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Determinants of Passengers' Satisfaction in Public Transport in Tanzania: A Mediating Effect of Efficiency of Public Transport Services

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Abstract *Few studies in the current literature have, however, systematically examined the underlying relationships among service attributes to assess their influence on passenger overall satisfaction. This study assessed the determinants of passengers' satisfaction in Tanzania. The study was guided by SERVQUAL Model. Positivism research paradigm and simple random sampling technique were used to obtain a sample size of 384 respondents. However, descriptive and explanatory cross-sectional survey research approaches were employed in data collection. Data were collected through questionnaire and documentary review. Inferential statistics analysis for the collected data was conducted using Partial Least Squares Structural Equation Modeling assisted by SmartPLS 4 software and for descriptive statistics analysis, IBM SPSS Statistics Version 26 was used for data collected regarding respondents' profile. The findings reveal that accessibility, affordability, reliability and efficiency of public transport services have positive effects on passengers' satisfaction. The study recommends that transport operators in Tanzania and other developing countries should consider the accessibility, affordability, reliability and efficiency of public transport services in order to satisfy the passengers who always use public transport.*

Keywords Accessibility, Affordability, Efficiency of Public Transport Services, Passengers' Satisfaction, Reliability, SERVQUAL Model

I. INTRODUCTION

The public transport sector in some areas faces challenges in providing quality service, including inadequate supply of services, non-compliance of rules and regulations, and low standard of service quality in terms of efficiency, accessibility, reliability, affordability, and convenience (Nhundu, 2013; Avermann & Schlüter, 2019; Li et al., 2020). Accessibility positively influences the efficiency of public transport services by: enhancing social equity and inclusion, increasing the demand for public transport services improving the efficiency of cross-border commuting. By focusing on accessibility, policymakers can make informed decisions to improve transport efficiency and promote sustainable urban development (Nwachukwu, 2014). High occupancy public bus transport services in some countries have gradually dropped due to its less competitive service performance. This has resulted in deteriorating the sustainability of the transportation system especially in developing countries (Atombo & Wemegah, 2021; Okoth, 2017). Traffic congestion has been a serious problem in many cities since the intensified industrialization and urbanization process began in the 1980s. Frequent traffic congestion has caused the society to suffer efficiency loss in terms of idle time on the road. The promotion of public transport by the government has yet to produce satisfactory results in terms of inducing a significant switch in mode of transport (Chee & Fernandez, 2013). Understanding the service quality of public

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transportation based on users' perception is an important input for local governments and transit service providers in their planning efforts to improve system performance (Obsie et al., 2020).

Studies on public transit have emphasized the role of passenger satisfaction with service quality in travel choice decisions and indicated that satisfaction depends on various service attributes. Few studies have, however, systematically examined the underlying relationships among service attributes to assess their influence on passenger overall satisfaction (Wu et al., 2016). Some studies have explored the perspectives of elderly people on the availability, acceptability, accessibility, compatibility, and affordability of public transport (Mahfoozpour, 2017). Other studies have considered the accessibility and affordability of public transport for older people (Vecchio et al., 2022), and the satisfaction of current commuter bus passengers (Muhua, 2022). Additionally, some studies have assessed the accessibility, affordability, and equity of public transport subsidies (Guzman & Oviedo, 2018), and the effect of critical incidents on public transport satisfaction and loyalty (Allen et al., 2018).

Literature Review and Hypotheses Development

This study employed SERVQUAL model because is a widely recognized framework used to assess service quality. It focuses on five key dimensions: reliability, responsiveness, assurance, empathy, and tangibles. In addition, the SERVQUAL model is crucial for assessing and improving service quality in various industries, including transport industry. In the context of transport industry, understanding and implementing the SERVQUAL model can help to enhance passengers' satisfaction and perception towards service quality, ultimately leading to better provision of efficiency public transport services. Multiple of studies highlight the importance of service quality dimensions in influencing consumer satisfaction within the transport industry, providing insights for policymakers and service operators to enhance customer experience and optimize service delivery.

For example, an evaluation model combining customer satisfaction and SERVQUAL model was used by Yun-yun et al. (2018) to analyze urban rail transfer systems. The study identified key factors influencing satisfaction indexes for bus, taxi, bicycle, and pedestrian modes (Yun-yun et al., 2018). A study by Ziyad et al. (2020) on ridesharing services like Uber and Careem found that all service quality dimensions of the SERVQUAL model positively impacted consumer satisfaction. Assurance, responsiveness, and empathy significantly influenced satisfaction, while reliability and tangibility had a less significant impact. Nkyami (2016) revealed that responsiveness and assurance significantly affected customer satisfaction, while reliability, tangibility, and empathy had a less significant impact. A study by Ubaidillah et al. (2022) showed that tangibility, reliability, and responsiveness significantly influenced users' satisfaction with public buses. Tangibility was identified as the most critical factor affecting satisfaction.

Despite the widespread use of the SERVQUAL model to evaluate service quality in the transport industry, there is still limited information on the indirect effects of accessibility, affordability, and reliability on passengers' satisfaction through the efficiency of public transport services. In order to fill the existing gap in the current literature, this study assessed the indirect effects of accessibility, affordability and reliability on passengers' satisfaction through the efficiency of public transport services by using SERVQUAL model.

Influence of accessibility on passengers' satisfaction in public transport

Accessibility positively influences customer satisfaction in public transport. Studies have shown that accessibility is a significant factor affecting user satisfaction in various modes of public transport, including rail-based services, buses, and urban rail transfer systems (Ubaidillah et al., 2022; Noor & Foo, 2018). Improving accessibility can lead to enhanced customer satisfaction and loyalty, which in turn can contribute to increased ridership and the overall success of public transport systems (Chan et al., 2021; Ibrahim et al., 2020; Ubaidillah et al., 2022; Noor & Foo, 2018; Yi et al., 2018).

Similarly, an efficient and reliable public transport system should be able to provide transport services for all categories of people living in a city, helping to eliminate social exclusion and guarantee equity among the dwellers (Jirgba et al., 2021). Accessibility is crucial for policymakers to implement diverse transport modes and commuters to choose a mode that has low accessibility cost (Antwi et al., 2020). Studies have shown that public transport can have a significant impact on the value of urban residential real estate. The proximity of

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public transport infrastructure, such as tram stops or metro stations, can increase the cost of properties (Leontev & Mayburov, 2021). This suggests that accessibility to public transport can positively influence the efficiency of public transport services by increasing the demand for these services and, in turn, improving the efficiency of the system. In the context of cross-border commuting, accessibility-based analysis has shown that public transport efficiency can be improved by enhancing accessibility (Cavallaro & Dianin, 2020). This highlights the importance of considering accessibility when planning and implementing public transport services. Based on the facts in prior literature, this study predicted that accessibility would directly influence efficiency of public transport services and would indirectly influence customer satisfaction.

H_{1a}: Accessibility positively influences the efficiency of public transport services
H_{1b}: Accessibility positively influences customer satisfaction in public transport through efficiency of public transport services

Influence of reliability on passengers' satisfaction in public transport

Reliability positively influences passengers' satisfaction in public transport. Studies have shown that reliability is a significant factor affecting user satisfaction in various modes of public transport, including buses, rail-based services, and urban rail transfer systems. Improving reliability can lead to enhanced passengers' satisfaction and loyalty, which in turn can contribute to increased ridership and the overall success of public transport systems (Swai et al., 2023; Ubaidillah et al., 2022; Ibrahim et al., 2020; Nkyami, 2016). Likewise, according to the prior studies, reliability positively influences the efficiency of public transport services. Improving the reliability of services can decrease operating and maintenance costs, increase efficiency, and reduce fuel consumption (Pampel, 1985). Commuters perceive reliability as an important attribute of public transport services, along with efficiency, comfort, safety, and accessibility (Vilakazi & Govender, 2014). The location and number of bus stops also affect the operational efficiency of public transport services, with a trade-off between reduced access time and operational speed (Medina et al., 2013). Creating bus timetables using different vehicle sizes can improve the reliability and efficiency of services, reducing passenger waiting time and empty seat time (Ceder et al., 2013). Based on the findings of prior studies, this study hypothesized that reliability would influence the efficiency of public transport services and the passengers' satisfaction

H_{2a}: Reliability positively influences the efficiency of public transport services
H_{2b}: Reliability positively influences passengers' satisfaction in public transport through efficiency of public transport services

Influence of affordability on passengers' satisfaction in public transport

The influence of affordability on the efficiency of public transport services is a topic of interest in urban transport planning. A study by Adom-Asamoah et al. (2021) sought to contribute to the debate on the efficiency of intra-city public transport usage by assessing the efficiency of public transport based on nine indicators. Additionally, a capabilities approach was used to understand the disjuncture between proximity and access for vulnerable non-motorized transport users in African cities, highlighting that proximity to public transport does not necessarily mean affordability (Cooke et al., 2022). Furthermore, a paper on urban locational efficiency discussed the long-term energy and affordability implications of residential location decisions, emphasizing the trade-offs in locational efficiency due to the separation of urban functions and increased dependency on private automobiles (Morrissey et al., 2012). These sources provide insights into the complex relationship between affordability and the efficiency of public transport services, highlighting the need for a comprehensive understanding of this issue in urban transport planning. Based on the facts of the prior literature, this study hypothesized that affordability positively influences the efficiency of public transport and the passengers' satisfaction.

H_{3a}: Affordability positively influences the efficiency of public transport services
H_{3b}: Affordability *positively influences passengers' satisfaction in public transport through efficiency of public transport services*

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Influence of efficiency of public transport services on passengers' satisfaction

According to the prior literature, there is evidence to suggest that the efficiency of public transport services positively influences passengers' satisfaction. A study conducted by Cao (2022) found that passengers attributed great importance to higher satisfaction preferences on frequency or headway-related experience linked with their waiting time. Another study evaluated the satisfaction level of passengers using Mass Rapid Transit (MRT) feeder bus services and found that most of the respondents were satisfied with the overall quality, but punctuality, waiting and travel times as well as services frequency of this first and last mile connection had left a lot to be desired (Olabayonle et al., 2021). Improving public transport services can effectively alleviate city congestion and other traffic problems (Ha, 2014). New big data sources in the public transport industry enable dealing with major challenges such as elevating efficiency, increasing passenger ridership and satisfaction, and facilitating the information flow between service providers and service users (Oort & Cats, 2015). In order to validate the findings of prior literature, this study predicted that efficiency of public transport services would directly influence passengers' satisfaction.

H_4: Efficiency of public transport services positively influence passengers' satisfaction.

Conceptual Model of the Study

The conceptual model of this study was developed by considering the findings of prior empirical literature and the SERVQUAL model. Figure 1 presents the conceptual model of the study.

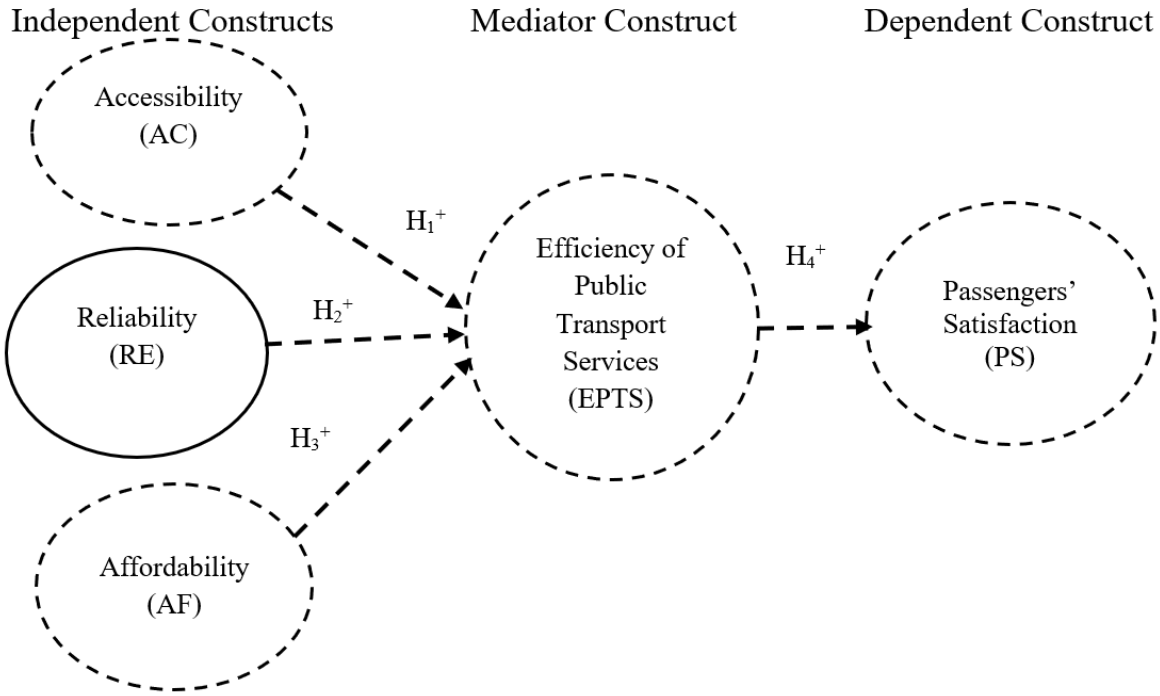

Figure 1: Conceptual model of the study.

Key

Theoretical Gap (relationships and constructs which do not exist in SERVQUAL model)

Source: Author

The Mathematical Model

The study used the mathematical equation x = lY + e to illustrate the connections between latent variables and their visible indicators, as seen in Figure 1. The variable x represents the observable indication, while Y signifies the hidden variable. The loading coefficient L is a statistical metric that quantifies the degree of correlation between the observable dependent indicator x and the latent independent variable Y. The variable e denotes the stochastic measurement error (Sarstedt et al., 2022; Shatta, 2023).

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II. METHOD

The adoption of positivist philosophy was motivated by the necessity to test the research hypotheses. In addition, the study employed descriptive and explanatory cross-sectional survey research approaches to collect data from a particular sample of buyers and suppliers. This is due to the fact that data was collected once, and a subset of this unit was examined (Creswell & Plano, 2018). Similarly, this study obtained data using a survey approach, which allows for the gathering and quantitative analysis of data using descriptive and inferential statistics. Nonetheless, this research used the tenth rule proposed by Hair et al. (2019) to estimate the proper sample size required to test the study model's hypotheses using PLS-SEM and SmartPLS 4 software.

According to Hair et al. (2019), the tenth rule of thumb suggests that the minimum sample size required to evaluate the hypotheses of a given research model is 10 times the maximum number of exogenous construct indicators. In this research, each exogenous construct has four indicators. According to the tenth rule of thumb, a sample size of 384 respondents was declared enough for evaluating the hypotheses of this study since it exceeded the minimum threshold of respondents required. Furthermore, closed-ended questionnaires were assigned numerical values to improve the efficiency and accuracy of quantitative data processing. The quantitative data collected for the respondents' profiles were analyzed using descriptive statistics with the help of IBM SPSS Statistics Software Version 26. To assess the hypotheses, inferential statistical analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) and the SmartPLS 4 software. The SmartPLS 4 application addressed missing data using the extra response technique. This study substituted the value of 99 for the missing values found in the surveys. However, this technique aided in the building of a structured separation between observed and unobserved data (Hair et al., 2019).

Evaluation of Models

This research assessed reflecting models using Partial Least Squares Structural Equation Modeling (PLS-SEM). This decision was taken based on the features of the constructs and their indicators in the validated theoretical study models shown in Figures 2 and 3. Because all indicators were dependent on their constructs, a reflecting model was considered appropriate for this inquiry (Hair et al., 2019). In addition, the measurement and structural models of the proposed research model were evaluated using the criteria established by Hair et al. (2019). There were numerous steps to the evaluation of reflective measuring models. First, the indicators' reliability was assessed, with a requirement that the reliability value be larger than 0.708. Second, the internal consistency reliability of the composite reliability of constructs was evaluated using a criterion of larger than 0.708. Third, the convergent validity of the constructs was assessed using the Average Variance Extracted (AVE) value, which must be more than 0.5. Finally, the discriminant validity was determined using the Heterotrait-Monotrait Ratio of Correlations (HTMT) criteria, which must be less than 0.9.

In addition, the constructs' collinearity in the structural model was evaluated. According to Hair et al. (2019), the VIF values should be around 3 or below. After accounting for collinearity, the key variables applied to assess the structural model in PLS-SEM were as follows: Path coefficients with a significance level are acceptable if the t-statistic is more than 1.96 at a significance level of 0.05 for all paths, and p-values of 0.05 or below are considered significant (Hair et al., 2019). Likewise, R^2 values of 0.75, 0.50, and 0.25 are classified as significant, moderate, and weak, respectively (Hair et al. 2019). Similarly, Hair et al. (2019) found that f^2 effect values larger than 0.02, 0.15, and 0.35 correspond to minor, medium, and large impact sizes, respectively. However, Becker et al. (2018) define strong predictive significance as a Q^2 impact size greater than zero. In overall, the evaluation results for both the measurement and structural models were good, meeting all of the criteria established by Hair et al. (2019).

III. RESULT AND DISCUSSION

A. Results

Table 1 shows statistics on respondents' gender, age group, education level, and experience. roughly 59 percent of the responders were men, while roughly 41 percent were women. Furthermore, the vast majority of participants, almost 85 percent, were between the ages of 31 and 50. Furthermore, almost 67% of the

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respondents had a bachelor's or master's degree. In contrast, many participants had prior experience with public transportation, spanning from one to twenty years, accounting for around 92 percent of the total. These results are consistent with those of earlier study. For example, Okoth (2017) discovered that around 53% of participants had a bachelor's or master's degree. On the other hand, the findings of this study contrast those of Obsie et al. (2020), who discovered that around 30% of the participants were between the ages of 30 and 50, with approximately 37% holding a bachelor's, master's, or Ph. D degree.

Table 1. Demographic Characteristics of the Respondents (n=384)

Characteristics		Frequency	Percentage (%)
Sex	Male	225	58.6
	Female	159	41.4
Age Group	21-30	31	8.1
	31-40	192	50.0
	41-50	135	35.2
	51-60	20	5.2
	61+	6	1.5
Education	Secondary Education	55	14.3
	Certificate Level	41	10.7
	Diploma Level	28	7.3
	Bachelor Degree	194	50.5
	Master's Degree	64	16.7
	PhD Degree	2	.5
Experience	1-10	258	67.2
	11-20	98	25.5
	21-30	22	5.7
	31+	6	1.6

Indicator's Reliabilities, R^2 Values and Relevance of the Path Coefficients

After applying the PLS-SEM method using SmartPLS software, it was discovered that the loadings of most indicators for the constructs were above the recommended threshold of 0.708, as proposed by Hair et al. (2019). The R^2 values of 0.515 and 0.580 indicate that about 51.5 percent of the variation in the efficiency of public transport services (EPTS) may be attributed to the exogenous variables (accessibility (AC), reliability (RE), and affordability (AF)). Moreover, the study discovered that a substantial proportion, specifically 58.0 percent, of the variation in passengers' satisfaction (PS) can be ascribed to the collective impact of accessibility (AC), reliability (RE), and affordability (AF), with the efficiency of public transport services (EPTS) acting as an intermediary. Furthermore, all suggested influences exhibited positive path coefficients, indicating that a one standard deviation increase in the accessibility (AC), reliability (RE), and affordability (AF) of the exogenous constructs, along with the mediator efficiency of public transport services (EPTS), led to an increase in the level of passengers' satisfaction (PS). Figure 2 shows the reliabilities of the indicators, R^2 values, and the relevance of the path coefficients.

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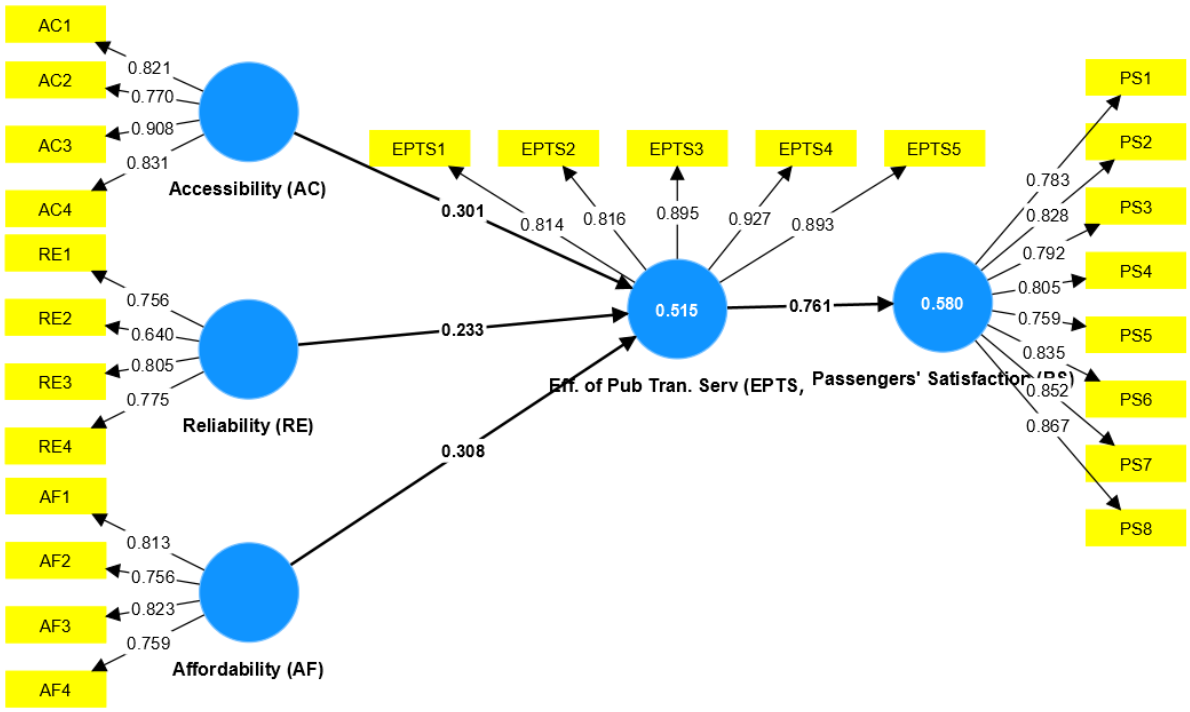

Figure 2: Indicator's Reliabilities, R^2 Values and Relevance of the Path Coefficients

Reliability and Convergent Validity Analysis Results

As to the findings of Hair et al. (2019), a construct is considered dependable if its composite reliability (CR) score exceeds 0.708. Furthermore, in order for a construct to possess convergent validity, it is necessary for its Average Variance Extracted (AVE) value to exceed 0.5. This study evaluated the reliability of all constructs using composite reliability (CR) values, which were determined to be more than 0.708. In addition, the convergent validity of all constructs was assessed using the Average Variance Extracted (AVE) value, which exceeded 0.5. The findings indicate that this research saw positive response patterns, and each component contributed to explaining the variation in its respective item (Hair et al., 2019). Table 2 presents the results on the reliability and validity of the constructs.

Table 2: Reliability and Convergent Validity Analysis Results

Construct	Composite reliability (CR)	Average variance extracted (AVE)
Accessibility (AC)	0.901	0.696
Affordability (AF)	0.868	0.622
Eff. of Pub Tran. Serv (EPTS)	0.940	0.757
Passengers' Satisfaction (PS)	0.941	0.666
Reliability (RE)	0.833	0.557

Discriminant Validity Analysis (HTMT Results)

The HTMT values for all influences examined in the research model were below 0.90, as seen in Table 3. The results indicate that each component in the study model was empirically distinct from the other components in the structural model, as advised by Hair et al. (2019).

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Table 3: Discriminant Validity Analysis (HTMT Results)

Construct	Accessibility (AC)	Affordability (AF)	Eff. of Pub Tran. Serv (EPTS)	Passengers' Satisfaction (PS)
Affordability (AF)	0.667			
Eff. of Pub Tran. Serv (EPTS)	0.667	0.735		
Passengers' Satisfaction (PS)	0.553	0.666	0.820	
Reliability (RE)	0.664	0.869	0.722	0.768

Collinearity Statistics by VIF Metric for Inner Model

The research analyzed collinearity data by using the Variance Inflation Factor (VIF) metric. However, the study conducted by Hair et al. (2019) found that VIF values below 3 indicate the absence of collinearity problems in the predictor constructs of the proposed research model. Table 4 presents the statistical findings of collinearity for the inner model of the recommended study model. The VIF metric was used, and values below 3 indicate that there were no problems with collinearity in the predictor constructs.

Table 4: Collinearity Statistics (VIF) for Inner Model Results

Construct	Eff. of Pub Tran. Serv (EPTS)	Passengers' Satisfaction (PS)
Accessibility (AC)	1.547	
Affordability (AF)	2.040	
Eff. of Pub Tran. Serv (EPTS)		1.000
Reliability (RE)	1.982	

F^2 Values Results

According to the study done by Hair et al. (2019), impact sizes of 0.02, 0.15, and 0.35 are categorized as small, medium, and large f^2 values, respectively. The analysis of this study revealed effect sizes (f^2) of 0.057, 0.096, 0.121, and 1.378 for each unique connection as shown in Table 5. These numbers represent the presence of small, moderate, and large effect sizes, respectively, for all hypotheses in the study model.

Table 5: F^2 Values Results

Construct	Eff. of Pub Tran. Serv (EPTS)	Passengers' Satisfaction (PS)
Accessibility (AC)	0.121	
Affordability (AF)	0.096	
Eff. of Pub Tran. Serv (EPTS)		1.378
Reliability (RE)	0.057	

Statistical Significance Results for the Hypothesized Relationships

After running bootstrapping from SmartPLS, the results showed that all suggested relationships were validated with p values < 0.05, suggesting that the conceptual research model of this study is suitable for management decision-making pertaining passengers' satisfaction in transport sector. These phenomena confirm the actual existence of all hypothesized relationships. Figure 3 displays the statistical significance results of the hypotheses.

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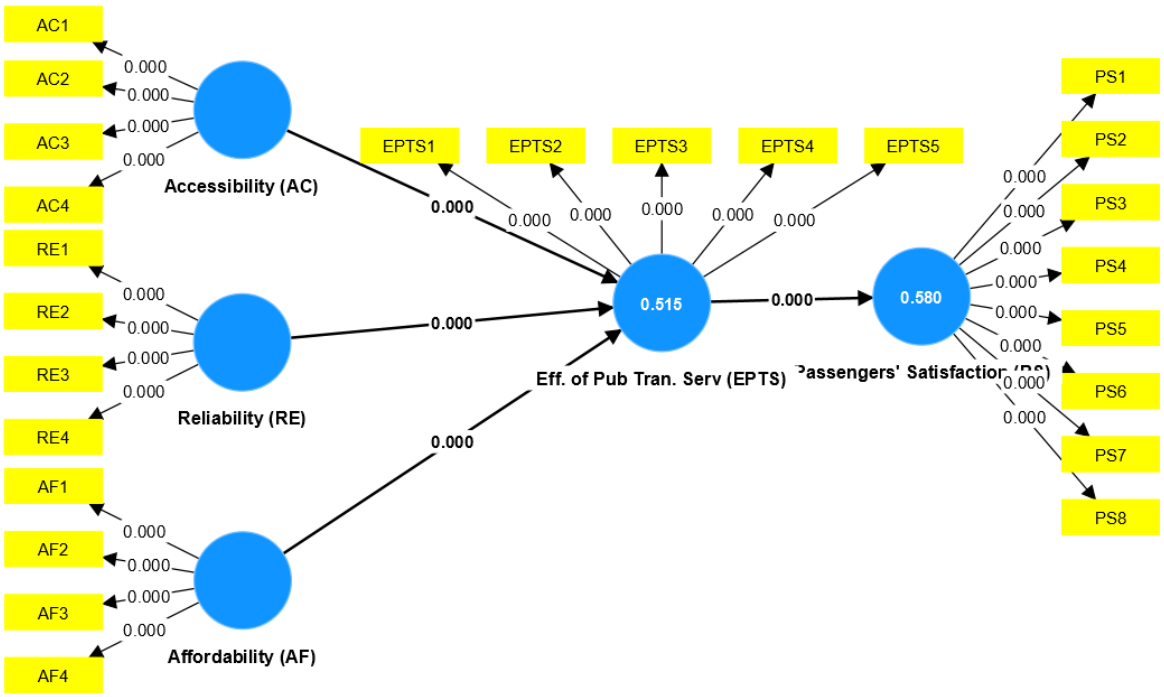

Figure 3: Statistical Significance of the Hypothesized Relationships

Direct and Indirect Statistical Significance Results of the Hypotheses

Table 6 presents a summary of the findings obtained from evaluating the direct and indirect assumptions derived from the theoretical framework of the study. After creating the bootstrapping report using SmartPLS 4 software, it was found that both the direct and indirect predictions had statistically significant results (p values < 0.05). This suggests that the links seen in the model exist in real-world situations, and the verified model may be successfully used for decision-making in the transportation sector issues in particular with regard to passengers' satisfaction.

Table 6: Direct and Indirect Statistical Significance Results of the Hypotheses

Hypothesis	Influence	STDEV	T statistics (|O/STDEV|)	P values
Accessibility (AC) -> Eff. of Pub Tran. Serv (EPTS)	Direct	0.063	4.775	0.000
Accessibility (AC) -> Eff. of Pub Tran. Serv (EPTS) -> Passengers' Satisfaction (PS)	Indirect	0.052	4.411	0.000
Affordability (AF) -> Eff. of Pub Tran. Serv (EPTS)	Direct	0.065	4.720	0.000
Affordability (AF) -> Eff. of Pub Tran. Serv (EPTS) -> Passengers' Satisfaction (PS)	Indirect	0.048	4.856	0.000
Eff. of Pub Tran. Serv (EPTS) -> Passengers' Satisfaction (PS)	Direct	0.028	27.347	0.000
Reliability (RE) -> Eff. of Pub Tran. Serv (EPTS)	Direct	0.051	4.565	0.000
Reliability (RE) -> Eff. of Pub Tran. Serv (EPTS) -> Passengers' Satisfaction (PS)	Indirect	0.039	4.493	0.000

Importance-Performance Map Analysis Results

The efficiency of public transport services, as shown in Figure 4, is above the average importance and performance of passengers' satisfaction, which is the targeted construct. This result implies that it is essential to provide priority and dedicate more resources towards changing the mentality of passengers throughout the development of the transport system to ensure existence of sustainable efficiency of public transport services. Nevertheless, the factors of accessibility, affordability, and reliability are rated lower than the average importance of passengers' satisfaction, which is the main focus. This indicates that these constructs have a

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restricted impact on the target construct (passengers' satisfaction). However, these constructs are positioned above the average on the performance map of the main focus construct (passengers' satisfaction), suggesting that they are also significant when constructing and reforming the transport system.

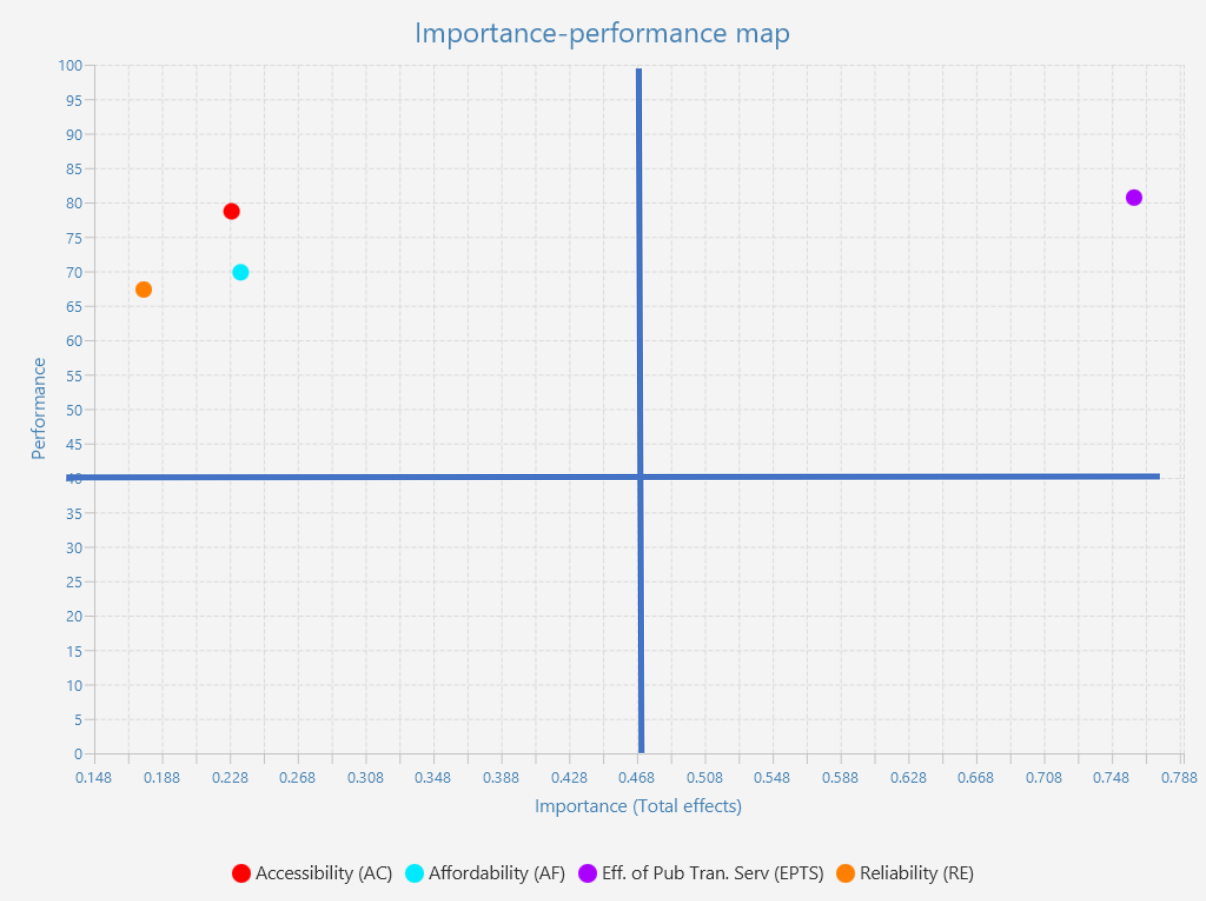

Figure 4: Importance-Performance Map Analysis Results

B. Discussion

Hypotheses Tested

This study hypothesized that the level of accessibility will directly influence the efficiency of public transport services, while also indirectly affecting the satisfaction of passengers. Figure 2 revealed that there were positive path coefficients. This implies that a single standard deviation enhancement in accessibility led to a rise in both the efficiency of public transport services and the satisfaction of passengers, and vice versa. In addition, the results in Table 6 confirmed the presence of statistically significant (direct and indirect effects) at a level below 0.05 (p value <0.05). These results validate the existence of the anticipated relationships in real-life situations. Moreover, these findings corroborate the conclusions drawn from previous studies (Chan et al., 2021; Ibrahim et al., 2020; Ubaidillah et al., 2022; Noor & Foo, 2018; Yi et al., 2018) which demonstrated that reliability plays a crucial role in influencing passengers' satisfaction across different modes of public transport, such as road, rail-based services, and urban rail transfer systems.

Moreover, this study predicted that the affordability of public transport systems will directly influence their efficiency, while also indirectly affecting passengers' satisfaction. The results from Figure 2 revealed that there were positive path coefficients, indicating that an increase of one standard deviation in affordability would lead to improvements in the efficiency of public transport services and passengers' satisfaction, and vice versa. Furthermore, the findings of this study in Table 6 indicate that affordability has a statistically significant and

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positive impact (p value < 0.05) on both the efficiency of public transport services and the satisfaction of passengers. The results of this study are consistent with the findings of previous studies undertaken by Adom-Asamoah et al. (2021), Cooke et al. (2022), and Morrissey et al. (2012). These studies have shown that the affordability of public transport systems has a beneficial impact on their efficiency in urban transport planning.

Furthermore, this study hypothesized that the reliability of public transport services would directly influence the efficiency of public transport services and the level of satisfaction among passengers. The results shown in Figure 2 validate a positive path coefficient, indicating that a one standard deviation increase in reliability will lead to an improvement in the efficiency of public transport services and the satisfaction of passengers, and vice versa. Similarly, the results in Table 6 suggest that the reliability of public transport services has a statistically significant positive impact (p value < 0.05) on both the efficiency of the services and the level of satisfaction among passengers. However, this study's results align with previous research (Swai et al., 2023; Ubaidillah et al., 2022; Ibrahim et al., 2020; Nkyami, 2016) that have demonstrated how reliability can improve customer satisfaction and loyalty. This, in turn, can lead to higher ridership and overall success of public transportation systems.

Primarily, this study hypothesized that the efficiency of public transport services will directly influence the level of satisfaction experienced by passengers. The results shown in Figure 2 validate a positive path coefficient, indicating that a one standard deviation increase in the efficiency of public transport services would lead to an improvement in passengers' satisfaction. Likewise, the results in Table 6 suggest that the efficiency of public transport services has a statistically significant positive impact (p value < 0.05) on the satisfaction of passengers. However, the results of this study align with previous research (Cao, 2022; Olabayonle et al., 2021; Oort & Cats, 2015; Ha, 2014) indicating that the efficiency of public transport services has a beneficial impact on passengers' satisfaction.

Theoretical Implications

This research effectively addressed the demand for a specialized model that defines the factors influencing passengers' satisfaction as mediated by the efficiency of public transport systems. This paradigm is missing from the present corpus of theoretical literature. The study focuses on examining the impact of efficiency of public transport services as a mediator, as well as the predictive characteristics of accessibility, affordability, and reliability on passengers' satisfaction. The research uses the SERVQUAL model, which presently lacks the accessibility and affordability aspects as predictors, and the efficiency of public transport services as a mediator to predict passengers' satisfaction in the transportation business. Figure 5 depicts a validated model for understanding the determinants of passengers' satisfaction in public transport.

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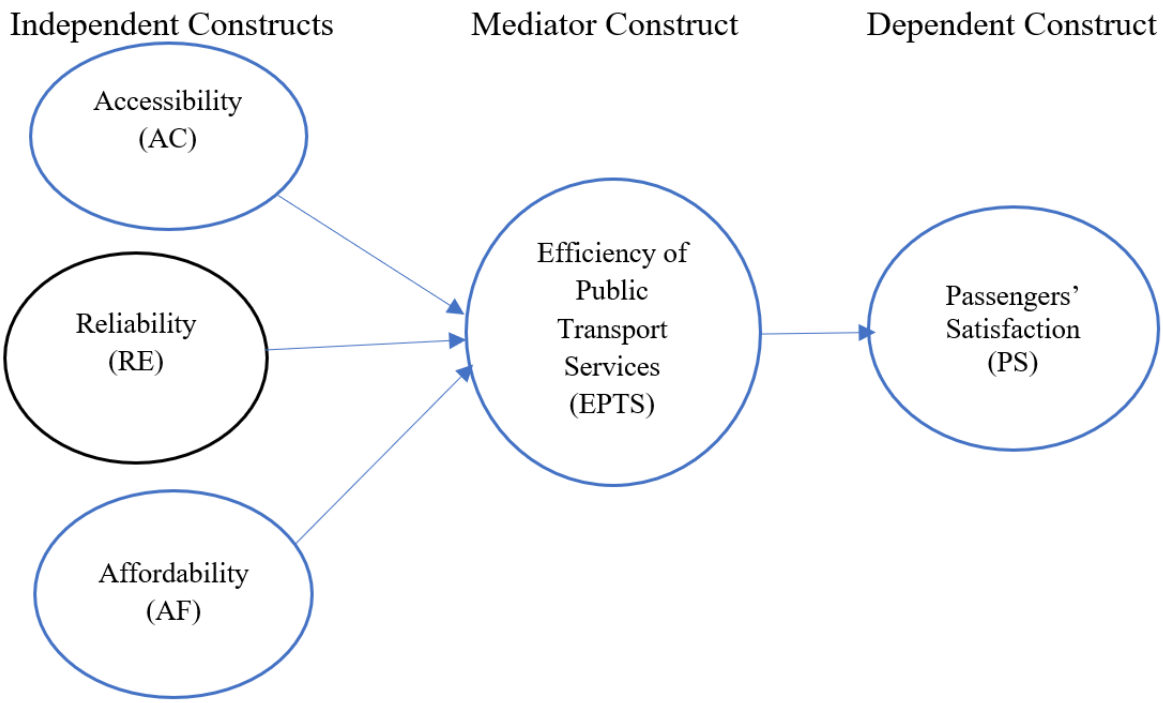

Figure 1: Validated model for determinants of passengers' satisfaction.

Key

Construct which exists in SERVQUAL model

Theoretical Contribution

Source: Authors, 2024

Practical Implications

The validated model shows that efficiency in public transport services has a mediating effect on passengers' satisfaction. These findings indicate that efficiency in public transport services is critical to increasing passengers' satisfaction. Likewise, the statistical standing of accessibility, affordability, and reliability in both direct and indirect affects indicates that passengers always rely on these factors in order to be satisfied with public transport.

VI. CONCLUSIONS

The results shown in Figure 4 provide solid evidence that supports the perfection of the study model proposed in the context of decision-making, especially in terms of prioritizing expenditures in public transportation services to improve customer happiness.

Limitation and Recommendation for Future Research

This study employed a restricted set of SERVQUAL model components (reliability) to anticipate the increase in passengers' satisfaction. Figure 3 shows that the combination of reliability and other components (accessibility, affordability, and efficiency in public transport services) explained only 58% of the observed variance in passengers' satisfaction. The current study proposes that future research should incorporate more SERVQUAL model components such as responsiveness, assurance, empathy, and tangibles. This method should be used to increase the variance of passengers' satisfaction and to broaden the applicability of the validated model. Furthermore, this study only included Tanzanian participants. Future study should include

passengers from several nations to improve the validated model's generalizability in predicting the factors of passengers' satisfaction in public transport.

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