Effect of coronavirus disease (covid-19) on the academic performance of students in federal polytechnic, Nasarawa, Nasarawa state – Nigeria

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Abstract
Educational sector in the world was affected by coronavirus most especially academic activities besides, students are expected to receive quality services at the time that the service is seriously needed but this is often not achieved in practice due to Covid-19 pandemic. The study objective was to examine the effect of Covid-19 pandemic on students academic performance in Federal Polytechnic Nasarawa. Descriptive statistics and regression analysis was used to test the hypotheses. Population of 400 students with a sample of 200 students were drawn and findings revealed that lockdown, social distancing, use of facemask and the perception about Covid-19 pandemic have significantly affected the performance of students. The study recommended that Federal Polytechnic Nasarawa obliged to modify their strategy on the awareness campaign to educate the students on coronavirus disease 2019.

Keywords: Academic activities, COVID 19, lock-down, performance, social distancing.

1.0 Introduction

The current global health challenges have resulted to global academic challenges and posed a serious fear to academic activities in several institutions as a result of partial or total lockdown that led to closure of institutions of learning. The virus does not discriminate at all as academic activities in Universities, Polytechnics, Colleges of education, Secondary schools and Primary schools was brought to a halt due to emergence of coronavirus pandemic. Educational institutions are proud of their students because they are the greatest assets that create value, innovates the existing structures and turn the activities of the institution to be known by an outsider but the emergence of Covid-19 in the country in particular the Nasarawa state and western senatorial zone where the institution is located has critically calls for a workable and reliable strategy to sustain and improve academic activities in the institution.

Academic performance of students in every academic institution especially Federal Polytechnic Nasarawa (FPN) has different factors to figure out that can motivate students to enhance their performance. Consider for example, in the era of pandemic a good and hygiene working environment add value to the institution in terms of achievement of students academically. The service quality of institutions change with time and every

institution has a rare quality to play to achieve (Aliyu, Iliya and Sampson, 2020a). Student's performance has always been a concern of every academic institution for their survival and sustainability of academic activities in the institution. Performance in an academic institution is dynamic ranges from quality of teaching and environmental factors influencing the students and its effects on future results especially during the Covid-19 pandemic. Performance of organization depends on the knowledge and ability of its employees toward understanding the dynamism in the market (Ogbu & Osanaiye, 2017).

The perception of students with regards to Covid-19 and different government policies has become a thing of concern in an educational sector. The closure of the institutions, social distancing issues and use of face mask has actually affected the educational sector either positively or negatively. Though, some of these policies made sense to the students while others were treated with discord. The use of Information and Communication Technology (ICT) was successful because it takes a new swing into visual learning using electronic device and internet due to emergence of Covid-19 pandemic (Ahmed, Ahmed and Gambo, 2020a).

The outcome of coronavirus in 2020 had change the educational sector in the world today, most especially academic activities (Ahmed et al., 2020a). Educational institutions are essential parts of our lives that provide academic and non-academic services to individual or group of persons suffering from various ailments. Students studying in this institution are expected to receive quality services at the time that the service is seriously needed but this is often not achieved in practice due to Covid-19 pandemic and accessing the services is still

entangled with lockdown constraints, social distancing constraints, use of face mask constraints and perception about Covid-19. The truth of this assertion cannot be denied in this era of technology which impedes prompt performance of students in the institution and create gap for the present study (Ahmed, Mohammed and Mohammad, 2020).

This study was guided by following objectives:

(i). Investigate the effect of lockdown on academic performance of student in FPN.

(ii). Examine the effect of social distancing on student attitude to class attendance in FPN.

(iii). Determine the effect of use of face mask on student performance in FPN.

(iv). Examine the effect of perception about Covid-19 pandemic on student performance in FPN.

The following questions are formulated to guide the study:

(i). What is the outcome of lockdown on academic performance of students in FPN?

(ii). What is the effect of social distancing on students attitude to class attendance in FPN?

(iii). What is the effect of use of face mask on health condition of students in FPN?

(iv). What is the effect of perception about Covid-19 on student performance in FPN?

The hypotheses formulated are:

H_{01}: Lockdown has no significant effect on performance of students in FPN.

H_{02}: Social Distancing has no significant effect on students attitude to class attendance in FPN.

H_{03}: Use of face mask has no significant effect on students performance in FPN.

H_{04}: Perception about Covid-19 has no significant effect on students academic performance in FPN.

2. Literature Review

The emergence of coronavirus pandemic in Nigeria has posed a serious threat to educational sector and psychological disorder among the stakeholders as several activities was brought to a halt (Ahmed et al., 2020a). The virus does not discriminate at all, it infects all and sundry. The bid to attain higher productivity in educational sector has remained a wishful thinking as coronavirus affected the academic activities to a very large extent as a result of fear of the virus. The usage of information and communication technology in educational sectors has improved significantly and academic performance of institutions as Covid-19 destabilized the general activities (Ahmed, Ahmed and Gambo, 2020b). Coronavirus is a pandemic disease destabilized numerous activities in the world (Poudel, Meng, Wu, Zhou, 2020). Coronavirus disease is becoming a universal problems causing apprehension to the universe. (Evans, 2020). World Health Organization (WHO) (2020) asserted that children were less infected to coronavirus disease than adults but the virus affected numerous people to untold hardship.

Coronavirus is a virus whose genome structure is among all ribonucleic acid (RNA) viruses (Sahin, Erdogan, Mutlu, & Senel, 2020). Covid-19 is a virus that does not have regard for gender, status, race, belief or culture (Ahmed et al., 2020b). Ahmed and Abdulkarim (2020) asserted that Covid-19 encouraged a paradigm shift from traditional forms of performing tasks to ICT based in order to improve performance in an organization. Ahmed, (2020) postulated that coronavirus infections cause severe health challenges amongst children and ageing population, as people with chronic debilitating diseases. Recently, WHO was reported to be information on coronavirus disease and compiling it in a database to find solution to the virus (Nadeem, 2020).
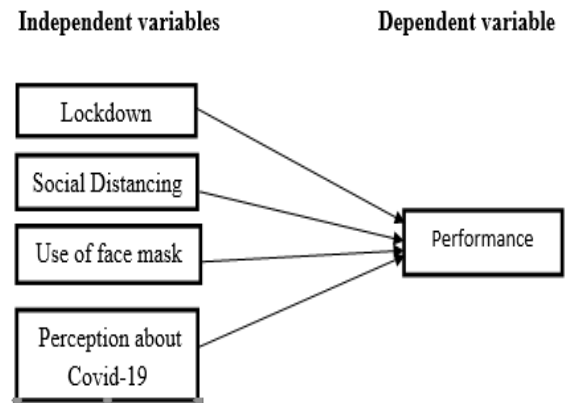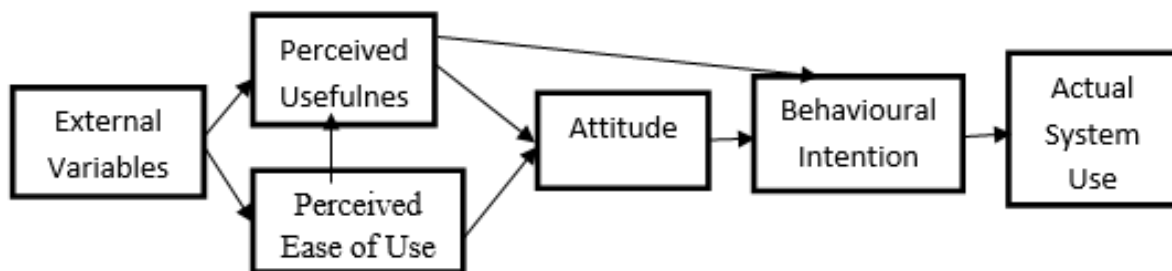

Figure 1: Conceptual framework

The lockdown measures instituted by government has either positively or negatively affects the performance of students in an academic institution. It restricts the movement of students from one classroom to another which negatively affects exchange of ideas towards improving performance. Also, lockdown has positively reduced stress and make them to be creative and innovative. The performance of students in FPN was affected by social distancing as the virus posed a great threat to all and sundry in the institution and the spread of the virus become easily within the shortest possible time. Students are encouraged to use face mask to protect against and limit the spread of Covid-19 in order to sustain and improve learning process in the institution. Meanwhile, perception about Covid-19 posed a great threat to performance and give different descriptions about the virus.

The factors or variables that affect the performances of students and educational sector is one that has continuously generated discussions, contributions and debates. It is generally known that the educational sector exists and operates in two major types of environments namely, external and the

internal and any of this may play significant roles in the survival, growth and development of the student. The debate on whether one of these environments is not as impactful as the other is still on and had led to the development of different views and theories. Aliyu, Akinyelore and Ahmed (2020b) asserted that academic performance of educational institution has peculiar variables that figure out performance and if the variables are carefully solve it can ameliorate quality of services. Besides, a good and hygiene working environment can improve performance. Ogbu & Osanaiye (2017) opined that knowledge and ability to understand continue to enhance performance in the organization.

Covid-19 manifested to be a health problem but gradually integrated to national and international problems that affected numerous organizations and educational sector was affected. Technology Acceptance Model (TAM), Expectancy Theory, Scientific Management Theory and Theory of Human Service Delivery were used.

The Technology Acceptance Model (TAM) laid the foundation on technological innovation on how individual come to accept the innovations and use it to achieve their goals. Besides, using a particular technology enhance performance but depends on a number of factors influencing their decision. Davis (1989) opined that degree to which using a particular system would enhance performance depends on Perceived Usefulness (PU) while, Perceived Ease Of Use (PEOU) is the degree to which using a particular system would be free from effort. According to TAM, whenever a student perceives an innovation in the technology the student believed in a positive direction that the technology can perform. Besides, the PU has a constant effect on attitude while PEOU affects attitude. The relevance of this theory is the attitudes and intentions in the minds of decision makers with respect to Covid-19 pandemic which has changed educational sector significantly e.g. using zoom, visual, social media (WhatsApp, Facebook, etc.). The TAM is depicted below:

Source: www.ischool.utexas.edu

Expectancy theory was propounded by Victor Vroom in 1964. The theory stated that one's effort will result in attainment of desired performance. Indeed, an individual will behave in a certain way because they are motivated. The implication of this theory is the fact that employees embraces creativity, innovation and utilize any opportunity to plan strategically towards

goal attainment. Besides, an employee aims at improving effective and efficient performance through the available opportunities. The relevance of this theory is the expectation in the minds of every stakeholder in the educational sector with respect to Covid-19 pandemic as every stakeholder is expected to use facemask, observe social distancing rule and regular

washing of hands which changed the expectation of every stakeholder in the educational sector significantly.

Scientific management theory was propounded by an American inventor and engineer called Frederick Winslow Taylor in 1909. It focused on improving efficiency and elimination of waste in order to ensure effective and efficient performance. It makes managers to be creative and innovative. The theory is relevant because it aimed at improving performance through the use of technological innovations.

According to Casey (2009), the theory of human service delivery entails an understanding of how people work within systems to deliver services. People are a resource unlike any other in that their value and availability can be difficult to quantify. Services are judged partly by subjective criteria, so understanding the quality that is provided by any service system can be tricky. Services cannot be touch or handle but exist as an events and delivering it to a person involves satisfying the needs and servers must be capable of interacting in a positive and effective manner since services are fundamentally intangible also, the theory attempt to understand how to build the best system for the best services. The quality of one service to another differ immensely and organizations can improve the quality and consistent of their services through their great effort and constant attempt must be made to gain customer feedback and it is necessary to stress the importance of an internal ideology for an organization so that people delivering the service can be motivated because internal ideology tends to work best by being ambitious. The relevance of this theory is on the service delivery as Covid-19 pandemic has changed the way of delivering the needed services with the introduction of zoom and use of Information and Communication Technology (ICT) due to lockdown constraints.

Empirical studies on Covid-19 pandemic are very few within the context of educational sector with particular reference to student performance to enrich the existing literature however, Poudel et al. (2020) investigated the early outbreak of novel coronavirus with the aim to determine the causes of the virus. The study discussed 70 research articles published and revealed that the virus was originated in Wuhan. The shortcoming with this study was the application of policies to curtail the spread of the virus was not justified.

Similarly, Meo et al. (2020) carried out a research on novel coronavirus 2019 with the aimed to investigate the effect of novel coronavirus in Wuhan. The study discovered that 34,799 people were infected and resulted in 724 casualties from December 2019 to February 2020. The shortcoming with this study was the policies to curtail the spread of the virus in one country cannot be generalized and the study did not take cognizance of environmental factor in other areas therefore, it would not be sufficient and justifiable to generalize these findings.

Also, Sahin et al. (2020) carried out an empirical study on 2019 novel coronavirus outbreak with the aim to investigate preliminary opinion about the disease and its prevention in the early stage. The study investigated the patients with viral pneumonia and evidence was found that a rapid increase in Covid-19 cases occur suddenly. The shortcoming with this study was the number of patients investigated was not clearly specified.

In Nigeria, Ahmed et al. (2020b) investigated the effect of training on performance of employee of health sectors in Nasarawa metropolis with the objective to assess the medical personnel during Covid-

19 pandemic. Survey method was used. The findings revealed that training has affected the performance of medical personnel. The shortcoming with this study was the location and the policies in the health sector of Nasarawa metropolis was not justified.

Aliyu, Aliyu & Abbah (2020) investigated the effect of coronavirus disease 2019 on the performance of employees in National Hospital Abuja with the aimed to examine COVID-19 and performance of employees of National Hospital, Abuja. Survey method was used and the findings showed that COVID-19 has destabilized the activities of employees in national hospital, Abuja. The study concluded that COVID-19 pandemic affects the performance of employees in national hospital, Abuja. The study recommends that strategy on the awareness campaign to educate the public on coronavirus disease 2019 should be modify by government, seminars and workshops should be organized for employees on survival strategy during and after Covid-19 pandemic.

Indeed, the above studies have empirically made significant contributions to the literature on Covid-19 pandemic carried out in different places. The findings of these studies showed mixed or inconclusive results due to individual perception about the health crisis that change to be educational crisis. Indeed, the respondents that were personally interviewed by the researchers revealed that they diversify the methods used for learning due to Covid-19 pandemic in their various communities.

3. Methodology

Survey method was adopted to investigate the effect of Covid-19 pandemic in terms of service quality and the likely panacea from academic performance of students. The adopted designs helped to explain the relationship existing among the adopted indices of the study variables and this was aided by the statistical tools used for analysis of the data collated. Population of 400 students was selected at random with a sample of 200 students. Regression analysis was used to measure the relationship between academic performance of student in FPN and its effect on lockdown, social distancing, facemask and perception about Covid-19 pandemic. A pilot studies was carried out based on the administration of questionnaires to a test group of 40 respondents randomly selected and the reliability and validity of the study instrument were all above 0.6.

The Yamane's (1967) simplified formulae was used to obtain the sample as:

$$n = N/1 + Ne^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: **n** = computed sample,

N = population,

e = sampling error while, 0.05 level of significance is the decision of researchers.

Thus, $n = \dfrac{400}{1 + 400(0.05)^2}$ $n = \dfrac{400}{1 + 400(0.0025)}$

$n = \dfrac{400}{1 + 1}$ $n = \dfrac{400}{2}$ n = 200 respondents

The regression model is:

$$PER = \beta_0 + \beta_1 LD + \beta_2 SD + \beta_3 FM + \beta_4 PCP + \mu_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Whereas:

PER = Performance, LD = Lockdown, SD = Social Distancing, FM = Face Mask, PCP = Perception about Covid-19 Pandemic, b_0 = Value of constant, β = Slope, μ = error term

4

. Results and Discussion

  Table 1

  Return Rate of Respondents

Responses	*Questionnaire Administered*	*Questionnaire Not Returned*	*Questionnaire Returned*	*Percentage of Total Questionnaire Returned*
SBS	50	5	45	25.3
SIT	50	6	44	24.7
SES	50	7	43	24.2
STVE	50	4	46	25.8
Total	200	22	178	100

Source: Field Survey, 2021

Table 1 shows response from the questionnaires administered to students in School of Business Studies (SBS), School of Information Technology (SIT), School of Environmental Technology (SES) and School of Technical and Vocational Education (STVE) respectively. It shows that each of the departments was given 50 questionnaires respectively. Furthermore, 25.3% of the questionnaires collected are from SBS, 24.7% from SIT, while 24.2% of the respondents were from SES, 25.8% of the respondents were from STVE. Indeed, a total of 200 questionnaires was administered and 178(89%) was retrieved.

Table 2

Model Summary

Indicator	Coefficient
R	0.896

R^2	
0.871	
Adjusted R^2	
0.820	
Std. Error of the Estimate	
0.312	

Table 2, shows the goodness of fit between performance and lockdown, social distancing, facemask and perception about Covid-19 pandemic are sufficient. Also, R= 0.896 portrays simple correlation while R^2 = 0.871 indicates the four variables studied while, factors not studied is 12.9%. Besides, 87.1% variation in lockdown, social distancing, facemask and perception about Covid-19 pandemic concert the academic performance. Also, adjusted R^2 = 0.820 indicates coefficient of determination. The standard error of estimate = 0.312 is the result factors outside this study.

Table 3

Analysis of ANOVA Variance

Indicator	Sum of Squares	Df	Mean Square	F	Sig.
Regression	433.847	4	433.847	2627.791	0.000
Residual	29.058	173	0.165		
Total	462.905	177			

The results of ANOVA in Table 3, shows the data is optimal and the model is acceptable. Therefore, lockdown, social distancing, facemask and perception about Covid-19 pandemic influenced academic performance of students.

Table 4

Regression Coefficient Results

Variable	*Beta*	*Std. Error*	*T*	*Sig.*

Constant	0.781	0.081	2.941	0.756
LD	0.834	0.108	2.719	0.583
SD	0.683	0.071	4.241	0.532
FM	0.743	0.103	3.417	0.678
PCP	0.869	0.069	5.289	0

Table 4, indicates the relationship between academic performance of student in relation to lockdown, social distancing, facemask and perception about Covid-19 pandemic as shown in: PER = 0.781 + 0.834LD + 0.683SD + 0.743FM + 0.869PCP. Also, a strong positive relationship exists in the study variables as shown by a positive constant of 0.781.

5. Conclusion and Recommendations

Lockdown, social distancing, facemask and perception about Covid-19 pandemic are strongly related to performance of students in the selected departments with statistical significance. The findings showed that lockdown, social distancing, facemask and perception about Covid-19 pandemic destabilize academic performance of students. It was concluded that lockdown, social distancing, use of facemask and perception about Covid-19 pandemic positively affects the performance of students in the selected departments in Federal Polytechnic, Nasarawa

Recommendations were made based on the findings and conclusion:

(i)Strategy on the awareness campaign to educate the students on coronavirus disease 2019 should be modified by the institution.

(ii)Seminars and workshops should be organized for students on survival strategy during and after Covid-19 pandemic.

(iii) The selected departments should request the services of qualified and professional medical and non-medical personnel to look in to the problems affecting them.

(iv) Embrace new technology that comes with innovations especially using zoom and visual teaching.

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