

Structural Assessment of the SERVQUAL Model on Passengers' Satisfaction at Julius Nyerere International Airport (JNIA) in Tanzania

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Abstract- This study assessed the applicability of the SERVQUAL model in assessing passenger satisfaction at Julius Nyerere International Airport (JNIA) in Tanzania. Using a quantitative approach, 270 passengers who travelled from JNIA in April and May 2023 were surveyed. The results demonstrate significant positive correlations between all SERVQUAL dimensions (tangibility, reliability, responsiveness, assurance, and empathy) and passengers' satisfaction, highlighting their interrelated nature. Tangibility emerged as the most influential dimension, followed by reliability and responsiveness, while assurance exhibited a negative relationship mainly due to data problems that may not be immediately noticeable. Although empathy has no direct impact on satisfaction, it contributes to the overall passenger experience. The study's findings suggested opportunities for enhancing service quality at JNIA, with a focus on tangible aspects, staff responsiveness, and reliability. Improving these aspects while acknowledging the important of assurance and empathy has the potential to enhance Airport Service Quality (ASQ) and bolster the aviation industry in Tanzania. This would eventually attract international travellers within the East African region and foster economic growth in Tanzania.

Keywords- SERVQUAL Model, Passenger, Satisfaction, Airport.

I. INTRODUCTION

The service quality model or SERVQUAL model, which Parasuraman, Zeithaml, and Berry developed in the late 1980s, has become a comprehensive framework for evaluating service quality across various industries (Mwendapole and Jin, 2021). This model identifies five key dimensions that are instrumental in evaluating customers' perceptions of service quality. These are tangibility, reliability, responsiveness, assurance, and empathy (Humphreys et al., 2019; Shishi, 2021). SERVQUAL has been widely employed to gauge customer satisfaction and service quality in numerous sectors, including the airline industry (Adeniran and Fadare, 2018; Jing, 2021).

In developed nations, the SERVQUAL model has gained significant traction as an effective tool for evaluating passengers' satisfaction with airport services. Various international airports in developed nations have utilised this model to measure and enhance service quality (Chilongola et al., 2017; Thao et al., 2020; Ilunga, 2022). Studies and empirical research conducted in airports in North America, Europe, and other rich countries in Asia have consistently demonstrated the versatility and applicability of the SERVQUAL model in capturing passengers' perceptions and expectations (Miremadi et al., 2011; Alp et al., 2022). These investigations have provided valuable insights into the drivers

of passengers' satisfaction and have informed Airport Service Quality (ASQ) improvements worldwide.

In the African context, the SERVQUAL model has also found relevance as an analytical framework for assessing passengers' satisfaction within airport settings (Simon et al., 2022). Recent studies conducted in several African airports have employed SERVQUAL to investigate ASQ and its impact on passengers' overall satisfaction. These studies have explored the unique challenges and opportunities faced by African airports and have contributed to the discussion on enhancing ASQ standards in the African regions (Adeniran and Fadare, 2018; Matimati, 2020; Ntambi, 2022). Applying this model within the African context, according to Eboli et al. (2022), holds promise for identifying areas for improvement and optimising the overall airport experience for travellers.

As Tanzania strives to advance its aviation industry and accommodate an increasing number of passengers, understanding passengers' satisfaction with airport services becomes paramount. By adopting the SERVQUAL model, Tanzania's airports, including the Julius Nyerere International Airport (JNIA), can gain valuable insights into passengers' expectations, perceptions, and satisfaction levels. As this paper embarks on evaluating the applicability of this model at the JNIA, it seeks to contribute to the body of knowledge on enhancing ASQ within all Tanzanian airports. By doing so, it aims to provide valuable recommendations for optimising the airport experience and fostering higher passenger satisfaction levels in the Tanzanian aviation sector.

This aligns with the argument presented by Halpern and Mwesiumo (2021), suggesting that a well-performing aviation sector, as measured by the ASQ, not only attracts international travellers but also attract potential investors and significantly strengthens investment, trade and tourism within the respective nations. The improved ASQ in Tanzania, particularly JNIA, will enhance the competitive advantage of the Tanzanian aviation sector in attracting passengers at a good pace, notably international passengers visiting the East African region. This paper pursued two specific objectives: to scan the correlation between the SERVQUAL dimensions and passengers' satisfaction at JNIA; and to identify the foremost SERVQUAL dimensions affecting passengers' satisfaction at JNIA.

II. LITERATURE REVIEW

A. Theoretical literature review

The fundamental concept of this paper lied on the applicability of SERVQUAL model. This model is widely recognized and influential framework for assessing service quality in various industries, including the aviation sector (Adeniran and Fadare, 2018; Matimati, 2020; Simon *et al.*, 2022). This model has been instrumental in measuring passengers' satisfaction levels with airport services, offering a structured approach to evaluating service quality (Nkosi and Mokwena, 2016; Ilunga, 2022). It comprises five key dimensions, each designed to capture different aspects of service quality. Regarding the ASQ, the dimensions can be explained as follows:

The first dimension, tangibility, pertains to the physical appearance of airport facilities, equipment, personnel, and communication materials (Nagarajan 2018; Simon *et al.*, 2022). It encompasses the cleanliness, modernity, and overall aesthetic appeal of the airport environment (Chike, and Stephens, 2021). Passengers form perceptions of service quality based on these tangible indications. For instance, modern terminals, well-maintained facilities, and courteous staff can positively influence passengers' perceptions of service quality (Mburu, 2020; Saut and Song, 2022). The research sought to validate the initial hypothesis (H1), positing that "the extent of tangibility at JNIA exerts a significant influence on passengers' satisfaction."

Reliability measures the ability of the airport to consistently deliver accurate and dependable services (Nagarajan 2018; Matimati, 2020). This dimension focuses on aspects such as on-time flight departures and arrivals, baggage handling efficiency, and the airport's ability to meet passenger expectations consistently (Lee and Yu, 2017; Matimati 2020). Passengers highly value reliability as it ensures a hassle-free travel experience (Nwaogbe *et al.*, 2021). The second hypothesis (H2) stated that "reliability at JNIA significantly influence passengers' satisfaction."

Responsiveness reflects the airport's willingness and ability to assist passengers promptly and address their needs (Bellizzi *et al.*, 2018; Saut and Song, 2022). This dimension assesses the effectiveness of airport staff in handling passenger inquiries, resolving issues, and providing assistance when required. Passengers appreciate airports that are responsive to their queries and concerns (Mburu, 2020; Chike, and Stephens, 2021). The third hypothesis (H3) proposed that "the responsiveness of JNIA's staff significantly contributes to passengers' satisfaction."

Assurance deals with the competence, courtesy, credibility, and professionalism of airport staff (Lee and Yu, 2017; Chike, and Stephens, 2021). Passengers place significant importance on the knowledge and courtesy of airport personnel, as well as their ability to instil confidence in the services provided. Courteous and knowledgeable staff contributes to passengers' overall sense of security and satisfaction (Shamaoun, 2017; Okonkwo and Osei, 2017; Abdirad and Krishnan, 20220). The study fourth hypothesis (H4) stated that "assurance at JNIA significantly influence passengers' satisfaction."

Empathy measures the airport staff's ability to understand, care for, and meet passengers' individual needs (Ilunga, 2022). It involves aspects like personalized services, clear communication, and a genuine effort to understand passenger preferences (Nagarajan 2018; Matimati 2020; Simon *et al.*, 2022). Empathetic services can create a positive emotional connection with passengers, leading to greater satisfaction (Lee and Yu, 2017). The fifth hypothesis (H5) postulated that "empathy of JNIA's staff significantly contribute to the passengers' satisfaction."

B. Empirical literature reviews

They are number of researches have been conducted in the aviation sector across the world using SERVQUAL. These studies have highlighted various dimensions of service quality as foremost or key factors influencing passenger satisfaction. A study by Saut *et al.* (2022) found that airport service quality, including tangibility, significantly impacted passengers' satisfaction, leading to an increased intention to revisit a particular country. On the other hand, Bellizzi *et al.* (2018) identified that assurance and responsibility from airport staff played a crucial role in predicting passengers' satisfaction in Italy. Nkosi and Mokwena (2016) reported high passenger satisfaction with the responsiveness dimension at Sir Seretse Khama International Airport in Botswana. Moreover, Allis *et al.* (2017) noted positive ratings for empathy at Brasilia and São Paulo–Guarulhos airports in Brazil, indicating a high level of courtesy and helpfulness among airport staff. Kamau and Soweto (2015) emphasized the importance of reliability and responsiveness to enhance customer service at Jomo Kenyatta International Airport in Kenya.

Conversely, some studies have applied SERVQUAL and revealed negative association between some dimensions of the model and passengers' satisfaction. A survey study conducted at Kumasi International Airport in Ghana by Okonkwo and Osei (2017) found that passengers departing from this airport expressed overall dissatisfaction, particularly with reliability due to frequent flight delays. Another study by Chike and Stephens (2021) identified a slightly low level of passengers' satisfaction at Murtala Muhammed International Airport in Nigeria, with specific dissatisfaction in several areas, including baggage delivery service, functionality of flight screens, comfort of waiting areas, and quality of internet facilities.

These empirical reviews demonstrate the varying results of applying SERVQUAL dimensions on assessing passengers' satisfaction, underscoring the importance of examining these dimensions in the context of Julius Nyerere International Airport (JNIA) in Tanzania.

Conceptual and operational frameworks

The conceptual framework for this study is grounded in the SERVQUAL model, which comprises five dimensions: Tangibility, Assurance, Responsiveness, Empathy, and Reliability. These dimensions served as the independent variables, while passengers' satisfaction represented the dependent variable. The study assumed a direct relationship between each dimension of SERVQUAL and passengers' satisfaction, as indicated by previous research studies in the

empirical reviews. However, it is important to recognize that these dimensions are not isolated entities but are interconnected (or interlinked), influencing each other and collectively shaping passengers’ satisfaction.

In the conceptual framework of this study (figure 1), it was posited that improvements in one dimension can stimulate enhancements in other dimensions. For example, addressing issues related to Tangibility, such as upgrading airport facilities and aesthetics, can contribute to a more positive perception of airport services. This, in turn, may lead to increased assurance

as passengers gain confidence in the airport’s ability to meet their needs. Enhanced Responsiveness, which involves timely assistance and support, can also be positively influenced by improvements in tangibility and assurance. As passengers feel that their concerns are addressed promptly, their perception of reliability, encompassing consistency and dependability, can further improve. Empathy, or the understanding and caring attitude of airport staff, can be positively affected by passengers’ overall satisfaction with the airport experience.

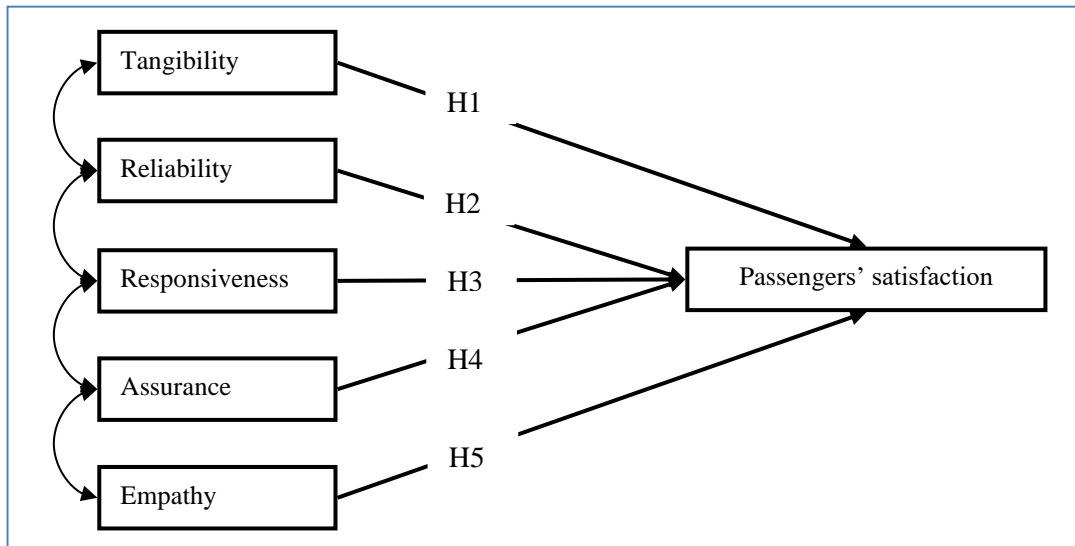


Fig. 1: Conceptual Framework

TABLE 1: Operational framework

VARIABLES AND THEIR OPERATIONAL POXIES		ITEMS
Reliability (REL)	JNIA has reliable communication and response system	REL1
	JNIA provide reliable information to the travellers	REL2
	JNIA has a reliable baggage handling services	REL3
	JNIA has service consistency in terms of adhering to departure and arrival times.	REL4
Assurance (ASS)	JNIA has effective security measures and procedures that make passenger to feel secure and well-protected.	ASS1
	JNIA’s employees have the courteous and helpful behaviour to answer passengers’ questions.	ASS2
	JNIA’s employees indicate professionalism and competence to passengers.	ASS3
	Passenger feels safe in sharing personal information with JNIA.	ASS4
Empathy (EMP)	JNIA’s employees provide passenger with individual attention.	EMP1
	JNIA’s employees are patient when handling customer inquiries or problems.	EMP2
	JNIA’s employees show genuine care and consideration for passengers’ comfort and well-being.	EMP3
	JNIA makes an effort to understand passengers’ needs.	EMP4
Tangible (TAG)	JNIA provides proper parking facilities.	TAG1
	JNIA has clean, safe and comfortable physical premises.	TAG2
	JNIA has modern and well-maintained working equipments.	TAG3
	JNIA’s employees are smartly dressed, neat, and appealing.	TAG4
	JNIA has proper and easy to understand signboards directing passengers within the airport.	TAG5
	JNIA has good restaurant facilities.	TAG6
Responsiveness (RES)	JNIA’s employees try to minimise the long queues of passengers.	RES1
	JNIA’s employees provide prompt service for passengers	RES2
	JNIA’s employees are always willing to help passengers	RES3
	JNIA’s employees are never too busy to respond to passengers’ requests.	RES4
Satisfaction (SAT)	The services provided at JNIA contributed positively to my travel experience.	SAT1
	I prefer to choose JNIA as a transport hub again.	SAT2
	JNIA’s employees managed my inquiries and complaints effectively.	SAT3
	I experienced a hassle-free and pleasant journey through JNIA.	SAT4
	I recommend my friends and relatives to use JNIA.	SAT5
	I felt valued as a passenger during my time at JNIA.	SAT6
	JNIA consistently met or exceeded my expectations for airport services.	SAT7

On the other hand, deficiencies in one dimension can potentially impact other dimensions negatively. For instance, if there are problems with responsiveness, such as delays in providing assistance, it can lead to lower passenger satisfaction with assurance, as passengers may doubt the airport's commitment to their well-being. Likewise, shortcomings in tangibility, such as poorly maintained facilities, can erode confidence in reliability, as passengers may question the airport's ability to provide consistent services.

Therefore, the conceptual framework acknowledged the interplay among the SERVQUAL dimensions, illustrating that they are not operating in isolation but as a dynamic system that collectively influences passengers' satisfaction. Understanding these interconnections is vital for airport management to formulate effective strategies for improving overall service quality and enhancing passengers' satisfaction at Julius Nyerere International Airport (JNIA) in Tanzania.

However, there was an operational framework in the study, represented by the detailed presentation in Table 1. This table serves as a comprehensive reference that delineates the proxies employed for each variable within the conceptual framework. It provides a clear mapping of how these variables were translated into observable and measurable indicators or factors during the data collection and analysis processes. The operational framework ensured that each variable was adequately represented by specific indicators or metrics, thereby facilitating a systematic and structured approach to the study endeavour.

III. METHODOLOGY

A. Research approach and design

The study used a quantitative approach with an explanatory research design to achieve its main objective of structurally assessing the applicability of the SERVQUAL model to passengers' satisfaction at JNIA.

B. Population and Sample Design

The target population consisted of all individuals who had utilized JNIA for air travel. Hence, the study population was only passengers and not employees of this airport. Inclusion criteria encompassed: (i) individuals who had flown from JNIA during April and May 2023, (ii) individuals aged between 21 and 70 years old, and (iii) individuals willing to participate in the study. The study's respondent selection did not take into account factors such as religion, gender, race, ethnicity, or level of education.

C. Sample size

The study employed Cochran's formula, designed to generate a representative sample from an infinite population. Accordingly, the study sampled 270 passengers. The formula is as follows:

$$n_0 = \frac{z^2 \times p(1 - p)}{e^2}$$

Whereby,

n_0 -Sample size to be estimated

z^2 - The study used a 95% CI ($Z = 1.96$).

p - For an infinite population, the maximum variability is assumed to be 50%, or 0.5.

e -The desired level of precision or error margin (= 5% or 0.05). However, in order to ensure equal representation of both local and international passengers, the researcher divided the sample size into two equal parts: 135 local passengers and another 135 international passengers.

D. Sampling procedure

The researcher visited five different offices of tour and travel agencies located within the JNIA premises to collect data from respondents using a systematic sampling procedure. After obtaining permission to conduct the research in these offices, the researcher requested the contact information (email addresses and phone numbers) of passengers who had purchased air tickets from the agencies during April and May. The researcher then began selecting one individual's contacts, if the passenger met the eligible criteria of being a respondent, from each day from the beginning of April until the end of May. If there were days when the agencies did not sell tickets, the researcher selected two contacts on the following day when sales occurred.

Furthermore, the researcher implemented an alternating selection process. On odd dates (1, 3, 5, [...]), the researcher chose the contact information of the first local passenger (who met the inclusion criteria) to purchase an air ticket. Conversely, on even dates (2, 4, 6, [...]), the contact information of the first international passenger to purchase a ticket was selected. Each visited tour and travel agency provided the contact information of 54 individuals (27 locals and 27 international passengers), resulting in a total of 270 individuals' contacts. All selected individuals were contacted to confirm their willingness to participate in the study.

E. Data collection method

The data collection for this study took place in June 2023 and exclusively involved primary data obtained through online questionnaires, distributed via email addresses. The questionnaires consisted of closed-ended questions that were designed using proxies representing the study variables. Respondents were asked to rate their responses on a five-point Likert scale, ranging from (1) "strongly disagree" to (5) "strongly agree," with a neutral midpoint in the middle.

F. Data analysis

STATA version 17 and SPSS version 27 software were employed for data analysis, encompassing the utilization of descriptive statistics, correlation analysis, and Structural Equation Model (SEM). Descriptive statistics were employed to analyze the demographic characteristics of the respondents, and the results were visually presented through figures. Correlation analysis was conducted to measure the strength and direction of the linear relationships between dimensions of SERVQUAL and passengers' satisfaction. SEM, specifically the Partial Least Squares SEM (PLS-SEM) which uses the latent variable technique to estimate relationships between variables, was used to predict the foremost SERVQUAL

dimensions affecting passengers’ satisfaction at JNIA and test specific hypotheses.

IV. ANALYSIS AND DISCUSSION

A. Respondents’ Profile

Figure 2 illustrates that 67.4% of the respondents were male, while 32.4% were female. The male population was approximately twice as large as the female population. This difference can be attributed to the fact that men tend to travel more frequently for work and providing for their families, while women often stay at home to take care of children and household responsibilities.

Regarding the age distribution of the respondents, Figure 3 illustrates that one-third (33%) of the respondents fell within the 25 to 30 years old age bracket. One-quarter (25.9%) were above the age of 40, while 29.3% of respondents were between the ages of 31 and 35 years old. Additionally, 9.3% were in the 36 to 40 age group, and 2.6% were between the ages of 21 and 25 years old. The findings from Figure 3 highlight that a substantial amount of data was collected from young individuals, who are part of the entrepreneurial generation and are particularly inclined to travel for business-related reasons to various locations.

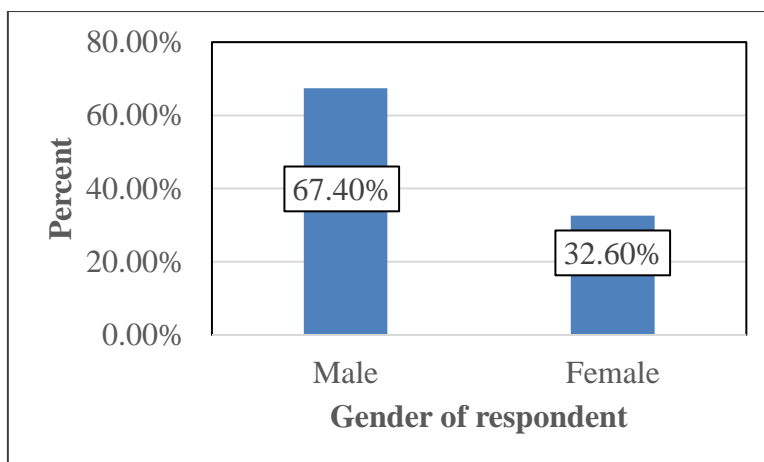


Fig. 2: Gender of Respondents

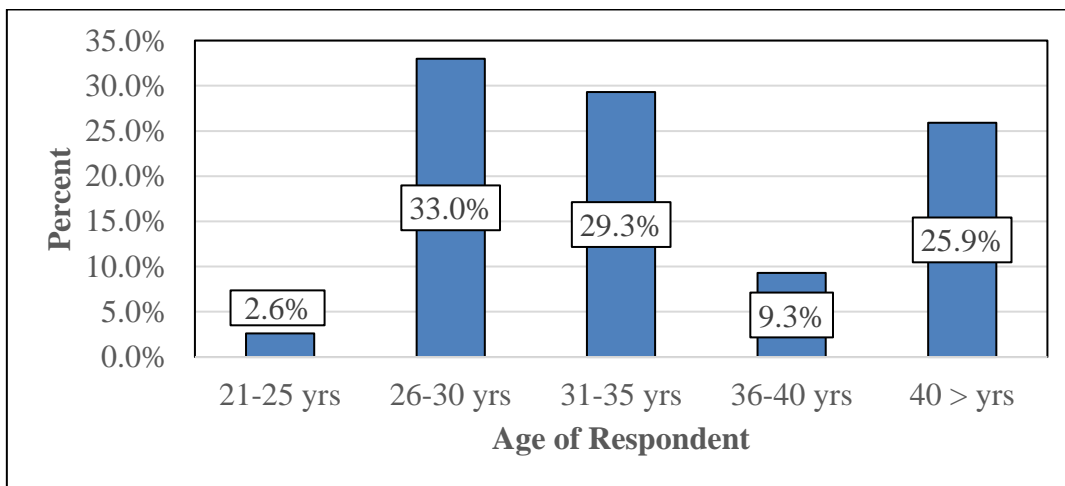


Fig. 3: Age Groups of Respondents

Concerning educational qualifications, Figure 4 reveals that 43% of the respondents held bachelor’s degrees, 17.4% possessed master’s degrees, 10% had ordinary diplomas, 9.6% had advanced diplomas, 5.2% had only secondary school education as the highest levels of education and 4.8% held PhD qualifications

B. Validity and reliability of the data

The validity of the data was assessed using the Kaiser-Meyer-Olkin Measure of Sample Adequacy (KMO) along with

the anti-image correlation matrix (AntI). As presented in Table 2, all six study variables demonstrated strong validity, as indicated by KMO values exceeding 0.5. Furthermore, their respective proxies also exhibited robust validity, with anti-image values surpassing 0.5. To assess reliability, Cronbach’s Alpha, denoted as coefficient alpha ($C\alpha$), was employed. As shown in Table 2, all variables were found to be highly reliable, with Cronbach’s Alpha values exceeding 0.7.

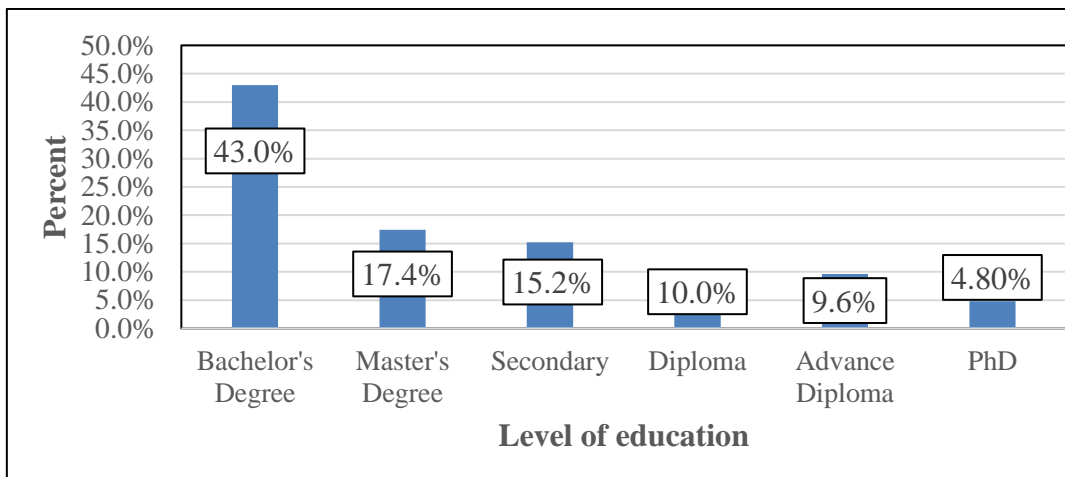


Fig. 4: Level of Education of Respondents

TABLE 2: Validity and Reliability Test

VARIABLES	ITEMS	KMO	AntI	CONCLUSION	C α	CONCLUSION
Reliability (REL)	REL1	0.71	0.77	Valid	0.80	Reliable
	REL2		0.71	Valid		Reliable
	REL3		0.67	Valid		Reliable
	REL4		0.71	Valid		Reliable
Assurance (ASS)	ASS1	0.80	0.81	Valid	0.88	Reliable
	ASS2		0.79	Valid		Reliable
	ASS3		0.77	Valid		Reliable
	ASS4		0.84	Valid		Reliable
Empathy (EMP)	EMP1	0.83	0.82	Valid	0.86	Reliable
	EMP2		0.84	Valid		Reliable
	EMP3		0.84	Valid		Reliable
	EMP4		0.81	Valid		Reliable
Tangible (TAG)	TAG1	0.86	0.87	Valid	0.90	Reliable
	TAG2		0.88	Valid		Reliable
	TAG3		0.87	Valid		Reliable
	TAG4		0.86	Valid		Reliable
	TAG5		0.87	Valid		Reliable
	TAG6		0.76	Valid		Reliable
Responsiveness (RES)	RES1	0.78	0.80	Valid	0.84	Reliable
	RES2		0.82	Valid		Reliable
	RES3		0.74	Valid		Reliable
	RES4		0.79	Valid		Reliable
Satisfaction (SAT)	SAT1	0.89	0.88	Valid	0.95	Reliable
	SAT2		0.91	Valid		Reliable
	SAT3		0.85	Valid		Reliable
	SAT4		0.93	Valid		Reliable
	SAT5		0.90	Valid		Reliable
	SAT6		0.89	Valid		Reliable
	SAT7		0.90	Valid		Reliable
Interpretation of the KMO, AntI and Cα						
KMO > 0.5 and AntI > 0.5 = Valid findings; KMO < 0.5 and AntI < 0.5 = Invalid findings						
C α < 0.5 = Unreliable C α :0.5-0.7 = Weak reliability; C α > 0.7 = Strong reliability						

C. Correlation between SERVQUAL Dimensions and satisfaction

Table 3 reveals a noteworthy observation, indicating that passengers' satisfaction exhibits a positive, significant, and strong correlation with all five dimensions. More specifically, a strong correlation was observed between passengers' satisfaction and the level of tangibility (R-value = 0.727; P-value < 0.0001). Additionally, there was a moderately perfect correlation between passengers' satisfaction and the responsiveness of the employees (R-value = 0.582; P-value < 0.0001), empathy (R-value = 0.574; P-value < 0.0001),

reliability (R-value = 0.472; P-value < 0.0001), and assurance (R-value = 0.419; P-value < 0.0001).

On the other hand, it was revealed that there was a strong positive significant, and perfect correlation within dimensions of SERVQUAL. It can be observed that reliability has a positive correlation with responsiveness (R-value = 0.511; P-value < 0.0001), assurance (R-value = 0.565; P-value < 0.0001), empathy (R-value = 0.658; P-value < 0.0001), and tangibility (R-value = 0.533; P-value < 0.0001). Further, responsiveness had a strong positive and significant perfect correlation with assurance (R-value = 0.495; P-value < 0.0001), empathy (R-

value = 0.734; P-value <0.0001), and tangibility (R-value = 0.559; P-value <0.0001). Furthermore, assurance had a perfect positive correlation with empathy (R-value = 0.605; P-value

<0.0001) and tangibility (R-value = 0.493; P-value <0.0001). Finally, empathy was shown to have a perfect positive correlation with tangibility (R-value = 0.723; P-value <0.0001).

TABLE 3: Correlation between SERVQUAL Dimensions and Satisfaction

		SAT	REL	RES	ASS	EMP	TAG
SAT	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	270					
REL	Pearson Correlation	.472**	1				
	Sig. (2-tailed)	.000					
	N	270	270				
RES	Pearson Correlation	.582**	.511**	1			
	Sig. (2-tailed)	.000	.000				
	N	270	270	270			
ASS	Pearson Correlation	.419**	.565**	.498**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	270	270	270	270		
EMP	Pearson Correlation	.574**	.685**	.734**	.605**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	270	270	270	270	270	
TAG	Pearson Correlation	.727**	.533**	.559**	.493**	.723**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	270	270	270	270	270	270

Interpretation of correlation coefficient (Pearson value)

> 1 = imperfect correlation

0.81 - 1.00 = very strong perfect correlation

0.61 - 0.80 = strong perfect correlation

0.41 - 0.60 = moderate perfect correlation

0.21 - 0.40 = week perfect correlation

0.00 - 0.20 = very week perfect correlation

** . Correlation is significant at the 0.01 level (2-tailed).

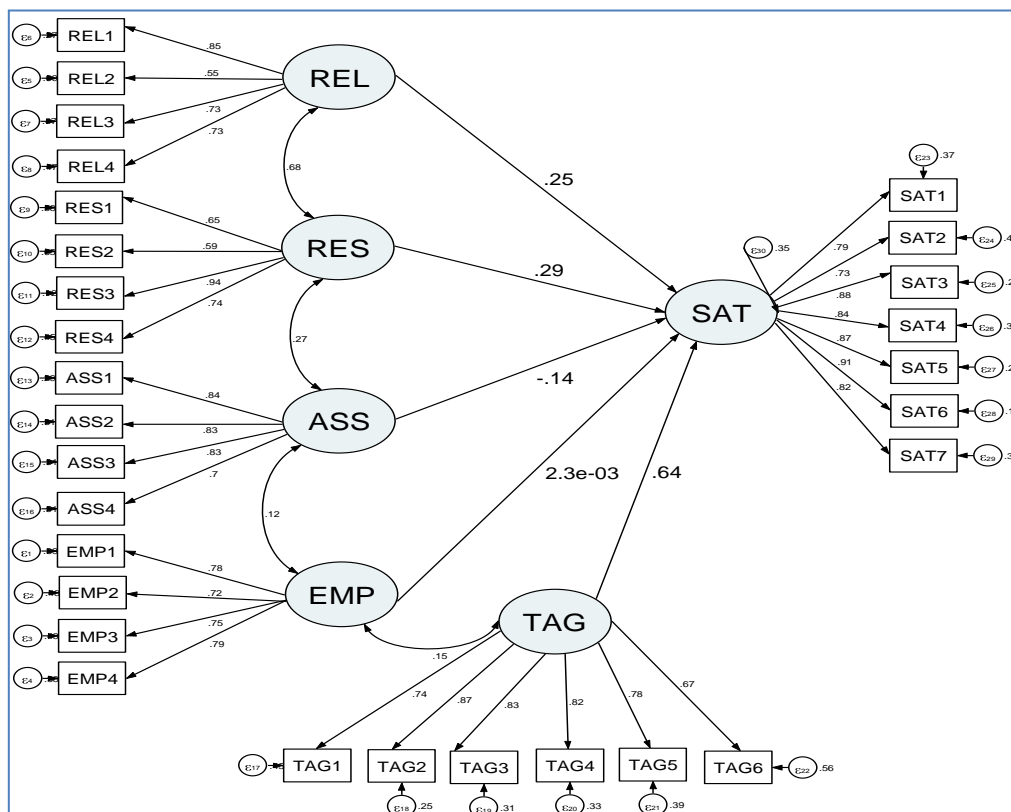


Fig. 5: SEM for SERVQUAL dimensions and passengers' satisfaction

Based on these statistics, the underlying assumption is that the SERVQUAL dimensions are interconnected and collectively contribute to passengers’ satisfaction. Furthermore, each dimension has the potential to influence the others due to their interlinked nature. This implies that enhancements in one of these service quality dimensions can positively impact the others, while any decline in one dimension may lead to a decline in the others.

D. The foremost SERVQUAL dimensions

The results obtained from the PLS-SEM analysis (as depicted in Figure 5 and Table 4) reveal that certain SERVQUAL dimensions significantly influenced passengers’ satisfaction at JNIA. These influential dimensions include tangibility (P-value < 0.0001), responsiveness (P-value < 0.0001), reliability (P-value = 0.008), and assurance (P-value = 0.017). Notably, empathy was the only dimension found to have an insignificant influence on predicting satisfaction (P-value = 0.961).

Furthermore, when examining the coefficients of determination (represented by beta values or B-values), it was observed that a one-unit change in tangibility could result in a 0.64 change in satisfaction. This suggests that if the current level of tangibility were to increase by one unit, it could lead to a 0.64 increase in satisfaction. Conversely, a one-unit change in reliability could influence satisfaction by 0.25, responsiveness by 0.29 and empathy by a minimal 0.002.

However, one unit change in assurance could change satisfaction by a negative 0.14. It’s important to note that this negative value can be attributed to random chance, given that the data were collected from a random population. Consequently, the researcher possesses a high degree of confidence that an enhancement in the assurance dimension would lead to an improvement in passenger satisfaction at this airport. This confidence is reinforced by the strong positive correlation observed between passengers’ satisfaction and assurance, as earlier indicated in correlation table 3.

TABLE 4: SEM Summary

Standardized	OIM		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
Structural						
SAT <-						
REL	.2463782	.0921972	2.67	0.008	.0656751	.4270813
RES	.287255	.0789327	3.64	0.000	.1325498	.4419602
ASS	-.1372715	.0577144	-2.38	0.017	-.2503897	-.0241534
EMP	.0022886	.0472812	0.05	0.961	-.0903809	.094958
TAG	.6410737	.0506713	12.65	0.000	.5417598	.7403876

The prediction equation for the SEM is as follows:
 $SAT = 1 + 0.246REL + 0.287RES + 0.002EMP + 0.641TAG - 0.137ASS + e$

Whereby:

SAT= Satisfaction

REL= Reliability,

RES= Responsiveness,

EMP= Empathy,

TAG= Tangibility,

ASS= Assurance.

The implication of this developed SEM’s equation is that it can be used to improve passengers’ satisfaction in Tanzania airports.

V. DISCUSSION

The findings of this study reveal a profound insight into the applicability of the SERVQUAL Model in monitoring passengers’ satisfaction at JNIA in Tanzania. The statistical analysis of the data yielded compelling results. It was observed that there exists a positive, significant, and strong correlation between all five SERVQUAL dimensions and passengers’ satisfaction at JNIA. This suggests that these dimensions are

indeed interconnected, operating synergistically to shape passengers’ overall perceptions of service quality. This interlinking highlights a crucial aspect of service quality management at airports, as improvements or deficiencies in one dimension can potentially cascade to affect others. Therefore, efforts to enhance any single dimension have the potential to yield positive ripple effects throughout the passenger experience.

Notably, the study identified tangibility as the dimension with the most substantial influence on passengers’ satisfaction. A one-unit increase in tangibility was found to correspond to a substantial increase in satisfaction. This emphasises the importance of maintaining and enhancing the physical attributes of the airport, including packing and waiting facilities, accessibility, and cleanliness, as they significantly shape passengers’ initial impressions and overall perceptions of JNIA’s service quality. Therefore, the study accepted the first hypothesis (H1) which stated that “the extent of tangibility at JNIA exerts a significant influence on passengers’ satisfaction.”

Following tangibility, reliability and responsiveness emerged as influential dimensions affecting passengers’ satisfaction. Reliability, while slightly less influential than

tangibility, still exhibited a substantial impact, highlighting the significance of consistent and punctual service delivery. Similarly, responsiveness, indicating the effectiveness of staff interactions, played a pivotal role in passenger satisfaction. The study's findings underscore the importance of staff training and efficient service delivery in shaping passengers' perceptions and experiences at JNIA. The study accepted the second hypothesis (H2) which stated that "reliability at JNIA significantly influence passengers' satisfaction." It also accepted the third hypothesis (H3) which stated that "the responsiveness of JNIA's staff significantly contributes to passengers' satisfaction."

Interestingly, assurance, while significant, showed a negative relationship with passenger satisfaction. However, this negative relationship is likely a result of the multicollinearity problem associated with the collected data and should not be interpreted as a fundamental problem with assurance. Instead, it represents an opportunity for improvement in ensuring the best ASQ for the passengers. The strong positive correlation found between assurance and passenger satisfaction in the earlier correlation analysis reinforces the importance of this dimension in creating a favourable atmosphere for passengers. Nevertheless the fourth hypothesis (H4) which stated that "assurance at JNIA significantly influence passengers' satisfaction" was accepted.

Empathy, despite its insignificance in predicting passenger satisfaction in this study, remains an essential aspect of service quality, particularly in the aviation industry. The results suggest that while empathy may not have a direct, significant impact on overall satisfaction, it contributes to the holistic passenger experience by fostering a sense of care and understanding. Further research is warranted to explore the fine points of empathy and its potential influence on specific aspects of the passenger journey within the aviation sector. The study rejected the fifth hypothesis (H5) which stated that "empathy of JNIA's staff significantly contribute to the passengers' satisfaction."

VI. CONCLUSION

This study has provided valuable insights into the application of the SERVQUAL model in assessing passengers' satisfaction with airport services, with a focus on JNIA in Tanzania. The findings have demonstrated that the SERVQUAL dimensions, including tangibility, responsiveness, reliability, and assurance, play a significant role in shaping passengers' satisfaction levels at JNIA. These dimensions are interlinked, indicating that improvements in one aspect can lead to enhancements in others, ultimately contributing to an overall positive passenger experience. Further, the results have shown that the airport's tangible elements, such as its physical facilities and appearance, have a substantial impact on passenger satisfaction. Likewise, the responsiveness of airport staff, reliability of services, and assurance in terms of trust and confidence have also been identified as critical factors in determining passenger satisfaction levels. However, it is important to note that empathy, while important, did not exhibit a significant influence on satisfaction in this context.

It is essential to acknowledge the limitations of this study, including the reliance on self-reported data and a focus on a single airport. Future research could expand the scope to include other airports in Tanzania, providing a more comprehensive understanding of passengers' satisfaction with the Tanzanian aviation sector.

VII. RECOMMENDATIONS

The SEM's equation developed in this study holds significant implications, suggesting the application of the SERVQUAL model has the potential to facilitate substantial enhancements in passengers' satisfaction levels across various airports in Tanzania. The developed equation can be used as a guiding framework for the airport authorities and management to systematically identify and address key factors within the SERVQUAL dimensions, such as tangibility, responsiveness, reliability, and assurance that exert the most influential impact on passengers' overall satisfaction. By leveraging the findings of this study, policymakers in Tanzania can develop strategic policies to enhance ASQ, elevate passengers' satisfaction, and strengthen the position of Tanzanian airports in the competitive aviation landscape.

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