1. Establish more Stations, and create new routes
2. Renovate Bus station with shelter
3. Reduce the waiting time at the station
4. Provide regular off-campus services
5. Develop app for students to track bus daily schedule

On a scale of 1-5 where 1 means strongly agree, 2 is Agree, 3 is Neutral, 4 is Disagree, and 5 is strongly Disagree rate the BTS behavior/conduct on the following

1. Drivers are friendly
2. Drivers know Department of Transport (DOT) safety regulations
3. Excellent driving skills
4. Good communication skills

Appendix 4: Research Respondents Data Base

Gender	Age Cohort	Level of Education	Place of Residence	Transport Mode
Male	26 - 30	Masters	Off-Campus Residential Housing	Walking
Female	15 - 20	Freshman	On Campus Residential Housing	Walking
Male	15 - 20	Freshman	On Campus Residential Housing	Walking
Female	26 - 30	Masters	Off-Campus Residential Housing	Private Vehicle
Female	26 - 30	Masters	Off-Campus Residential Housing	Public Transport
Female	15 - 20	Freshman	On Campus Residential Housing	Walking
Female	21 - 25	Masters	On Campus Residential Housing	BTS
Female	15 - 20	Freshman	On Campus Residential Housing	Walking
Male	15 - 20	Freshman	On Campus Residential Housing	Walking
Male	26 - 30	Masters	Off-Campus Residential Housing	Private Vehicle
Female	15 - 20	Freshman	On Campus Residential Housing	Walking
Male	26 - 30	Masters	Off-Campus Residential Housing	Private Vehicle
Male	15 - 20	Sophomore	On Campus Residential Housing	Walking
Male	46 - Above	Masters	Off-Campus Residential Housing	Private Vehicle
Female	26 - 30	Masters	Off-Campus Residential Housing	Private Vehicle
Male	26 - 30	Masters	Off-Campus Residential Housing	Private Vehicle
Female	36 - 40	Masters	Off-Campus Residential Housing	Private Vehicle
Male	46 - Above	Doctorate	Off-Campus Residential Housing	Private Vehicle
Male	26 - 30	Doctorate	Off-Campus Residential Housing	Private Vehicle
Male	26 - 30	Doctorate	Off-Campus Residential Housing	Private Vehicle
Male	31 - 35	Doctorate	Off-Campus Residential Housing	Private Vehicle
Male	26 - 30	Doctorate	Off-Campus Residential Housing	Private Vehicle
Male	15 - 20	Freshman	On Campus Residential Housing	Walking
Female	15 - 20	Freshman	On Campus Residential Housing	Walking
Male	15 - 20	Freshman	On Campus Residential Housing	Walking
Male	15 - 20	Freshman	On Campus Residential Housing	BTS
Female	15 - 20	Freshman	On Campus Residential Housing	Walking

Male	15 - 20	Freshman	On Campus Residential Housing	Walking
Male	15 - 20	Freshman	On Campus Residential Housing	Private Vehicle
Female	15 - 20	Freshman	On Campus Residential Housing	Walking
Female		Masters	Off-Campus Residential Housing	Private Vehicle
Male	15 - 20	Freshman	On Campus Residential Housing	Walking

Data Base Continued

Reason for Transport Mode	Effectiveness of BTS Rate	BTS Efficiency
It is the oly option I have. I have no other option	Maybe	3
It is fast and convenient; It isnâ€™t really convenient but the BTS can be quite slow soo	Maybe	2
It is fast and convenient	Maybe	3
It is fast and convenient	Yes	3
It is cost effective	Yes	1
It is readily available; It is fast and convenient	No	3
It is the oly option I have. I have no other option	Maybe	2
It is readily available	Yes	2
It is readily available; It is the oly option I have. I have no other option	Yes	2
It is the oly option I have. I have no other option	Maybe	3
It is fast and convenient	Yes	2
It is readily available; It is fast and convenient; It is cost effective	Yes	2
It is readily available; It is fast and convenient; It is cost effective	Maybe	2
It is fast and convenient	Maybe	3
It is readily available; It is fast and convenient	Maybe	4
It is fast and convenient	Yes	5
It is fast and convenient; It is cost effective	Yes	1
It is fast and convenient	Maybe	3
It is fast and convenient; It is cost effective	Yes	1
It is fast and convenient	Yes	1
It is readily available; It is fast and convenient	Yes	4
It is readily available; It is fast and convenient; It is the oly option I have. I have no other option	Yes	3
It is readily available; It is fast and convenient	Maybe	2
It is the oly option I have. I have no other option	Yes	2
It is readily available	Yes	3
It is fast and convenient	Yes	2
It is readily available	Yes	1
It is readily available	No	5
It is fast and convenient	Yes	4
It is fast and convenient	Yes	3
It is fast and convenient	Maybe	3
It is readily available	Yes	2

Data Base Continued

Recommendation	Drivers Are Friendly	Know Safety Regulations	Excellent Communication	Excellent Driving Skills
Provide regular off-campus services	Strongly Agree	Strongly Agree	Neutral	Strongly Agree
Establish more Stations, and create new routes	Strongly Agree	Strongly Agree	Strongly Agree	Agree
Establish more Stations, and create new routes	Neutral	Neutral	Neutral	Neutral
Develop app for students to track bus daily schedule	Agree	Agree	Agree	Agree
Renovate Bus Stations with Shelter	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Develop app for students to track bus daily schedule	Agree	Strongly Agree	Agree	Agree
Develop app for students to track bus daily schedule	Neutral	Neutral	Neutral	Neutral
Establish more Stations, and create new routes	Agree	Agree	Neutral	Agree
Establish more Stations, and create new routes	Strongly Agree	Agree	Strongly Agree	Strongly Agree
Renovate Bus Stations with Shelter	Neutral	Neutral	Neutral	Strongly Agree
Establish more Stations, and create new routes	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Reduce the waiting time at the station	Strongly Agree	Agree	Agree	Strongly Agree
Renovate Bus Stations with Shelter	Agree	Agree	Neutral	Agree
Provide regular off-campus services	Neutral	Neutral	Neutral	Neutral
Provide regular off-campus services	Agree	Agree	Agree	Agree
Develop app for students to track bus daily schedule	Disagree	Agree	Agree	Agree
Renovate Bus Stations with Shelter	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Provide regular off-campus services	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Provide regular off-campus services	Strongly Agree	Strongly Agree	Neutral	Strongly Agree
Provide regular off-campus services	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Provide regular off-campus services	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Develop app for students to track bus daily schedule	Neutral	Neutral	Neutral	Strongly Agree
Reduce the waiting time at the station	Strongly Agree	Strongly Agree	Agree	Strongly Agree
Establish more Stations, and create new routes	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Develop app for students to track bus daily schedule	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Reduce the waiting time at the station	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Develop app for students to track bus daily schedule	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Develop app for students to track bus daily schedule	Neutral	Neutral	Neutral	Neutral
Develop app for students to track bus daily schedule	Agree	Neutral	Agree	Agree
Reduce the waiting time at the station	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
Develop app for students to track bus daily schedule	Agree	Agree	Agree	Agree
Provide regular off-campus services	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree