

## Effect of Covid-19 on Public Transport Commuters' Well-Being in Ilorin Metropolis, Nigeria

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### Abstract

*COVID-19 outbreak is a pandemic that shakes the whole world without exception. The pandemic has caused a lot of activities to stop, with strict restriction on mobility in order to curtail the spread of the virus. The transport sector is one of the most affected sectors in the economy. This study therefore, investigates the impact of COVID-19 Pandemic on public transport commuters' wellbeing in Ilorin metropolis of Kwara State Nigeria through cross-sectional survey technique. Questionnaire was used to 117 respondents who were selected using convenient sampling techniques. PLS-SEM path modeling was employed to process the data. The result revealed that the major determinants of public transport commuter's well-being during the first wave of COVID-19 pandemic in Nigeria are quality of road and transport fare. The study therefore recommended the need for improvement in quality of road by the government and provision of alternative means of transportation like railway for public transport commuters.*

**Keywords:** Commuter, Covid-19, Mobility, Transport, Well-Being

**JEL Classification:** C83, D91, I31, L92

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### 1. Introduction

The outbreak of corona virus also known as COVID-19 shook the world, and left no country unscathed. It left countries in the global north and south scrambling for responses to the unprecedented pandemic in our live time. Initially, the spread of the coronavirus from China across the globe spared the African continent, with zero confirmed cases as of January 2020. However, by 14 February, the region had confirmed the first case in Egypt. Almost nine months later, the number of cases confirmed has increased to approximately 1.6 million, 1.3 million recoveries and more than 38,000 deaths. In Nigeria alone, confirmed cases stood at 60,430, with a total of 51,943 recoveries and 1,115 deaths as at 14 October 2020 (WHO, 2020). While the spread of coronavirus affected many sectors of the economy, its effect is very pronounced in the transportation sector.

As a way of curtailing the spread and fighting the pandemic, many countries and cities adopt measures such as massive restrictions on travels as well as imposed lockdown, except for absolute necessity. In the UK for instance, the government enforced a stay-at-home order, restricting all non-essential travel and closing down almost all schools, businesses, places of worship and gatherings. Nigeria also declared a national lockdown and mobility restriction following suit. As a result, the pandemic struck public transport hard. As public transport is directly related to economic development and dependent on mobility, loss of revenue is most likely unavoidable as a result of travel restrictions. In Brazil, for example, according to the National Association of Urban Transport, mobility restrictions are expected to cost bus operators as much as USD188 million in daily fare losses (International Growth Centre, 2020). While there are no current statistics on loss of revenue, given the serious effects of COVID-19 on the sector, this is expected to be high.

Very peculiar to African countries, Nigeria transportation is largely owned and managed by the private sector. A vast majority of Nigerians rely on privately-operated transportation to get around their daily lives. As such, public transport, in the form of taxis, bus, tricycle and bike has and continues to play a pivotal role in the lives of citizens and since private transit operators are profit-oriented, they charge rates that produce sufficient income to cover all cost, as well as make some profit. This may often suggest unreasonable hiking of transport fares by private transit operators, albeit without any justifiable cause. Prior to the pandemic, there was rising concern over the upsurge in public transportation cost. A study by Wojuade (2017) on public transport pricing in Lagos concludes that transport fares are viewed as high by commuters and do not correspond to services offered by transit operators. The coronavirus pandemic and government regulations to curtail its spread have exacerbated this concern. The nationwide lockdown and movement restriction, coupled with rise in energy prices and instability of the economy is likely to impact adversely on the transit operators. As countries began to ease lockdown and restrictions, it is pertinent to understand its impact on commuters' welfare.

Many researches (Jallow, Renukappa and Suresh, 2020, Loske, 2020 & Katrakazas, Michelaraki, Sekadakis & Yannis, 2020) have been conducted on the effect of COVID-19 on transportation system in the developed countries, studies on this issue is still at infancy stage on countries in the global south, like Nigeria. The few existing studies (Mogaji, 2020 & Ozili, 2020) focus majorly on theoretical underpinnings of the effect of COVID-19 on transportation, there is dearth of empirical evidence in the literature; this study, therefore, attempt to fill the gap in our knowledge, by providing an empirical evidence on the effect of COVID-19 on public transport commuters' welfare. The current effort is to investigate the effect of COVID-19 on public transport commuter's well-being in Ilorin Metropolis of Kwara state, Nigeria.

This paper proceeds as follows. Section two provides a review of the literature on transportation, Section three provides the methodology used, while section four presents and discusses findings. The final chapter concludes this paper.

## **2. Literature Review**

Transport is an important instrument for social and economic development, and a tool for integration of Nigeria (Aderamo & Salau, 2020). It is evident that urbanization relies intensely on transport facilities in a country, as it links origins and destinations. As documented by Aderamo and Salau (2013), movement of passengers and goods are achieved mainly by roads, via rail ways and inland water ways (although they play less important roles). The most dominant means of transportation in Nigeria is car (Aderamo & Salau, 2013).

Transport facility is one of the most important elements that determine industrial growth and development in any country, Nigeria to be specific (Oni & Okanlawon, 2006). Oni and Okanlawon, (2006) further asserted that poor provision of transport infrastructure accounts for the incidence of poverty across various Nigerian communities in both urban and rural areas. Public transport constitutes the largest share of mobility of goods and commuters in Nigeria, and mainly conducted by road through cars and buses.

### *Determinants of Travel Well-being*

In literature, the determinants of life satisfaction can be categorized into two which include travel characteristics and personal information (Singleton, 2017). The travel characteristics involve majorly the quality of service while the personal characteristics involve the socio-economic information of transport commuters such as gender, income, education and so on.

Quality of service has been found to have great effect on satisfaction of public transport commuters (De Vos, Schwanen, Van Acker & Witlox, 2013). The quality of service variables includes transport fare, punctuality, speed, proximity, cleanliness and so on. Other studies concluded that travel time and travel duration exerts influence on the satisfaction of commuters with divergence results (Stutzer & Frey, 2008, Morris 2015, & Smith, 2017). Specifically, Morris (2015) found a positive relationship between travel time and satisfaction, while, Smith (2017) found inverse link between satisfaction and longer journey (Smith, 2017).

### *COVID-19 and Transport*

Jallow, Renukappa and Suresh (2020), explored the impact of COVID-19 on infrastructural sector in the United Kingdom, using thematic analysis to determine their results. Their outcome revealed that, the imposed lockdown has made it difficult to carry out projects, especially those that require physical attendance. It was more challenging for managers to manage their teams as a result of the lockdown. However, online communication platforms turned out to be more effective in communication with project teams. Also, induction of new starters proved more challenging, as it involves some certain tests.

Loske (2020) examined the link between transport volume and the number of COVID-19 infection per-day in Germany. The result of the empirical analysis for Germany retail food statistics shows that the change of freight volume does not depend on covid-19 pandemic. The study however, showed that the freight volume depends on the strength quantification through the aggregate number of fresh infection per day. Katrakazas *et al.*, (2020) considered the effect of COVID-19

pandemic on driving behaviour and road safety in Greece and Kingdom of Saudi-Arabia using descriptive statistics. They discovered that the reduction in traffic volume due to lockdown led to a slight increase in speed per kilometer and reduction of accidents especially at the early hours of the day.

In Nigeria, Mogaji (2020) studied the impact of COVID-19 on transport in Lagos metropolis, using descriptive and One-Way ANOVA as the method of analysis. His findings revealed that there is no notable difference between the impact of COVID-19 on transport and the impact of COVID-19 on economic, social and religious activities. However, most of the respondents were female, within the range of 18-35 years, who were essentially engaged in sales and rendering of essential goods and services.

Ozili (2020) used descriptive analysis to examine the effect of COVID-19 on the Nigerian economy and the structural causes that worsen the COVID-19 pandemic. Findings from the study showed that the economic downfall by the dwindling oil prices accompanied by spillovers of the COVID-19 outbreak, led to a fall in demand for oil produce as well as economic activities, due to the social distancing policies.

#### *Theoretical Framework*

In the literature the study on travel behaviour had been conducted within the purview of utility theory, experienced utility and subjective well-being (SWB) theory (DeVos et.al. 2015) . The Utility theory describes the consumer as a rational individual who based his choice decision on maximization of satisfaction derived from a commodity. It is otherwise known as decision utility (De Vos et. al, 2015).

According to Bentham (1789) cited in De Vos et.al 2015 experienced utility describes the pleasure and pain of consumers. This simply means that experience utility measures the emotions of consumer in consumption of a particular commodity. The experienced utility is very similar to the social well-being theory. This is because the SWB theory measures how individuals are satisfied with their life experiences ( De, Vos et.al 2015 &Chatterjee, et. al. 2019). The SWB also measures the achievement of individual. Hence, The SWB covers three main aspect of human well-being which includes: Positive emotions, negative effect and cognitive evaluation.

Therefore, the social well-being theory is the underpinning theory adopted to investigate the effect of COVID-19 on transport commuters' well-being.

#### *The Conceptual Framework*

This section explained the schematic link of the determinants of well-being. Adapting the determinants of well-being from previous study the conceptual framework for this study is shown in figure 1

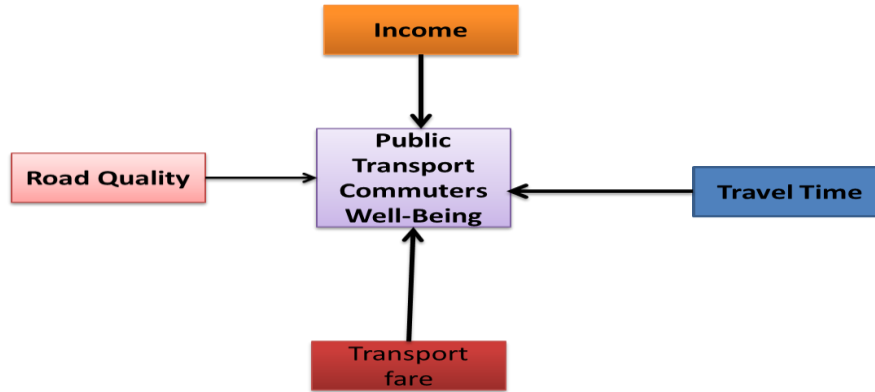


Figure1: Schematic link of Public transport commuters' well-being.

Source: Authors' Report, 2020

### 3. Methodology

In studying the effect of COVID-19 on the welfare of public transport commuters in Ilorin west local government, the study used primary data set which was gotten through a structured questionnaire designed with Google form and administered randomly with convenient sampling technique via email and WhatsApp platforms. This method of sampling technique was adopted, due to the contagious nature of COVID-19, which necessitate great caution for physical contact. Respondents were however, requested to fill their local government in order to guide the geographical scope of the study. A total of 117 samples, which were from Ilorin metropolis were retrieved via the google form for the study.

To measure well-being of transport commuters, the study adapted the satisfaction travel scale items from Smith (2017) and Singleton (2017). The items were divided into three: Positive deactivation, Positive activation and Cognitive evaluation. The study used descriptive statistics, confirmatory factor analysis, and structural equation modeling to analyze the results of the survey. The Structural Equation Modeling is an extension of linear model. It is a graphical interface that displays the relationship of the items in the model. One major advantage of structural equation model is that it provides the overall test model fit, as well as individual parameter estimates simultaneously.

The determinants on well-being include income of public transport commuters, travel time, transport fare and road quality as explained earlier under the literature review. The model is specified using a structural modeling method as shown in figure 2:

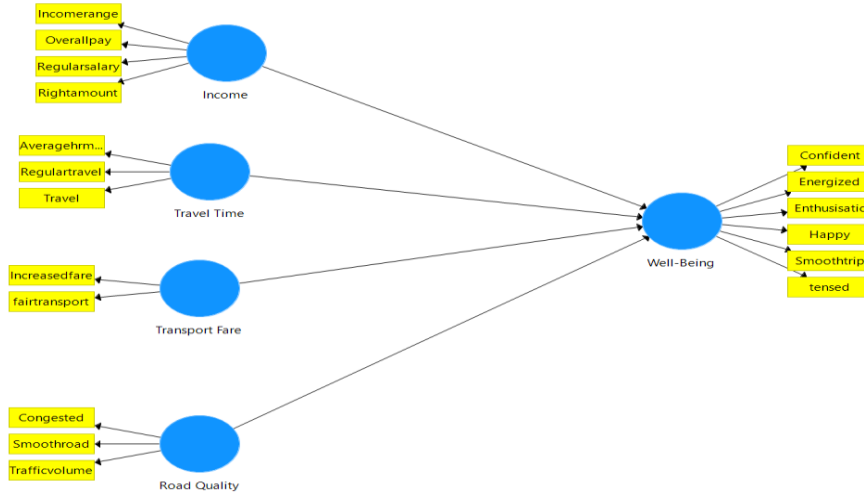


Figure 2: Transport Commuter's Well-Being Model  
 Source: Authors' Report, 2020

4. Results

Socio-Demographic Characteristics of the Respondent

The socio-demographic characteristics of the respondents are presented in table 1. This includes gender, age, level of education and occupation. The table indicates that out of 117 respondents 54 (46.2 per cent) are males while 63 (53.8 per cent) were females. It also indicates that the age bracket between 18 and 20 years as well

Table 1: Socio Demographic Characteristics of the Respondents

		Frequency	Percent	Mean
Gender	Male	54	46.2	0.461538
	Female	63	53.8	0.538462
Age	18-20	24	20.5	0.205128
	21-30	24	20.5	0.205128
	31-40	36	30.8	0.307692
	Above 40	33	28.2	0.282051
Education	SSCE	3	2.6	0.025641
Level	ND/NCE	6	5.1	0.051282
	B.Sc/B.ED/B.A	90	76.9	0.769231
	Masters/PGD	9	7.7	0.076923
	Ph.D	9	7.7	0.076923
Occupation	Unemployed	32	27.4	0.273504
	Self-Employed	13	11.1	0.111111
	Civil-Sevant	56	47.9	0.478632
	Private-Servant	12	10.3	0.102564
	Pensioner	4	3.4	0.034188

Source: Authors' Computation, 2020

as 21 and 30 years constitute 20.5 per cent of the respondents respectively while highest age brackets of the respondent falls between the age group of 31 and 40 years. Looking at the education level the highest qualification of the majority of the respondents (76.9 per cent) is the first degree (B.Sc./B.Ed./B.A). This may be as a result of the method used in gathering the data set which was through the used Google forms, e-mails and social platforms. In addition, the table also shows that majority of the respondents are civil servants with a percentage of 47.9.

*Descriptive Statistics of the Measurement Instruments*

The descriptive statistics of the measurement instrument is presented in table 2. The results show that the average scores of the instruments ranges between 2.259 and 4.385 on the 1-5 Likert-scale. Majority of the instruments fall above the average mean score of 3.14, which imply that most of the respondents agreed with most of the instruments with moderate dispersion. After due screening of the data set, the values under kurtosis range between -2.1 and +2.0 with the exception of two instruments (Energized and Increasedfare). However, the skewness ranges between -1 and +1

**Table 2: Descriptive Statistics of the Measurement Instruments**

S/N	Measurement Variable	Mean	Standard Deviation	Kurtosis	Skewness
1	Incomerange	2.259	1.328	-1.740	0.277
2	Regularsalary	3.349	1.221	-1.091	-0.132
3	Rightamount	3.402	1.285	-1.265	-0.201
4	Overallpay	3.098	1.287	-1.095	0.430
5	Regulartravel	3.129	1.157	-1.076	0.633
6	Nottravel	3.571	1.208	-0.615	-0.480
7	Destination	4.056	1.026	-0.679	-0.739
8	Increasedfare	4.385	0.977	2.999	-1.843
9	Fairtransport	3.305	0.959	-0.022	-0.060
10	Happy	3.789	1.080	-0.154	-0.840
11	Energized	3.863	0.856	3.136	-1.303
12	Enthusiastic	3.744	0.775	0.111	-0.519
13	Tensed	3.500	0.881	-0.691	-0.234
14	Smoothtrip	3.557	0.906	-0.656	-0.491
15	Confident	3.575	1.029	-1.066	-0.304
16	Congested	3.659	1.133	-1.442	-0.082
17	Smoothroad	3.363	1.048	-0.820	-0.214
18	Trafficvolume	3.532	1.112	-0.444	-0.560

*Source: Authors' Computation, 2020*

*Measurement Model*

The factor loadings of the constructs for the measurement model are presented in Table 3. All the factor loadings for the constructs were greater than 0.5 except travel time which was very low (0.019). The travel time construct was subsequently removed because all other statistic justifies its removal. For the measurement model evaluation, the study adopts the reliability and Validity tests statistics as well as discriminant statistic to test the reliability of the constructs. The reliability of the construct was tested using Cronbach's Alpha, composite reliability and

convergence reliability which are presented in Table 3. The cronbach’s Alpha for all the constructs is between 0.5 and 0.9 while the composite reliability is greater than 0.7 for all the constructs.

The Discriminants reliability test was based on two major statistics methods of evaluation which are Fornel-Lacker Criterion and Hetrotrait-Montrait Ratio (HTMT). Both of them are presented in Table 2 and Table 3 respectively.

**Table 3: Factor Loadings, Reliability and Validity**

Indicator	Factor Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Overallpay	0.954	0.933	0.953	0.871
Regularsalary	0.951			
Rightamount	0.894			
Increasedfare	0.647	0.503	0.78	0.647
Fairtransport	0.936			
Smoothroad	0.865	0.626	0.79	0.56
Congested	0.639			
Trafficvolume	0.723			
Tensed	0.647	0.784	0.847	0.484
Enthusiastic	0.577			
Happy	0.669			
Energized	0.678			
Confident	0.833			
Smoothtrip	0.742			

*Source: Authors’ Computation, 2020*

**Table 4: Fornel- Larker Criteria**

	Income	Road Quality	Transport fare	Well-Being
Income	0.933			
Road Quality	0.059	0.748		
Transport fare	0.308	0.43	0.804	
Well-Being	0.055	0.648	0.44	0.696

*Source: Authors’ Computation, 2020*

**Table 5: HTM Criteria**

	Income	Road Quality	Transport fare	Well-Being
Income				
Road Quality	0.21			
Transport fare	0.344	0.717		
Well-Being	0.117	0.836	0.677	

*Source: Authors’ Computation, 2020*

**Bootstrapping Analysis**

The bootstrapping analysis was carried out to determine the direct contribution of the determinants of public transport commuters’ well-being in Ilorin Metropolis of kwara state, Nigeria. The bootstrapping was conducted by using 5,000 subsamples for 117 cases. The bootstrapping result is presented in figure 3, and it indicates that the magnitude and significance of the structural paths are consistent.



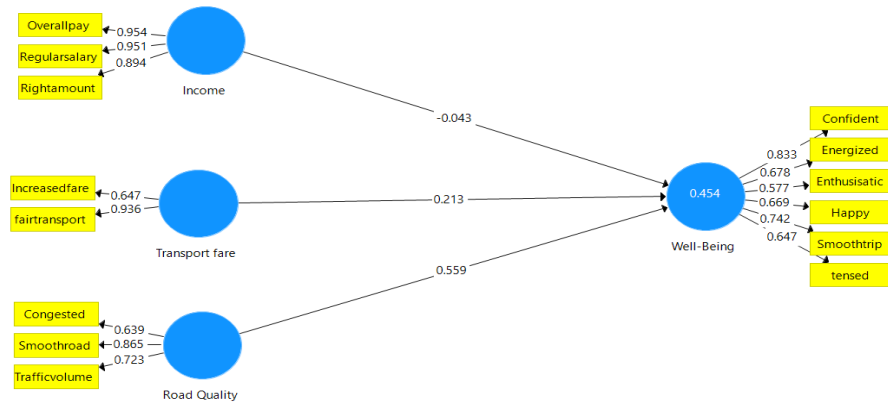


Figure 3: Bootstrapping Analysis  
 Source: Authors' Computation, 2020

Path Coefficient

Table 6 presents the path coefficient of the model which indicates the Beta Value, Standard Error, T-Statistic, P-Values, R Square and Q Square.

Table 6: Path Coefficient

	Beta Value	Standard Errors	T Statistics	P Values
Income -> Well-Being	-0.043	0.075	0.573	0.567
Road Quality -> Well-Being	0.559	0.062	9.046	0.000**
Transport Fare -> Well-Being	0.213	0.089	2.398	0.017**
	R <sup>2</sup>	Q <sup>2</sup>		
	0.483	0.217		

Note: P value \*\* < 0.05

Source: Authors' Computation, 2020

The structural model is presented in Table 6, The result indicates that income exhibits an insignificant negative effect on well-being using both p-value (0.567) and t-Statistic (0.573) while road quality constructs(P= 0.000, t = 9.046) shows a significant positive impact on transport commuters well-being during the covid-19 pandemic. In addition the model also reveals that transport fare (P=0.017 & t = 2.398) exerts significant impact on well-being of transport commuters during the COVID -19 pandemic.This corroborates the study of Morris (2015), which found positive relationship between travel time and well-being. The goodness of fit of the model is determined by R<sup>2</sup>, Q<sup>2</sup> and SMR. The R<sup>2</sup> result is 0.483 which is above 0.1 thus, simply means that, the predictive capability of the model is established. The Q<sup>2</sup> (0.217) also corroborates the predictive relevance of the endogenous variable because it is greater than zero.

### 5. Conclusion and Recommendation

The study investigated the effect of COVID-19 on public transport commuters' well-being in Ilorin metropolis of Kwara state, Nigeria. Based on the previous studies, this study adapted constructs for public transport commuters' wellbeing determinants. The data was analysed using structural equation model. The results revealed that the quality of road and transport fare exert significant effect on wellbeing. The study concluded that the major determinants of wellbeing of public transport commuters' during COVID-19 Pandemic in Ilorin metropolis, Nigeria are quality of road and transport fare. Therefore, the study recommends that there is need for improvement in the quality of road in the country which is the major means of transportation by public transport commuters'. Also to put a check on transport fare, provision of affordable alternative means of transportation such as railway should be made accessible for public transport commuters. This will go along way to reduce excessive increase in transport fare through competition.

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