Comparative Service Quality Evaluation between Major Seaports in Southern and Eastern Africa using SERVQUAL model

Msabaha Juma Mwendapole[1], Mahamudu Mashaka Mabuyu[2], Wilfred Johnson Kileo[3], Mwesiga Leonce Leopord[4]

[1](Maritime Transport Department, Dar es Salaam Maritime Institute, Tanzania)
Email: mwendapole.msabaha@gmail.com
[2]World Food Programme (WFP), Tanzania,
Email:mahamudu.mabuyu@wfp.org
[3](Science and Management Department, Dar es Salaam Maritime Institute, Tanzania)
Email:wilfred.kileo@dmi.ac.tz
[4](Maritime Transport Department, Dar es Salaam Maritime Institute, Tanzania)
Email:kapatano@yahoo.com

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Abstract- Service quality is a significant metric for gauging the achievement of seaports around the world. This study focused on evaluating and comparing the service quality of major seaports in Southern and Eastern Africa. 347 structured questionnaires were distributed to seaport customers who were the study respondents for data collection purpose. SERVQUAL model based on Responsiveness, Reliability, Tangibility, Assurance and Empathy measures were used to compute and compare the service quality of six selected seaports from Southern and Eastern Africa. A composite service quality (Overall Average %) was applied to determine the region with the highest service quality between the South and the East African regions. The researcher deducted expectation mean from perception mean to get the gap scores. The positive mean gap scores indicate the best service quality while the negative mean gap scores indicate the poor service quality. The overall results found that, all the service dimensions got negative gap scores which indicated poor service quality of all seaports from both regions; meanwhile the actual experiences were lower than the customers' expectations. Therefore implementation of proper strategies for enhancing seaport service quality in both regions is highly needed.

Index Terms- Service quality, SERVQUAL, Customer satisfaction, Gap analysis, Seaport

I. INTRODUCTION

Seaports around the globe are very essential for supporting economic development of both, developed and developing countries. Seaports normally perform many activities like loading or discharging cargo onto or from vessels, labelling, packaging and other activities [1]. In order to improve competitiveness of the seaports, the issue of assessing service quality is very crucial in order to support the survival and growth of the seaports. Assessment and evaluation of service quality in seaports would also assist seaports to mitigate different challenges facing them in a competitive market. Mapunda (2016) stated that "it is common knowledge that seaports play a key role in economic growth and development". In modern competitive environment seaport managers should ensure the delivery of high quality service as a key successful factor for economic development [2]. The trend of globalization and containerization has increased the rival among seaports in recent years Pak and Vinch (2015) started that "an increase of poor service quality and dissatisfaction for customers using the seaports cause poor revenue collection for the government which is also slowing down an economic development [3]. Study by Sakyi (2020) was focused on ECOWAS seaports due to the fact that it is one of the world's poorest areas and has one of the lowest rates of economic growth. This challenge has brought the idea for him to assessing the ECOWAS seaport service quality using and finally he recommended the crucial factors to be applied to the seaport management and the government in order to improve seaport service quality [4].

In different parts of the world there is a great competition concerning seaport industry, the coastlines of South and East Africa are lined by numerous maritime seaports.; the six highly competitive are Mombasa seaport in Kenya, Djibouti seaport in Djibouti, Dar es Salaam in Tanzania, Maputo seaport in Mozambique Durban seaport in South Africa and Walvis Bay seaport in Namibia. The seaport's authority was influenced by the growth of the maritime sector to reorient its priorities from providing basic services to

focusing on the level of customer service over the region [5]. More notably, seaport authorities in South and East Africa are confronted with the obligation of keeping its clients and attract more clients through upgrading of the service quality measures. This paper is going to be among of the earliest articles to evaluate the service quality of major seaports in Southern and Eastern Africa using SERVQUAL model. This study is very useful as it will provide the full picture concerning service quality of the major seaports in Southern and Eastern Africa, also strategies for improvement for the selected seaports and government are well recommended.

II. LITERATURE REVIEW

In this section a researcher discusses both theoretical and empirical literature review. In theoretical literature review, discussion based on key study concepts related with a study topic while in an empirical literature, different previous views and ideas of researchers conducted topics related with this study are discussed. Here is where study gaps are captured after relating ideas of different studies.

A. Theoretical Literature

Customer satisfaction implies to customer reactions toward the given service, being satisfied indicating the positive reaction and acceptance for the provided service. For many cases, a presence of customer satisfaction in seaport industry depends much on a service quality of the company, if there is best service quality it means more customer satisfaction while a poor service quality bring low level of customer satisfaction [6]. Gap analysis is a statistical technique which measures service quality of a company after computing the difference between customer expectation and service received. This technique identifies missing strategies, processes, structures, practices and skills then offers measures to help the firm accomplish its objectives [7]. Jesse S Carly and Ehigie Johnson, 2018 they defined service quality as a measure of meeting customer needs and expectations. Service quality is measured by comparing customer expectation against customer service received. That means if the customer expectation is greater than service received this indicate a poor service rendered to customers. If customer expectation is less than the service received, this indicates the best service quality delivered by the company [7].

According to Parasuraman et al (1988) as cited by Duc Nha le and Thi Nguyen (2020) they defined SERVQUAL Model as a model used to assess perceptions of customers towards service quality using five dimensions of assurance, reliability, empathy, responsiveness, and tangibility [8-9]. Sarmin Sultana and Shohel Rana (2010) describe the model as “a very popular measurement tool that is used for the assessment of service quality. They continue describing the model as a service measurement tool which is necessary for a company to assess their service performance using customer’s opinion [6]. Jesse S. Karky and Ehigie C. Johnson (2018) they defined five service quality dimensions as follows;

i. Tangibility implies to physical facilities, equipment’s and staff appearance. Good appearance of port facilities is an indication of best service quality of a port

ii. Reliability implies to the process in which service provider remains faithful in rendering services to its customers”. This is an ability to provide services to customers dependably and accurately. This action if done could improve the efficiency and organizational performance.

iii. Assurance implies to an ability of staffs to inspire confidence and trust to their customers. This is the knowledge of staffs and their ability inspires trust to customers. This dimension consists of staff politeness, competence and respect to the customer.

iv. Empathy implies to an ability for service delivering companies to pay consideration to specific customer’s challenges and demands then addressing those matters in an effectively way. An empathy dimension comprises of sense of security, and effort to understand customer needs.

v. Responsiveness implies to the method in which a service provider responds fast to positively fix a customer's concern within a specified time frame. This is the readiness to help and reply to customer need. If service delivery to customer is taking too long, this situation will create negative perceptions of customers. A quick reaction of delivering service will create positive perception toward the service and hence improves service quality of a company.

B. Empirical Literature

Several studies have been conducted related to seaport service quality including the study conducted by Chinedum et al (2017), they assessed the impact of five service quality dimensions of responsiveness, reliability, tangibility, empathy and assurance on a customer satisfaction in Nigerian seaports. Researchers used factor analysis rotated factor matrix to assess the link between customer satisfaction and service quality dimensions and the value of rotated factor matrix above 0.4 was regarded as a significant service quality attribute. The outcomes of the study were that all of the service quality attributes were significant in terms of having the great service quality because all of their factors rotated a matrix was above 0.4 [10]. Gi Tae Yeo et-al (2015) in Korea, they assessed the correlation between customer satisfaction and seaport service quality of Korean container seaports. Researchers used ample correlation to assess the relationship between study variables. The results of their study were that the multiple R=0.701 which implied that the correlation existed between customer satisfaction which regarded as dependent variable and the five service quality predictors of image and social responsibility, management, outcome, process and resource. The correlation was statistically significant at (p=0.000) except the resource component, the rest attribute had a positive impact on customer satisfaction [11]. Nguyen and Duc (2020) conducted study in Vietnam with the aim of assessing the correlation between customer satisfaction and seaport logistic service quality, the results of their study were that all five seaport dimensions of assurance, tangibility, reliability, empathy and responsiveness had positive influence on customer satisfaction. The researchers used multivariate analysis method in data analysis supported by

hypothesis testing [9]. Phan et al (2020) conducted an exploratory study to assess service quality and customer satisfaction of container seaports in Vietnam. Researchers used four predictors of image and social responsibility, outcomes, process and management as independent variables against one dependent variable of customer satisfaction. Their study used multiple regression analysis to analyse the correlation between the variables and the four predictors with the value of multiple R (R=0.780) was achieved, this was statistically significant at (p=0.000). Furthermore, their study results indicated a suitable correlation between independent variables represented by port service quality and dependent variable represented by customer satisfaction. Researchers also used Durbin Watson Index to check for existence of autocorrelation problem and the results was that the Durbin Watson index was 1.546 being in the range from 1.5 to 2.5 meaning no autocorrelation problem exist [12]. Gudisa (2016) assessed the dry port service quality in Ethiopia. Researcher conducted a comparative study in two ports of Modjo and Kaliti as the case study areas. The general objective of the study was to conduct a comparative analysis of Kaliti and Modjo dry ports concerning service quality in customer's perceptions through SERVQUAL Model. Data collected were analysed using inferential and descriptive approaches. Correlation was employed in inferential analysis to compare the outcomes of the two dry ports and evaluate the relationship between service quality measures while descriptive used measure of dispersion and measurement of central tendency. Results of the study indicated that there was a low service quality in both terminals and dry ports parallel to low level of customers' expectations [13]. Sakyi et al (2020) with their study on a terminal level analysed service quality at Nigerian seaports. Their study conducted a comparative analysis of service quality in Nigerian sea ports terminal with the aid of the gap score technique using SERVQUAL Model. The results of their study were that all selected terminals indicated a low service quality [14]. Daniel and Berinyuy (2010) from Sweden used SERVQUAL Model and Gap score analysis to assess the relationship between service quality and customer satisfaction in grocery stores. Researchers found that the overall service quality perceived by consumers was not satisfactory meaning that expectations exceeded perceptions in all dimensions of reliability, assurance, responsiveness, empathy and tangibility [15]. Irrespective of numerous studies conducted in many sectors worldwide regarding service quality still researches' concerning service quality of seaports are not well covered, this justifies more evaluation specifically for seaports around developing countries like seaports from Southern and Eastern Africa.

III. METHODOLOGY

In this section different research methods are discussed, subsections including research philosophy and design, sampling and data collections, conceptual framework measures, instrument and research variables.

A. Research Philosophy and Design

This study was undertaken through positivist approach as knowledge gathered through structured instrument namely the questionnaire with measurements. This approach assumes that the knowledge is naturally exists according to real facts, objectivity, measurement and validity of results. In this approach, the role of the researcher is to collect data and interpret them in objective way. The results of this study will usually be observable and quantifiable. The results of this study will be compared with an existing theory to test their relationship. Chingang et al (2010) stated that "The decision to use quantitative or qualitative methods is dependent upon the assumptions concerning the nature of knowledge and reality, how one understands knowledge and reality, and the process of acquiring knowledge and knowledge about reality" [15].

This study used a descripto-explanatory design. This kind of design supported the evaluation of service quality for the selected seaports regarding to tangibility, responsiveness, empathy, assurance and reliability. This design is crucial because it allows a researcher to collect great amount of primary data from the respondents. A researcher collected information from respondents in terms of their opinions, attitude and behaviour toward a subject.

B. Sampling and Data Collections

This study targeted seaport customers of the selected six seaports. That kind of study population is selected because they are deeply involved in day-to-day operations of the seaport. The researcher adopted a non-probability sampling technique with a targeted sample of 347 seaport customers in order to collect primary data from them. Survey was used as the method of collecting data from those seaport's customers. Well-structured questionnaires were sent to respondents via emails after being pre-tested by the senior managers and administrators from shipping lines which are operating in the selected seaports. Until the deadline date for the response, 314 (90.5%) received responses were valid to be applied for further analysis out of the targeted sample of 347.

C. Conceptual Framework Measures

Researcher developed below conceptual framework by relating dependent variable with independent variables. Customer satisfaction is the only dependent variable while SERVQUAL variables (reliability, assurance, responsiveness, empathy and tangibility) are the independent variables. Figure 1 below (Conceptual framework) gives the entire idea of this study.

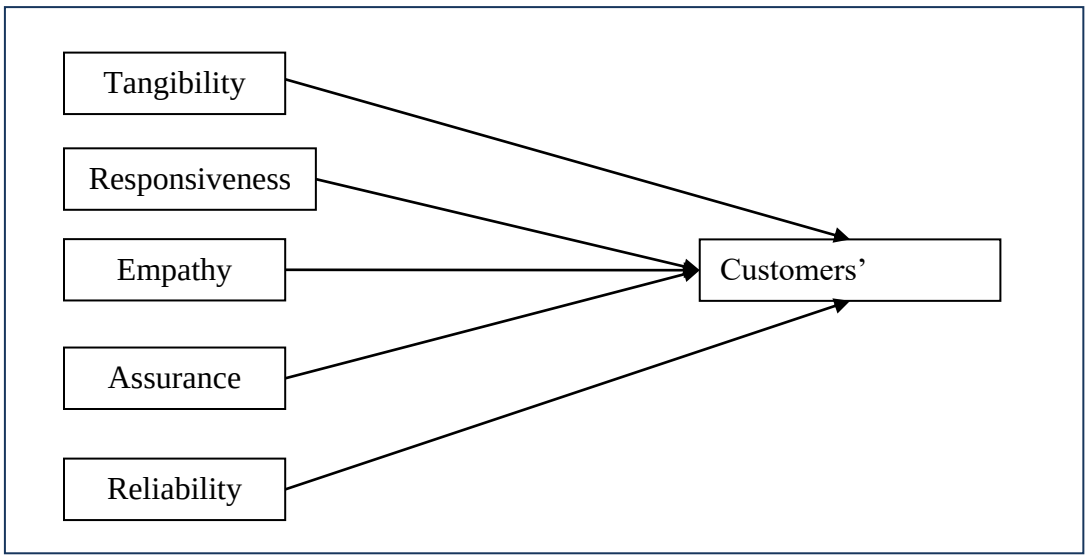

Figure 1: Conceptual Framework

D. Instrument and Research Variables

Questionnaire is the appropriate means of collecting data for the descripto-explanatory article. SERVQUAL's questions were adopted from the research works reviewed in the literature section. The questions had been validated by the previous researchers who conducted their studies within the seaport industry. Table 1 below summarized the service dimensions and research variables.

Table 1: Service Dimensions and Research Variables

Service Dimensions and Research Variables		Code
TANGIBILITY	Seaport official appearance is appealing	TAN1
	There are variety of ships call at the seaport	TAN2
	Seaport has good access	TAN3
	All physical facilities at the seaport are visually appealing	TAN4
	There is always electronic single window system to simplify clearance process at the seaport	TAN5
	Seaport has excellent physical infrastructure such as berths, yards, warehouses, distribution centres, and hinterland connection networks	TAN6
	Seaport has up-to date equipment and facilities that and always function properly	TAN7
RELIABILITY	Seaport storage time is reasonable	REL1
	There is frequency ship-calls at the seaport	REL2
	The storage charges do not change frequently at the seaport	REL3
	Records are kept accurate at the seaport	REL4
	The network system at the seaport has few problems	REL5
	Seaport always offers competitive price of service	REL6
	Seaport official provide fast and efficient services as promised	REL7
	Seaport always provide service in a consistent manner	REL8
	Service providers at the seaport are dependable	REL9
	Seaport always produce error free invoice and related documents	REL10
	Integrated electronic payment system enables customers to access bills and invoices at the seaport	REL11
RESPONSIVENESS	Official of the seaport respond quickly to shipping services requirements	RES1
	Officials of the seaport tell customers exactly when the services will be performed/provided	RES2
	Official of the seaport always collect customers' feedback about services delivery and reflect on improvement of the seaport	RES3

	Service Dimensions and Research Variables	Code
	Documentation procedures at the seaport take little time	RES4
	Official of the seaport handle customers complains very fast	RES5
	Level of management at the seaport is comprehensive	RES6
	Official of the seaport are willing to help customers at any time	RES7
	Official of the seaport gives after delivery services	RES8
ASSURANCE	Rate of cargo damage at the seaport is minimal	ASS1
	Seaport employees are reassuring when problem arise	ASS2
	There is an effective security system at the seaport	ASS3
	Goods are handled well with modern equipment's at the seaport	ASS4
	Customers trust official at the seaport	ASS5
	Official of the seaport possess the required skills and knowledge relating to seaport service delivery	ASS6
EMPATHY	Officials of the seaport are polite and friendly in handling complaints	EMP1
	Officials of the seaport give customer individual attention	EMP2
	Officials of the seaport are sympathetic when problem arise	EMP3
	Officials of the seaport demonstrate good understanding of customer needs	EMP4
	Management of the seaport prepares seminars and workshops for seaport users on how they are performing their services	EMP5
	Facilities such as cranes at the seaport are 24/7 working to satisfy many customers at the same hours	EMP6
	Seaport users are immediately informed on every change introduced	EMP7
Customer Satisfaction	Overall, I am satisfied with the equipments, facilities and other infrastructures available at the seaport	CUS1
	Overall, I am satisfied with the seaport's management and officials	CUS2
	Overall, I am satisfied with the procedures employed in the delivery of services at the seaport	CUS3

IV. ANALYSIS AND DISCUSSION OF FINDINGS

The following are the analysis and discussion of study results acquired from the study respondents. Data collected were coded, analysed and interpreted.

A. Respondent's Profile

Frequency distribution was used to analyse the profile information of respondents as shown in a Table 2 below.

Table 2: Percentage Distribution of the Respondent's Profile

Profile Variables		Frequencies	Percent (%)
Gender	Female	96	30.6
	Male	218	69.4
	Total	**314**	**100.0**
Age	<20 years	11	3.5
	20-39 years	142	45.3
	40-59 years	141	44.9
	60 years and above	20	6.3
	Total	**314**	**100.0**
Education qualifications	Postgraduate (masters and PhD)	80	25.5
	Bachelor degree	134	42.7
	Certificate and diploma	100	31.8
	Total	**314**	**100.0**

Profile Variables		Frequencies	Percent (%)
Experience in using seaport	1-10 years	79	25.2
	10-20 years	184	58.6
	> 20 years	51	16.2
	Total	**314**	**100.0**

From Table 2 above shows the profile data of respondents, both genders were involved whereby 30.6% of respondents were female and 69.4% were male. This indicated that males are dominated much in the maritime field. Based on respondent's age, majority of study respondents are the ones with the age between 20-59 years in which this group constituting about 90.2% of the entire sample. About 42.7% of study respondents had university bachelor degrees as their highest education level and 25.5% had doctorate and masters' degrees. On the other hands, respondents who had been in the maritime field for 1-10 years presented 25.2% of all respondents, 10-20 years presented 58.6%, for more than 20 years presented 16.2%. Therefore, the findings were gotten from educated and experienced respondents.

B. SERVQUAL Analysis of all Service Dimensions

Weighted mean was applied to determine the service quality level. Gap scores are the difference between expectation scores and perception scores. Negative gap scores indicate the poor service quality of a variable while a positive gap score indicate a best service quality. Table 3 below highlighted the expectation, perception, weighted means and gap scores of all service quality dimensions for all selected seaport in Southern and Eastern Africa.

Table 3: Service Quality Expectation (E) and Perception (P) Scores

	Service Quality Dimensions and Variables	Dar es Salaam seaport		Djibouti seaport		Mombasa seaport		Maputo seaport		Walvis Bay seaport		Durban seaport	
		E	P	E	P	E	P	E	P	E	P	E	P
TANGIBILITY	TAN1	3.90	3.53	4.08	4.01	4.01	3.76	3.86	3.45	3.44	3.29	4.12	3.91
	TAN2	3.94	3.58	4.17	4.07	4.04	3.81	3.90	3.58	3.55	3.41	4.21	3.92
	TAN3	4.00	3.71	4.22	4.09	4.06	3.87	3.94	3.52	3.51	3.35	4.32	4.09
	TAN4	4.03	3.74	4.11	3.79	4.02	3.70	3.96	3.54	3.52	2.93	4.14	4.01
	TAN5	4.04	3.64	4.11	3.80	4.04	3.66	4.03	3.72	3.70	3.21	4.15	4.02
	TAN6	4.03	3.64	4.08	3.77	4.03	3.68	4.02	3.68	3.67	2.98	4.13	3.95
	TAN7	4.01	3.71	4.07	3.63	4.01	3.63	4.01	3.64	3.53	2.95	4.12	3.99
	Weighted Mean	**3.99**	**3.65**	**4.12**	**3.88**	**4.03**	**3.73**	**3.96**	**3.59**	**3.56**	**3.16**	**4.17**	**3.98**
	Gap score (P-E)	**−0.34**		**−0.24**		**−0.3**		**−0.37**		**−0.4**		**−0.19**	
RELIABILITY	REL1	3.99	3.58	4.28	3.69	4.16	3.64	3.78	3.23	3.74	3.15	4.43	3.99
	REL2	4.03	3.18	4.36	3.75	4.19	3.39	3.83	2.91	3.79	2.83	4.51	4.05
	REL3	3.98	3.05	4.32	3.77	4.12	3.41	3.79	2.70	3.75	2.62	4.47	4.07
	REL4	4.01	3.29	4.29	3.47	4.21	3.43	3.92	2.92	3.88	2.84	4.44	3.77
	REL5	4.02	3.15	4.33	3.48	4.23	3.39	3.90	2.80	3.86	2.73	4.48	3.78
	REL6	3.98	3.42	4.19	3.45	4.11	3.42	3.81	3.07	3.77	2.99	4.34	3.75
	REL7	4.05	3.52	4.31	3.61	4.27	3.54	3.93	3.17	3.89	3.09	4.46	3.91
	REL8	3.96	2.09	4.23	3.39	4.12	2.72	3.74	1.74	3.70	1.68	4.38	3.69
	REL9	4.02	2.52	4.29	3.65	4.16	3.32	3.80	2.17	3.76	2.09	4.44	3.95
	REL10	4.03	3.41	4.32	3.87	4.17	3.47	3.82	3.05	3.78	2.93	4.47	4.17
	REL11	3.98	2.07	4.27	3.47	4.13	3.23	3.81	1.72	3.77	1.65	4.42	3.77
	Weighted Mean	**4.00**	**3.03**	**4.29**	**3.60**	**4.17**	**3.36**	**3.83**	**2.68**	**3.79**	**2.6**	**4.44**	**3.90**
	Gap score (P-E)	**−0.98**		**−0.69**		**−0.81**		**−1.15**		**−1.19**		**−0.54**	
RESPONSIVENESS	RES1	3.99	2.63	4.58	3.55	4.37	3.13	3.62	1.89	3.28	1.21	4.80	4.29
	RES2	4.03	3.31	4.59	4.44	4.38	4.02	3.66	2.57	3.32	1.89	4.81	4.68
	RES3	4.00	2.51	4.56	3.63	4.35	3.21	3.63	1.77	3.29	1.09	4.78	4.17
	RES4	4.00	2.75	4.65	3.87	4.45	3.45	3.63	2.01	3.29	1.33	4.87	4.31
	RES5	4.12	2.67	4.63	3.79	4.42	3.37	3.75	1.94	3.41	1.26	4.85	4.23
	RES6	4.15	2.55	4.61	3.67	4.40	3.25	3.79	1.81	3.45	1.13	4.83	4.11
	RES7	4.00	3.04	4.60	4.36	4.38	3.94	3.63	2.30	3.29	1.62	4.82	4.50

	RES8	3.94	2.61	4.50	3.73	4.29	3.31	3.57	1.87	3.23	1.19	4.72	4.27
	Weighted Mean	**4.03**	**2.76**	**4.59**	**3.88**	**4.38**	**3.46**	**3.66**	**2.02**	**3.32**	**1.34**	**4.81**	**4.32**
	Gap score (P-E)	**−1.27**		**−0.71**		**−0.92**		**−1.64**		**−1.98**		**−0.49**	
	Service Quality Dimensions and Variables	**Dar es Salaam seaport**		**Djibouti seaport**		**Mombasa seaport**		**Maputo seaport**		**Walvis Bay seaport**		**Durban seaport**	
		E	**P**	**E**	**P**	**E**	**P**	**E**	**P**	**E**	**P**	**E**	**P**
ASSURRANCE	ASS1	4.20	3.80	4.36	4.01	4.34	4.07	3.95	3.31	3.84	3.09	4.44	4.17
	ASS2	4.14	3.64	4.30	4.13	4.28	3.98	3.89	3.25	3.78	3.03	4.38	4.29
	ASS3	4.07	3.84	4.22	4.09	4.20	4.06	3.82	3.27	3.71	3.05	4.30	4.25
	ASS4	4.09	3.74	4.24	4.03	4.22	3.98	3.84	3.29	3.73	3.07	4.32	4.19
	ASS5	4.05	3.80	4.20	4.08	4.18	4.04	3.79	3.21	3.68	2.99	4.28	4.24
	ASS6	4.12	3.85	4.18	4.02	4.16	3.99	3.87	3.35	3.76	3.13	4.26	4.18
	Weighted Mean	**4.11**	**3.78**	**4.25**	**4.06**	**4.23**	**4.02**	**3.86**	**3.28**	**3.75**	**3.06**	**4.33**	**4.22**
	Gap score (P-E)	**−0.33**		**−0.19**		**−0.21**		**−0.58**		**−0.69**		**−0.11**	
EMPATHY	EMP1	3.99	3.73	4.14	4.02	4.04	3.82	3.92	3.56	3.81	3.38	4.24	4.22
	EMP2	3.93	3.68	4.07	3.96	3.97	3.76	3.85	3.50	3.76	3.32	4.17	4.14
	EMP3	4.02	3.66	4.17	3.95	4.07	3.75	3.93	3.49	3.84	3.31	4.27	4.21
	EMP4	3.94	3.73	4.08	4.01	3.98	3.81	3.85	3.56	3.79	3.38	4.18	4.15
	EMP5	4.08	3.59	4.22	3.89	4.12	3.69	3.99	3.42	3.90	3.24	4.32	4.09
	EMP6	4.08	3.68	4.23	3.97	4.13	3.77	3.99	3.51	3.90	3.33	4.33	4.17
	EMP7	4.07	3.70	4.21	3.99	4.11	3.79	3.98	3.53	3.88	3.35	4.31	4.19
	Weighted Mean	**4.02**	**3.68**	**4.16**	**3.97**	**4.06**	**3.77**	**3.93**	**3.51**	**3.84**	**3.33**	**4.26**	**4.17**
	Gap score (P-E)	**−0.33**		**−0.19**		**−0.29**		**−0.42**		**−0.51**		**−0.09**	

From Table 3 above concerning tangibility dimension, it shows that in all the variables (7 items) the expectation scores for all seaports are higher than perception scores as rated by customers in which resulted to negative values in gap scores of −0.34 for Dar es Salaam seaport, −0.24 for Djibouti seaport, −0.3 for Mombasa seaport, −0.37 for Maputo seaport, −0.4 for Walvis Bay seaport and −0.19 for Durban seaport. These negative values are directly implying that, the existing seaport facilities at the selected seaports are not in good appearance. Hence for the aim of improving service quality modern facilities and efficient equipment are required. Thus, under the tangibility measure, Durban seaport ranks highest on the use of up-to-date equipment followed by Djibouti seaport, Mombasa seaport, Dar es Salaam seaport, Maputo seaport and the last is Walvis Bay seaport. Similarly, other dimensions of service quality variables got negative values in the gap analysis. This included reliability (11 items) all perception scores are lower than expectation scores which results in negative gap scores of −0.98 for Dar es Salaam seaport, −0.69 for Djibouti seaport, −0.81 for Mombasa seaport, −1.15 for Maputo seaport, −1.19 for Walvis Bay seaport and −0.54 for Durban seaport. These findings imply that, regarding frequency ship-calls, frequently change in storage charges, provision of fast and efficient services, reasonable storage time, seaport network system problems, integrated electronic payment system, accurately keeping of seaport records, dependable seaport service providers, consistent manner in providing and competitive service price of selected seaports from Southern and Eastern Africa do not meet customers' expectations. Though, under the reliability measure, Durban seaport ranks the highest followed by Djibouti seaport, Mombasa seaport, Dar es Salaam seaport, Maputo seaport and the last one is Walvis Bay seaport.

Responsiveness (8 items) the negative gap scores of −1.27 for Dar es Salaam seaport, −0.71 for Djibouti seaport, −0.92 for Mombasa seaport, −1.64 for Maputo seaport, −1.98 for Walvis Bay seaport and −0.49 for Durban seaport are obtained. The highest average value of this dimension is −1.98; this means employees from Walvis Bay seaport do not have full readiness in providing timely seaport services and helping customers. On other hand Durban seaport ranks the highest after being found to have the smallest negative gap scores but in general speaking the selected seaports from Southern and Eastern Africa do not meet customers' expectations under this responsiveness dimension of service quality. With regard to the assurance (6 items) negative gap scores of −0.33 for Dar es Salaam seaport, −0.19 for Djibouti seaport, −0.21 for Mombasa seaport, −0.58 for Maputo seaport, −0.69 for Walvis Bay seaport and −0.11 for Durban seaport are obtained. This implies the workers sympathetic, politeness together with their aptitude to express confidence and faith in executing work at the selected seaports is poor. Similarly, to previous dimensions Durban seaport ranks the highest followed by Djibouti seaport, Mombasa seaport, Dar es Salaam seaport, Maputo seaport and the last one is Walvis Bay seaport. Lastly empathy (7 items) negative gap scores of −0.33 for Dar es Salaam seaport, −0.19 for Djibouti seaport, −0.29 for Mombasa seaport, −0.42 for Maputo seaport, −0.51 for Walvis Bay seaport and −0.09 for Durban seaport are obtained. This means there is poor delivery of personalized and compassionate services to customers at the selected seaports. Once again in this service quality dimension Durban seaport ranks the highest followed by Djibouti seaport, Mombasa seaport, Dar es Salaam seaport, Maputo seaport and the last one is Walvis Bay seaport.

Based on the found negative gap scores in all dimensions of the selected seaports this implies that, the management of seaports under the study should put on strategies which will enhance the delivery of best seaport service quality so as to meet customers' expectations. The study further analysed quality gap across all five service quality dimensions for all six seaports and developed a percentage gap as shown in the Table 4 below.

Table 4: Analysis of Quality Gap across Service Quality Dimensions

Seaports	Service Quality Dimensions	Weighted Means			% GAP [(P-E)/E] * 100
		E	P	Service Quality Gap (P-E)	
Dar es Salaam seaport	Tangibility	3.99	3.65	−0.34	−8.5%
	Reliability	4.00	3.03	−0.98	−24.5%
	Responsiveness	4.03	2.76	−1.27	−31.5%
	Assurance	4.11	3.78	−0.33	−8.0%
	Empathy	4.02	3.68	−0.33	−8.2%
	Composite (Overall Average)			**−0.65**	**−16.14%**
Djibouti seaport	Tangibility	4.12	3.88	−0.24	−5.8%
	Reliability	4.29	3.60	−0.69	−16.1%
	Responsiveness	4.59	3.88	−0.71	−15.5%
	Assurance	4.25	4.06	−0.19	−4.5%
	Empathy	4.16	3.97	−0.19	−4.6%
	Composite (Overall Average)			**−0.41**	**−9.3%**
Mombasa seaport	Tangibility	4.03	3.73	−0.30	−7.5%
	Reliability	4.17	3.36	−0.81	−19.4%
	Responsiveness	4.38	3.46	−0.92	−21.0%
	Assurance	4.23	4.02	−0.21	−5.0%
	Empathy	4.06	3.77	−0.29	−7.2%
	Composite (Overall Average)			**−0.51**	**−12.02%**
Maputo seaport	Tangibility	3.96	3.59	−0.37	−9.3%
	Reliability	3.83	2.68	−1.15	−30.0%
	Responsiveness	3.66	2.02	−1.64	−44.8%
	Assurance	3.86	3.28	−0.58	−15.0%
	Empathy	3.93	3.51	−0.42	−10..7%
	Composite (Overall Average)			**−0.83**	**−21.96%**
Walvis Bay seaport	Tangibility	3.56	3.16	−0.40	−11.2%
	Reliability	3.79	2.60	−1.19	−31.4%
	Responsiveness	3.32	2.34	−1.98	−59.6%
	Assurance	3.75	3.06	−0.69	−18.4%
	Empathy	3.84	3.33	−0.51	−13.3%
	Composite (Overall Average)			**−0.96**	**−26.78%**
Durban seaport	Tangibility	4.17	3.98	−0.19	−4.6%
	Reliability	4.44	3.90	−0.54	−12.2%
	Responsiveness	4.81	4.32	−0.49	−10.2%
	Assurance	4.33	4.22	−0.11	−2.6%
	Empathy	4.26	4.17	−0.09	−2.1%
	Composite (Overall Average)			**−0.29**	**−6.34%**

From Table 4 above, it shows that all variables scores negative gat which implies the actual experiences were below the expectations. Furthermore the found gaps were expressed in percentages to provide more insight to management concerning the gap compensation required in percentage wise. Also the variables were rated and arranged in order so that the respective seaport management can pay attention for better enhancement of their services. The arrangement is as follows: assurance (−2.6% Durban seaport, −4.5% for

Djibouti seaport, −5.0% for Mombasa seaport, −8.0% for Dar e Salaam seaport, −15.0% for Maputo seaport and −18.4% Walvis Bay seaport), empathy (−2.1% Durban seaport, −4.6% for Djibouti seaport, −7.2% for Mombasa seaport, −8.2% for Dar e Salaam seaport, −10.7% for Maputo seaport and −13.3% Walvis Bay seaport), tangibility (−4.6% Durban seaport, −5.8% for Djibouti seaport, −7.5% for Mombasa seaport, −8.5% for Dar e Salaam seaport, −9.3% for Maputo seaport and −11.2% Walvis Bay seaport), reliability (−12.2% Durban seaport, −16.1% for Djibouti seaport, −19.8% for Mombasa seaport, −24.5% for Dar e Salaam seaport, −30.0% for Maputo seaport and −31.4% Walvis Bay seaport), and responsiveness (−10.2% Durban seaport, −15.5% for Djibouti seaport, −21.0% for Mombasa seaport, −31.5% for Dar e Salaam seaport, −44.8% for Maputo seaport and −59.6% Walvis Bay seaport).

From above list, urgent attention is required for official's responsiveness followed by reliability dimension. Assurance and empathy are dimensions which doesn't need urgent attention. This is to say, although improvement of service quality is required in all seaports, but customers they don't focus much on empathy and assurance dimensions.

C. Service Quality Comparison based on Findings

By considering study analysis presented in Table 4, the rank for individual seaport according to its service quality is well presented in Table 5 below.

Table 5: Service Quality Rank of the selected Seaports in Southern and Eastern Africa

Seaport	Composite (Overall Average %)	Rank
Durban seaport	−6.34%	1
Djibouti seaport	−9.3%	2
Mombasa seaport	−12.02%	3
Dar es Salaam seaport	−16.14%	4
Maputo seaport	−21.96%	5
Walvis Bay seaport	−26.78%	6

From Table 5 above, Durban seaport confirmed to be the best seaport with the highest service quality of the study region (Southern and Eastern Africa). Study analysis declared that this seaport attained the lowest negative gap scores, this means the quality of services quality at Durban seaport is rated very good compares to other seaports involved in the study. Also, findings above showed that the least service quality seaport of the two regions is Walvis Bay seaport, this means the quality of services provided at Walvis Bay seaport rated worse. Maputo seaport ranked the 5th position after Dar es Salaam seaport which ranked 4th position regarding service quality. These seaports have to implement new strategies to enhance their service quality in order to remain competitive in the region. Mombasa seaport in Kenya ranked the 3rd seaport regarding the service quality after Djibouti seaport in Djibouti.

Study also confirmed that, the top ranked seaports in terms of service quality are the once which their countries and seaports are characterized with the followings; unlimited or transport intermodality, the good quality road infrastructure, and no delays at the border-crossing points and congestion free at the port-city interface. As previewed in above sections it found that, Durban and Djibouti seaports are the seaports with the largest draft and they are also the seaports which can accommodate the larger vessels in terms of LOA. In terms of the seaports with the most calls by shipping line, Durban, Djibouti and Mombasa represent the top three. In terms of incoming indirect routes, Djibouti remains among the best-connected seaport; however, Durban declines behind Mombasa seaport. Considering outgoing indirect routes, Durban appears to be the best-connected seaport. Djibouti seaport is well connected by road and recently a new 756 km electrified railway started operations. Road and rail infrastructure in South Africa is generally in good condition. All seaports have road and rail connections that stretch across the entire country and connect to Zimbabwe, Namibia, Zambia, Mozambique and Botswana. Lastly the top ranked seaports with highest service quality have another advantage of utilizing the new technologies and experience of specialist terminal operators.

Composite (Overall Average %) results presented in Table 4 were used to compute and identifying the region with highest seaport service quality between Southern and Eastern Africa. For Southern Africa seaport service quality composite average will be: Durban seaport (−6.34%) + Maputo seaport (−21.96%) + Walvis Bay seaport (−26.78%) / 3= −18.36% while for Eastern Africa seaport service quality composite average will be: Mombasa seaport (−12.02%) + Djibouti seaport (−9.3%) + Dar es Salaam seaport (−16.14%) / 3 = −12.49%. By considering these results, it confirmed that East African seaports possess an overall service quality

composite average of −12.49% which is higher compared to the South African seaports which possess an overall service quality composite average of−18.36%.

V. CONCLUSION

The foremost idea of this study was to evaluate and comparing service quality of the major six seaports from Southern and Eastern Africa. Study findings revealed that, the highest ranked service quality seaport in South Africa is Durban seaport followed by Maputo seaport and the last one is Walvis Bay seaport. Also, the highest ranked service quality seaport in East Africa is Djibouti seaport followed by Mombasa seaport and the last one is Dar es Salaam seaport. The composite (Overall Average %) seaport service quality of both selected regions found to have negative values, it explains that all regional seaports are providing poor service quality. Moreover, the findings also showed that, the least service quality seaport of the two regions is Walvis Bay seaport.

Also the findings from above analysis demonstrated that, the quality of services provided by the selected seaports to its customers is still poor and needs implementation of strategies for the improvements. Also regarding to negative score of the overall service quality gap, study recommends some strategies which can be undertaken by the government and management of the seaports under the study for better improvement of service quality including, to improve logistics facilities, systematize staff training sessions, formulate appropriate investment policies and solidify the use of PPP schemes, minimize tariff and seaport charges, modernization of seaport infrastructures, strengthening safety and security and modernize seaport operating systems. Study expanded body of knowledge on service quality in seaports. Also, this study adds to the current discussion about the utility of the gap approach to service quality, finally study confirms that SERVQUAL is an excellent instrument for measuring service quality, according to the study findings.

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AUTHORS

First Author – Msabaha Juma Mwendapole, PhD, MBA, BSc
Second Author – Mahamudu Mashaka Mabuyu, MSc, BSc
Third Author – Wilfred Johnson Kileo, PhD, MSc, BSc
Fourth Author- Leonce L. Mwesiga, MBA, BSc

Correspondence Author – Msabaha Juma Mwendapole, mwendapole.msabaha@gmail.com, msabaha.mwendapole@dmi.ac.tz +255713525079.