AN INVESTIGATION INTO THE NIGERIAN RAIL TRANSPORT QUALITY OF SERVICE: FROM THE PASSENGERS' PERSPECTIVE

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Introduction

An efficient transport system is a catalyst for socio-economic advancement of all nations, there is hardly any town or city that can function efficiently and effectively without adequate, reliable, safe and affordable transport network (Pius et al. 2017). Rail transport system has played a significant role in nations' development and the encouragement of regional cooperation. It is among the critical national infrastructures needed for economic and technology growth. Without transport network, many towns and cities would be severely inadequate in ability to compete with others. Given the fact that it is the duty of rail operators to plan and design profitable rail networks and support it with robust strategy for effective service delivery that meets service user needs and expectations, to encourage repeat patronages and sector sustainability (Nwaogbe, Pius & Dashe, 2017). This paper main aims are to measure the level of service provided by the Nigerian Railway Cooperation (NRC) across the nations' rail network. In a view to suggest possible areas of improvement. The objective is to evaluate six service dimensions; to capture what the commuters are thinking about their services. Before now, Nigeria's rail network has received very little attention from the scholars and the rail operators are focusing on the tick boxes exercise for regulator and government gratification, instead of them striving to provide a better service experience and become passenger centric operators in their strategies for loyalty and repeat usage (Pius, Nwaogbe & Chad, 2017).

Research Background and Problems

Rail transport is among the oldest forms of transportation in Nigeria, started 1898 in Lagos. Since this period, it has expanded across the country; rail transport over the year is known to have exerted a lot of positive contributions to the socio-economic transformation and development throughout nation. The NRC is the apex body in charge of rail transport; it supervises, manages and controls its operations (NAT, 2002). Thus, one of the major problems facing public owned transport organisations in Nigeria is low quality of service delivery (NRC, 2012; Esan, 2010). The rail corporation confronts with the challenges of offering efficient transport service to serve the needs of commuters and guarantees value for money, but this goal seems to be unachieved utopia, due to several factors; moribund traffic, migration, weak infrastructure and poorly motivated staffs have been diminishing its capacity to meet customer needs, resulted in a huge loss to income for the corporation (NRC, 2012; Esan, 2010). Incidentally, past studies have focused on the established rail networks, as a result limited attention is given for the quality of service and performance at the NRC, where this paper investigates.

Review of Literature

Rail transport network is one of the pillars of economic, cultural, social, and industrial development of any country (Aderibigbe, & Adurokiya, 2011). Besides, there are two-dimensional roles of creating jobs

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and space utilities, to ease social mobility and assist in maintain peace and tranquillity (Pius et al. 2017; Atoyebi, 2015) and Pius, Nwaogbe & Chad (2017) argues that it is the backbone of modern cities/ town's development and continuity. The mobility and accessibility provided by the rail transport system are key drivers of nations' growth and technological advancement in both developed and developing countries. In most emerging countries, rail transport is under tremendous pressure from the ever-growing passenger's demands, couple with weak infrastructure and limited network capacity, because of asymmetric funding strategy used by the successive governments over the years (Pius et al. 2017; Atoyebi, 2015). Incidentally, the increase in population of urban dwellers has also contributed immensely to the rail congestion, prompt low quality of service across the network (Aderibigbe, & Adurokiya, 2011). Service quality is an indispensable factor in attracting, retaining of customers, for repeated patronage to facilitate and guarantee organisational growth, though this issue is still under debate within the sector. Some researchers argue that the relationship between service quality and passenger repeated purchase is weak and hard to prove in the transport industry (Nwaogbe, Ukaegbu & Ibe, 2013).

Methodological Framework

This study is designed to measure the service gap between commuters' expectation and perceived experience in the rail transportation network. To achieve this, a self-administered questionnaire was designed and distributed in person at the stations, using a convenience sampling technique on the rail service users within the travel area. The populations are two selected from five major stations within the geographic across the country. By doing so, this research can capture the effects of organizational culture, employees' behavior, and the general norms which can influence passengers' perception. The criteria on which the five stations were chosen for this study are:

- Station size: this was a key factor in determining which station would be included in the survey population. The number of platforms would be an indicator of the size, which also means the number of trains, rail operators and network lines that were serviced. This would provide a good selection of diverse passengers for the sample.
- Traffic volume: the frequency, intensity and sheer number of passengers entering, interchanging and exiting was also considered as a key factor providing an opportunity to get a useful number of participants.
- Main services: the number of lines, services and network links available at a station was a key factor in selecting the stations. Diversity of rail operators can mean a diverse sample.
- The authors concluded that the five stations chosen as study population were appropriate, due to the volume and traffic of customers, intensity of rail usage and increase in passenger's traffic volume and the strategic locations, they occupied as the central hub of activity. These views provided a strong rationale behind the sample selection.
- Only journeys that commenced or concluded in the stations, were considered using structured questionnaires in parson for data gathering that span for a period of four weeks. Secondary data was sourced from Nigeria Rail Cooperation (NRC) and Office of then National Statistics (ONS), to reinforce the primary data.

Data Source and Collection

A total of 120 questionnaires was administered, but 112 questionnaires were returned. 100 questionnaires were useful in the study. SERVQUAL analytical tool, SPSS, JABS software and Microsoft excel was used for data analysis to determine the mean and the average gaps in service quality, descriptive statistics were used for data presentation. Survey was conducted in the railway stations to source data from various railway networks. Secondary data was sourced from Abuja railway station concerning scheduling of service to various routes of the station to supplement the primary data. The primary data was gathered through manual survey questionnaire, and it was based upon random sampling of the North Central rail users. See appendix 1, for the summary of commuter expectation, perception and the gap scores.

Discussion of Results

From the analysis of rail passengers' data gathered, the overall quality of service on the network was measured, using Likert scale to determine the gap score that exists between the expectation and perception. The analysis indicated that there is a higher level of expectation. So, if the perception mean scores are high, it means that the overall service qualities of the six dimensions for the Nigerian railway are operating at significant and high level of customer's service quality efficiency level. However, consumer expectation exceeded the perceived level of service as shown from the analysis to the perception score's measurement. This has resulted in a negative gap score (Perception – Expectation). Parasuraman et al. (1988); Pius, Nwaogbe and Manian (2017) studied on consumer satisfaction of commuter rail transport services of London's rail Zone 1, their study described how common consumer's expectation exceeds the actual service perceived, and this signified that there is always needed for improvement in the rail commuter transport services.

The customer services presents the highest score on the customer expectation scores, from the platform and train carriages should be clean and tidy always (TA4) with score of (6.86), when commuters have problem the employees should show genuine interest in dealing with customers problems (RL2) with score of (6.83), the commuters responded on the expectation that employees should be smartly dressed and appear neatly to attend to customers (TA3) with expectation scores of (6.82), while there was some other expectations with scores of (6.81) and several other expectations with scores respectively on the expectations table summary such as train operators should make peak and off tickets easy for passengers to understand, Nigerian train operators should use modern trains and equipment's for their operations, the employees should always be there and willing to assist their customers or passengers when they need their services during operations and the Nigerian rail transport operators and their employees should be ready to keep promises they gave their commuters during service delivery. There are more other expectation scores shown in table 1, see appendix 1. Nevertheless, these scores are not very different from scores of other questions that were during the study this implied that consumers of the rail transport except high standard of service of delivery from the rail operators, especially from the newly commissioned Abuja-Kaduna rail transport route. While the least mean score expectation of passengers is the overcrowding on trains during peak hours is normal (EM4) with a mean of (5.14).

On the other hand, perception of the passengers on quality of service score derived from the analysis. The perception questions among 24 question that formed the six dimensions of the SERVQUAL model used in the analysis show various high rates scores. The statement or question that rated highest for actual service perceived by the passengers' were that employees of the rail transport operators should have the knowledge to answer passengers 'questions, with a score rate of (4.44), the service quality provided by the rail operators are value for the money paid (PS2) with mean score of (4.19), the Nigerian railway employees are courteous with the commuters/passengers (AS3) with mean score of (4.05), passengers/commuters feel safe in their encounters with the employees (AS2) with mean score of (3.99) while several other mean score that was derived from the analysis of passengers perception are as follows, rail operators operating hours are convenient to the passengers (EM2) with mean score (3.98), when commuters have problems employees how genuine interesting in resolving them (RL2) with mean score of (3.85) , employees have commuters best interest at heart (EM4) with mean score of (3.84). There is some statement that has low mean scores on customer's/passenger's perception. The least among mean is waiting for toilets, and ticket kiosk, have functioning been functioning as Air conditioner with mean a mean of 2.43, while there are some mean scores perception that are very low as identified from the analysis. More so, the overall service quality mean of the passengers' perception result shows an average mean of 3.60. This shows that the Nigerian railway operator's service quality perceives an average of the passengers' expectations total mean score, we can therefore say that the Nigerian rail service in the North Central that Abuja-Kaduna route is operating at with average if compared by the passengers, perceived service quality and the expected service quality.

On the gap differences between the perception and expectation were not much different from each other, rather the scores of perceptions were lower than that of expectations. It is important to carefully consider the service gap that exists between passenger expectation and perception. The gap scores that exist between the expectation, and perception can be measured with a range of values between -6 to +6 (service quality and customer satisfaction) (Daniel and Berinyuy, 2010). When commuter perception draws closer to the expectation, this implies that the passengers are perceiving higher level of service quality by the operators. The research findings from this study show various commuters gap score and overall service quality average mean gap scores of all the statements and the six dimensions to the SERVQUAL model used in the analysis. The main five largest gap scores are shown in appendix 1; waiting rooms and toilets should be fitted with heating and air conditioning system (TA2) with a gap score of (-4.07), Nigerian rail operators should use modern equipment's (TA1) with a gap score of (-3.67), employees' demand and needs concerning service delivery to the passengers have met the highest standard (PS1) with a mean score of (-3.56), employees are prompt in service delivery to the passengers who are using the Abuja-Kaduna route and Minna-Kaduna route (RN1) with a gap score of (-3.38) and on the aspect of platforms and train carriages, the operators try to keep the place clean and tidy always (TA4) with a gap score of (-3.38). The gap score with the least mean score from the analysis is the statement is that employees do not embark on incessant strikes (RN4) with a gap mean score of (-0.4). While the overall quality of the service mean gap for the six dimensions of SERVQUAL model used in the analysis is an average mean gap score of (2.76) which is not close to the expectation mean score but closer to the perception mean score. This means that the Abuja-Kaduna and Minna-Kaduna route's train operator's overall quality of service performing on the average, and this is not a good significant result if comes to the aspect of customer's/passengers' perception and overall quality of service. That means the NRC that is controlling the rail transport operation in Nigeria need to improve on the customer's perception and overall quality of service. In general, these results indicated that respondents expect more for their service quality in Nigerian rail transport from the analysis of the six dimensions of the model.

Nigerian Rail Network Gap Score Analysis (GSA)

Gap score analysis is the major measurement that shows various gap that exist between expectations and perception of the overall quality of service during estimation of SERVQUAL dimensions analysis. The result made it possible for the rail operators and other modes transport operational sector determine the areas of service that are lacking by the operators' services towards passengers'/ commuters' using the rail transport in Nigeria and how the overall quality of service can be improved (Nwaogbe, Ukaegbu & Ibe, 2013). However, the service passengers perceived in terms of service quality of service in north central zone of Nigeria and attempted to identify service dimensions that passengers are satisfied with. Parasuraman et al. (1985) argue that the higher the scale of positive perception (P), the lower the scale of minus expectation score. Which translate into higher perceived service quality that leads to a higher level of customer satisfaction for the services offered by the providers. The gap scores for this study calculation were based on the difference between the service users' perceptions and expectation (Daniel and Berinyuy, 2010). From the study the researchers observed that, commuters'/passengers' perceptions of the service quality offered by the rail operators in Nigeria, fell short of their expectations (gap scores analysis were mostly negative). Besides, six dimensions' descriptive statistics were used in supporting the gap score examination; the highest mean gaps are shown on the respectively as tangibility with -3.565, closely follow by reliability with mean of -3.104 and assurance mean with -2.53. While the lowest mean gap is product service with mean score of -2.37, the responsiveness with score of -2.47 and empathy with mean score of -2.528. The above gap score analysis shows that the perceived service quality is less than the passengers' expectations in the north central zone.

As Parasuraman et al. (1988) noted to determine or derive an average gap score of the SERVQUAL dimensions of customer's service perception. To estimate or measure the overall service quality as

perceived by the Nigerian rail commuters effectively, additional one dimension was added bringing the total to six dimensions 'Services'. Aligning the adapted tool with the findings of earlier researcher Gronroos (1982) who proposed two main dimensions of service quality, technical and product dimension added to the modified SERVQUAL model, to reflect the technical dimension of service quality. This model is a high appropriate model that can be used to measure overall service quality in the transport industry more especially railway transport sector, regarding the fact that service quality offered by the rail operators in the north central zone form part of the core reason for passengers to be satisfied during operations. This will enhance the management in decision making process on the overall quality of service decisions which will drive more patronage for the Nigeria Rail transport sector. The standard deviation scores, kurtosis and skewness were distributed, some are high scores while some are consistent with the six dimensions, it suggested a wide range of opinions about the service quality among the respondents surveyed in this study.

The descriptive statistics of the six dimensions of the SERVQUAL model used to examine the overall quality of service of north central zone rail transport operations during the study period. The result shows a high standard deviation on the product service score (PR) followed by responsiveness (RN), empathy (EM) and Tangibility (TA). Regards to confidence interval of 95%, product service was the highest followed by responsiveness and empathy, the rest were very low. While on the mean average, product service shows the highest mean, this means that the zone studied is trying on the average in terms of product service which is one of the six dimensions when studying the overall quality of service of commuter's/passengers' perception. The overall descriptive statistics analysis of the expectation and perception service from the passengers/commuters towards the overall service quality delivery by Abuja-Kaduna and Minna-Kaduna routes. The mean score show that the expectation is higher than perception, which means that the passengers are expecting more from the rail operators in Nigeria in terms of service delivery. More so, the result shows the mean, median, mode, standard deviation, kurtosis and skewness of the customer's satisfaction of the rail quality of service delivery.

Overall Quality of Service in the Nigeria Rail Network

Commuters of the north central zone expect more from their service operators, evident from the negative mean of -2.7983. This indicates that passengers' expectations exceed perceptions see appendix 4. The respondent's overall level of service quality shows that the median gaps calculated are – 3.02, with a gap of -4.07 for the highest number of passengers. The standard deviation is 0.826, it is much lower than when we attempted to work with individual service dimensions. This confirms that there is homogeneity in terms of variables or factors used for the analysis among the sampled population. The deviation gap is more to the right, because the distribution skewed with a value of 1.3899 and the gaps are clustered at some point away from the mean. The standard deviations of individual dimensions are around common average making them consistent with the six specified service dimensions and this suggests a range of opinions about the service quality among the passengers surveyed (Daniel & Berinyuy, 2010). Furthermore, the overall perceived service quality of the Abuja-Kaduna and Minna-Kaduna rail network is low with a value of -2.7983, meaning that the level of service passengers received is lower than what they expected. This simply means that there is zero satisfaction in the overall level of service quality offered by the rail operators in the metropolis. This may probably be because of low quality of service encountered by the rail commuters over a period. If compared with studies using six dimensions in London zone 1, the research findings by (Pius, Nwaogbe & Manian, 2017) is higher than this study in Nigeria, although, London is an advanced and developed city more than Abuja or any city in Nigeria.

The results from the analysis show that the rail operators in North central zone have very high expectation. Base on the mean score the first variable was very high, meaning that a lot need to be done to improve on the overall service quality because the expectation is very high. Furthermore, the result presents variables statement in terms of mean scores. For the perception of the passengers/commuters, the

scores were very low, they expected more from the rail operators. Moreso, on the issue for level of service (LOS) the findings present the average waiting time at the terminal 15 minutes, the longer the time spent, increases waiting time at the station and this will have a negative effect on the operational performance of the rail operator and cause congestion at the station and reduce the turnaround time of operation. The result for the average mean score is about 44.4 minutes as the waiting time at the terminal, while Minna-Kaduna route waiting time is about 50.9 minutes on the average from the two weeks' survey. The boarding time for embarking and disembarking of passenger should not be more than 5 to 15 minutes. From the survey, it was observed that the average boarding time was 12.8 minutes. This means that Abuja-Kaduna route is operating within the standard boarding time at the terminal while Minna-Kaduna route are operating above the standard time of boarding with boarding time of 19.0 minutes. The rail operators need improvement in the facility and equipment usage during boarding time at the terminal. On the aspect of ticket collection, the standard time should for ticket collection should not be more than 2 to 5 minutes on the average. From the survey, it was observed that the average ticket collection time for Abuja-Kaduna route is about 3.2 minutes which within the range of the standard for ticket collection at the rail stations. While Minna-Kaduna route takes about 24.4 minutes to obtain a ticket by each passenger at the rail terminal. This above the standard for ticket collection during rail transport operation. This is the reason why there is a lot of queues at Minna-Kaduna rail terminal, this have led to congestion and at times result to queuing at the process of ticket purchase or collection. Generally, from the survey, it was observed that Abuja-Kaduna route/terminal operates on the average in some of the level of service that the Minna-Kaduna route/terminal. Therefore, the two-major terminal operating in the north central need to work towards improvement of their overall service quality and level of service to have a productive efficiency at various rail terminal so that other terminal can use them to benchmark their terminal in the country (Wanke Barros and Nwaogbe, 2016; Barros, Wanke, Nwaogbe &Azad, 2017; Nwaogbe, Ogwude & Ibe, 2017 and Nwaogbe, Pius & Idoko, 2017).

Service Dimensions Discussion - Nigeria Railway Context

Tangibles - TA

- Regards to the tangibility, we have mean score of -3.565 and median gap of -3.525. The standard deviation of the analysis is 0.40037, indicating the spread of gaps away from the mean. The deviation is not highly deviated. The distribution is positively skewed with a value of -0.4866, which indicates that the figures were deviated more to the right. The kurtosis value was -0.63708, which mean that there is clustering somewhere away from the mean, this implies that the service users expected more than what they are getting from the providers. While the confidence interval of 95% is 0.63708.

Reliability - RL

- In the reliability aspect, the mean is -3.104, which means that service users (passengers') are not satisfied with the quality of services as depicted by the reliability dimension. The standard deviation is 0.1727, which means that the gaps are spread away from the mean. The median gap for reliability is -3.12. The gap distribution is positively skewed with a value of 0.03511, indicating that the gaps are deviated toward the right at the mean, and clustered close to the mean with a kurtosis value of -1.486. With 95% confidence interval of 0.21445. Expectation is higher than the service encountered on this dimension.

Responsiveness - RN

- On the average, customers are not satisfied with the level of services offered by the north central rail operators (Abuja-Kaduna and Minna-Kaduna route), with a mean gap of -2.47 for responsive dimension. The median is higher than the mean with the service gaps of -3.025. The standard deviation of the responsibility dimension is 1.3645, which indicates that the gaps are not widely deviated from the mean. However, the deviation is to the right with a skewness of 1.8485. The

gaps are clustered at a point different from the mean of the distribution with a kurtosis value of 3.3645. With 95% confidence interval of 2.1712.

Assurance - AS

- The mean gap for the assurance dimension is -2.53 showing the level of service offered to the passengers., which is one of the least mean gap, indicating that the commuters are not satisfied with the level of services offered by the rail operators. The median gap for this dimension is –2.525, and it is lower than the mean. The standard deviation is 0.27166, showing a deviation from the mean, which is spread to the right as the distribution is skewed with a value of -0.009377, and the gaps clustered at some point away from the mean with a kurtosis value of -5.9323. The confidence interval of 95% with score of 0.43227

Empathy - EM

- The mean gap score for empathy dimension is -2.528, while the median gap for this distribution is -2.56. The standard deviation of the dimension is 0.7774, which means that the gaps are deviated from the mean. They are deviated toward the right because the distribution is skewed with a value of 1.08602 and clustered away from the mean, with a kurtosis value of 1.336677. Confidence interval of 95% show a score of 0.9652.

Product Services - PR

- The service dimension of the North central rail network mean value at -2.37 which is the highest mean showing that the product service quality of the rail operators was on the average better than other dimensions, indicating that rail commuters sampled during the study were satisfied with the services they are provided by the operators. The median gap recorded a value of -2.37. The standard deviation is 1.6122, which means that the gaps are deviated from the mean. The standard deviation of the service reliability shows a high value score. 95% confidence interval score of 14.485 were also observed from the product service quality, whereby skewness and kurtosis score show 0.

Conclusion and recommendations

The study measures the level of service quality in the Nigeria rail network, by capturing commuters' perception and service experience major stations within the country. Adapted SERVQUAL tool was used to measure six service dimensions from the passenger's experience in the past two years. The findings reveal that the overall service quality is low in the network, with a value -2.7983, while respondents' overall expectation based on scale (1 to 7) was 6.690. This high figure shows that passengers expect more services from the rail operators. Based on the six service dimensions to the model, the passengers want more customers' satisfaction from service dimension with higher figure. Therefore, the Abuja-Kaduna and Minna- Kaduna rail operators should endeavour to improve the services on their network. From the overall service quality, tangibility is the least mean score with -3.565, reliability with a score of -3.104, assurance with a score of -2.53, empathy with a score of -2.528, responsiveness with score of -2.47 and product service with mean score of -2.37. The overall service gap of the Nigeria rail network is at -2.761, with the expectation score of 6.358 and the perception score at 3.597. This simply means that there is zero satisfaction in the overall level of service quality offered by the rail operators in the network. This may probably be because of low quality of service encountered by the rail commuters over a period. The consequence of these outcomes is that the service users are not satisfied with the level of service offered by the nations' rail network "the users' expectation exceeded perceived service encountered." Therefore, this is a case for service quality improvement to close the gaps between commuters' expectation and perception, for much-needed customer satisfaction and loyalty to flourish in the industry.

Successfully meeting service expectations of rail passenger and other stakeholders — while delivering a better service experience to increasingly demanding users and governments alike; is not an easy task, especially with an emerging rail network infrastructure like Nigeria. Therefore, it is advised that

government continues to invest on the upgrading of the nation's rail lines for the next-generation high speed locomotive engine to ease track's congestion and reduce travelling hours across the network. It will provide a better service experience for the commuters and the nations' transport sector benefits in the long term. Rail operators increasing effort towards fostering and delivering quality services across all spectrums to the rail commuters need to be sustained, although to improve service quality can be an expensive practice and time consuming that may need at least a considerable amount time to accomplish. For instance, the introductions of modern technology such as new rolling stock and communication system that can withstand any adverse conditions are needed. Carriages fitted with the air-conditioning system was suggested by most respondents. It would improve passenger comfort on the rail network greatly – particularly in the dry-season months and rush hours.

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