

## **Impacts of COVID 19 on supply chain operations in Nigeria.**

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**Abstract:** *Recent COVID 19 had plunged the world into broken supply chain which Nigeria is not an exemption. Many manufacturers and service providers in the country are already experiencing severe shortage of Essential and non-essential raw materials including medical and pharmaceuticals products, in addition to intermediate inputs. This has implications for capacity utilisation, employment generation and retention and adequacy of products' supply to the domestic market, it appears that nobody seems to know where to get these supplies from, nor do they understand what the real demand and supply actually is.*

*Most countries had shot down their factory, the level productivity and efficient capacities had dropped, most nations stock exchange market crashed, most had closed their borders against Imports and Exports, Financial institutions weakening owing to excessive withdrawal of funds due to speculation on long period of lock down, Intra and inter regional trade affected, mobility of labour and other factors of production static (immobilised), seaports and Airports shut down, and some offering skeletal services, and peasants are no longer working at their farms and workshops. Oil prices dropping drastically. All the above is in addition to existing infrastructural and budgetary deficit in Nigeria like declining foreign reserve, falling global oil price, Excess Crude Account balance, dependence on crude oil proceeds, heavy debt portfolio, debt servicing, slow pace of foreign direct investment, Fiscal indiscipline and heavy monetary burden.*

*This supply chain disruption is estimated to cost shipping industry \$350 million weekly and over \$150 million for passenger and cargo air freight and other ancillary cost might be difficult to estimate in addition to loss of Jobs across all sector if the disruption continues unabated.*

*This disruption is mainly due to COVID 19 pandemic, emanating from China being the second largest economy in the world and the major supplier of inputs for manufacturing companies around the world and most OEMs in China have stopped production.*

*Also, the researcher interviewed some industry partners, stakeholders and supply chain practitioners in Nigeria, regarding the Impact of COVID 19 on the supply chain operation and economy in General. At the end of the paper, the presenter proposed a number of recommendations among which is devoting resources for supply network mapping as a risk-mitigation strategy against future supply chain disruption like COVID 19.*

**Keywords:** *COVID 19 pandemic, Nigeria, supply chain disruption, broken supply chain, risk-mitigation, Economy lock-down, transport and Logistics, Lagos shut-down*

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### **I. INTRODUCTION**

As supply chain teams struggle to cope with the Covid-19 global pandemic challenges, most have been trying to keep up with the shock about global response measures and have been working diligently to secure raw materials and components and protect supply lines. However, vital information is often not available or accessible across their global teams. As a result, their response to the disruption has been reactive and uncoordinated, and the impact of the crisis is hitting companies' seriously.

Recently, IMF had predicted the mission's growth forecast for Nigeria in the 2020 and was later revised down to 2% from 2.5% to reflect the impact of lower international oil prices. This will further worsen due to the impact of COVID 19 and total economy shutdown.

More than \$100 million worth of goods were stuck in China during the China lockdown. Most of the OEMs have stopped production. Stocks are currently depleting and if the situation fails to abate by the mid-month of the second quarter, prices of consumer electronics goods like mobile phones, computers etc. might rise up as much as 75 per cent.

Commercial vessels have stopped calling, with port calls falling by an estimated 30 per cent in February and container throughput estimated to decline by between 20 and 30 per cent, according to Clarkson, (a shipping research company), seven of the world's 10 largest container ports are in China, including Hong Kong. Many of the world's largest container shipping lines, including the Mediterranean Shipping Company (MSC), AP Moller Maersk, CMA-CGM and Hong Kong's own OOCL, have all cancelled their cargo routes from Asia to Europe and North America in recent weeks. (F.Adekoya; A.Adepetun; B.Alade, 2020 as published in Guardian newspaper of 21<sup>st</sup> March 2020.).

## II. Supply chain challenges experienced during COVID 19 disruption

- There is lack of visibility, collaboration and coordination of real demand and supply
- Wrong supply chain success function shift, which focuses on just cost savings and not revenue-assurance or sustainability
- Some supply chain disruption not included in regular supplier performance metrics and such, unplanned for.
- Most supply chains are still based on reactive or transactional model, once there is an unexpected thwart or drop in demand; it takes time for it to flow through the multi-tiered supply chain. Therefore, it could several days or month to adjust supply chains
- Lack of demand for many of the “non-essential” producers and manufacturers focused on production of cars, fashion, or high-tech products etc.
- Supply chain practitioners were engrossed with unbroken global supply chain that promises “Comfort zone chain” with little or no alternative supply and demand during disruption.
- Narrow pre-determined definition of Act of God or force majeure without planning for natural disasters like COVID 19 pandemic. Therefore all, companies and their supply chains were not prepared for this policy coverage.

### 2.1 Positive impact during COVID 19

- There is no crisis in food supply or consumer products.
- Many companies around the world started to re-purpose or re-adjust their production, with many brewing companies and distilleries producing hand-sanitizers, fashion companies producing masks and automotive companies looking to produce ventilators.
- Possibility of fast reaction, flexibility, re-purposes production and offer help which is desperately needed.
- Availability of technology to support companies to re-adjust to get things done.
- There are collaboration capabilities which ensure the integrity of the processes and the quality of the product

### 2.2 Global impact of COVID 19 on supply chain

Global impact experienced suspended operations, flight delays and cancellations are contributing to air freight capacity constraints. The disrupted global supply network has reduced some ocean capacity for pharmaceuticals. Although Global supply chain professionals are tracking the rapidly changing status of origin and destination airport, sea port and land options in real time to propose the best delivery option. Re-rerouting of shipments, consolidating airfreight to ocean freight or changing transit countries to catch “cargo-only” aircraft are increasingly necessary. Cost impacts are highly likely.






**Table 1; The Global Fund has taken steps to assess and address COVID-19-related procurement and supply chain risks.**

Area	Global Fund Actions
<b>Conduct supply chain risk analysis</b>	<ul style="list-style-type: none"> <li>• Run risk analysis of upstream and downstream product supply chains.</li> <li>• Identify possible threats involved in the end-to-end supply chain.</li> </ul>
<b>Estimate the risk and impact</b>	<ul style="list-style-type: none"> <li>• Summarize high risk product or product categories, define current inventory buffer and locations.</li> <li>• Conduct scenario planning to understand implications in prolonged supply chain interruption.</li> <li>• Collect 6 to 12-month accurate demand to determine required supply, considering that the lead time range for core Global Fund health products is between 5 and 6 months.</li> </ul>
<b>Avoid the supply chain risk</b>	<ul style="list-style-type: none"> <li>• Explore options to ramp up alternative products, suppliers and additional supply options.</li> <li>• Rerouting/changing transportation mode and leveraging other existing logistic capacity to reduce replenishment lead-times.</li> <li>• Enhance demand verification process to correct inflated demand to mitigate the bullwhip effect.</li> </ul>
<b>Strengthen collaborative relationships</b>	<ul style="list-style-type: none"> <li>• Work in close collaboration with partners to identify and address critical supply challenges.</li> <li>• Leverage partnership to optimize supply, logistics solutions and accelerate regulatory approval pathway.</li> <li>• Jointly manage demand with common recipient countries.</li> </ul>
<b>Communicate timely</b>	<ul style="list-style-type: none"> <li>• Ensure timely and transparent communication to avoid unnecessary panic and develop contingency plan.</li> </ul>
<b>Control the risk</b>	<ul style="list-style-type: none"> <li>• Establish cross-function supply chain operational risk management committee when risk becomes high.</li> <li>• Optimize processes and tools to support better planning and reduce demand fluctuations.</li> <li>• Determine possible product and supplier shortlists in case alternate supply is required.</li> </ul>

(Adopted from the global fund website, 2020)

**Table 2; Retail supply chain changes**

**Retail-supply-chain changes** ● Nondiscretionary categories ● Discretionary categories

Suppliers	Merchandising	Distribution	Logistics	Fulfillment
 <ul style="list-style-type: none"> <li>● Establish daily meetings with strategic suppliers</li> <li>● Reduce product variety</li> <li>● Reduce on-time, in-full requirements, as well as payment terms for key suppliers</li> <li>● Mitigate risk for existing orders, in collaboration with suppliers</li> </ul>	 <ul style="list-style-type: none"> <li>● Revise buy plans and reallocate staff toward high-demand categories</li> <li>● Override algorithms to redirect inventory to high-density areas</li> <li>● Dial down near-term buy plans to preserve cash</li> <li>● Anticipate future increases in sales and adjust buy plans accordingly</li> </ul>	 <ul style="list-style-type: none"> <li>● Retrain employees and redeploy them to distribution centers in high-demand areas</li> <li>● Raise wages and make temporary hires</li> <li>● Maintain good workplace hygiene</li> <li>● Cross-train store and back-office personnel to assist with e-commerce</li> </ul>	 <ul style="list-style-type: none"> <li>● Allocate more transport capacity to high-demand items</li> <li>● Have suppliers deliver directly to stores</li> <li>● Stage products at strategic hub stores to feed smaller stores</li> <li>● Explore alternative and supplemental delivery options</li> <li>● Offer transportation capacity if private fleet is available to support movement of critical goods</li> </ul>	 <ul style="list-style-type: none"> <li>● Relax same-day/next-day delivery requirements</li> <li>● Optimize routing and accommodate more delivery slots</li> <li>● Enforce order maximums</li> <li>● Expand fulfillment and return options to give customers flexibility</li> </ul>

(Adopted from Mc Kinsey and Company from W.Georgia, 2020)

### 2.3 Impact of transport

One of the first pieces of theory that transportation students are taught is that transport is a derived demand, in that people only use transport as it provides access to some other activity. The best that transport planners and operators can do is to provide opportunities for movement; professionals can encourage use of those opportunities through factors like pricing, speed, frequency and service quality.

However, no one can force people to travel. The current crisis starkly demonstrates this principle and also underscores the importance of economic activity in terms of generating the derived demand for movement.

It's easy for planners and operators alike to forget this lesson in normal times when demand seems secure and growing.

The effect of Covid-19 represents an opportunity for professional to recalibrate our understanding of the drivers of demand for transport and to think more carefully about the effect of health, economic and climate shocks on our industry.

### 2.4 Some of the negative impacts of COVID 19 supply chain disruption (Air freight) in Nigeria are the following;

Few weeks ago, The International Air Transport Association (IATA) claimed that Nigeria's aviation industry would lose no fewer than 22,200 jobs and \$434m over the coronavirus pandemic. The Managing Director, Dana Air in Nigeria, (Mr. Jacky Hathiramani,) said the airline would be losing at least N20m in revenue on each of its nine planes on a daily basis as a result of the shutdown. Some of the recorded impacts are below;

- Massive downsizing in airline industry is inevitable as domestic carriers ground no fewer than 76 planes during the coronavirus pandemic that has crippled activities across the country with 6,000 airline workers have been rendered redundant, with a few airlines sending their workers on compulsory leave following the shutting down of their operations
- Air Peace, which owns the highest fleet of 27 aircraft and with over 2,000 workers, has frequent suspended flight due to the global pandemic which is a threat to the financial stand of the company and its staff.
- Arik Air has parked seven planes and has about 1,800 workers, according to findings.
- Aero has over 850 employees and has four planes in its fleet as well as a functional hangar where routine aircraft maintenance is carried out on a commercial basis for other airlines had suspended its flight operations for 2 weeks in response to economy lockdown according to A memo sent by the Commercial Manager of the airline, Mr. Rogers Cookey.(L.Mikairu.2020 published 24<sup>th</sup> of March 2020 by Vanguard newspaper)
- Dana Air has about 630 workers and will be grounding about nine planes throughout the period of the lockdown.

- Max Air, which has functional private charter and Hajj business outfits, possesses 14 aircraft in its fleet with over 600 employees
- Azman Air has parked five aircraft and the number of employees could not be ascertained as of the time of filing this report.
- Overland Airways has also parked seven planes and the number of employees could not also be ascertained as of the time of filing this report.
- Overland Airways was recorded to temporarily shelve its flight operations since 28th of March although April 2020 to understudy the operational situation.
- Ibom Air owned by the Akwa-Ibom State Government has over 200 employees and has parked three airplanes.
- While most of the airlines have yet to decide whether to pay their workers during the two to three weeks break, Azman Air issued a circular to all its workers to go on compulsory leave without pay.
- Before the closure of the airports to international flights, Air Peace on March 19 suspended its flight operations to Dakar, Senegal and Liberia as a result of the coronavirus crisis, and cut down its Freetown, Sierra Leone, Banjul, Gambia, and Accra, Ghana, operations
- The revenue from ticket sales that airlines would lose within the two to three weeks first phase suspension is estimated to be N4bn from each airline monthly if the lock down continues for more than one month. According to Managing Director, Ibom Air, Mr George Uriesi the carrier would be losing at least N12.5m in ticket sale revenue alone on a daily basis
- Also The General Manager, Operations, Max Air, Mr. Raymond Omodiagbe, was reported to have said the airline was losing about N96m on a daily basis as a result of grounding its operations. (O.Abioye ; M.Affe ; M.Ihua-Maduenyi M,2020)

**2.5 Some of the negative impacts of COVID 19 supply chain disruption (Sea freight) in Nigeria are the following;**

**Reasons for such huge delays at the seaport in Nigeria**

- Cargo dropped at trans-shipment port with the plan that same will be picked up by another transiting vessel were delayed.
- Non prioritization of in-coming imports: Importers pick up their cargo and want to return empties containers immediately.
- No-movement restriction or not exempting the human element involved shipping (haulage operators and the freight forwarders) across the state and beyond despite the fact that the port is opened for operation. Although recently, Nigerian Shippers Council (NSC) had taking a bold steps to provide free buses at strategic places to convey stakeholders to and from the ports but the buses are not enough.
- The freight forwarder claimed that the online payment platform for payment of Customs duties and shipping charges are hindered by chaotic network, difficulty in generate receipt of payment and unsecured platform.
- Designated Bank inside the port for payments of Customs duty, shipping and terminal charges are not open for operation
- Haulage operators who lift over 70 per cent of cargoes out of the ports have been harassed by government regulator under the auspices of 'no movement' restriction placed on Lagos State. It was also noted that trucks have not been able to move beyond the seaports and Apapa area due multiple checkpoints all over the roads in Lagos, and the fear of facing multiple extortions. However, it was recorded that the Nigerian Ports Authority (NPA) is making efforts to allow truckers fall under essential service providers so that they can have unhindered access into the ports
- Delay in processing of form M and PAAR by Nigerian Customs with the claim that they are prioritising essential cargoes in the operations.
- Delay in Nigerian port authority(NPA) directive to terminal operator regarding demurrage or free days as NPA enforcement had never been obeyed by terminal operators in the past.
- Fear of the unknown: according to Mark Klapow, a partner with law firm Crowell & Moring in Washington, The freight transportation industry has invoked temporary force majeure over the years, often during regional incidents of natural disaster or "acts of God." They are typically added to avoid liability for natural and unavoidable catastrophes. However, rarely have forwarders taken these measures for their services on a global scale. "COVID-19 likely will cause many contracting parties to consider declaring that a force majeure event has occurred when performance has become impossible or significantly more difficult." (C. Gillis ,2020 published by American Shipper)



## **2.6 Transport Institutional frame work**

It is quite sad that the presidential tax force (PTF) establishment and identification of policy based on institutional policy and informal statutory policy cannot be said to be consistently consistent.

As long as the Ports is opened for operation, it is paramount that the operators and stake holder like i.e. The Nigerian Maritime Administration and Safety Agency (NIMASA), Nigerian port Authority (NPA), The Council for the Regulation of Freight Forwarding in Nigeria (CRFFN), Nigerian Shippers' Council (NSC), Nigeria Customs Service (NCS), Nigerian Railway Corporation (NRC) and banks, off-loader, truckers and other associated agencies should also be exempted. This lockdown period would have been an ample opportunity to decongest the Ports due to low traffic on port access road.

Recently, MD NPA at TVC News was complaining that Lagos Port Complex has cargoes that cannot be evacuated because the freight forwarders and off-loaders were not exempted in the presidential order.

In developed economies, the supply chain (transportation and logistics) were exempted in the lockdown because those in charge knew that, doing otherwise would bring their countries to their knees, hence, affecting all segments of society - including supply of basic necessities of life.

According to T. Adenubi, 2020 On Apr 3, 2020 in Nigerian Tribune "All terminals in Lagos are between 90 and 95 per cent full. Most of the cargo is non-essential. If cargo doesn't flow, within days, there will be no space in the terminals to discharge other cargo. And some of the cargo waiting to be discharged includes food and medicine. This is due to the restriction of movement within Lagos State, and the ports remaining operational, vessels have continued to discharge cargoes at the ports, and the number of un-cleared cargoes has risen sharply within the first day of Lagos lockdown, forcing operators to raise the alarm that the ports are already 95 per cent full".

## **2.7 CSR of public and private sector in support of COVID 19 in Nigeria**

Some Agencies of Government created by the Act of The National Assembly of Nigeria (NASS) has provision of Corporate Social Responsibility (CSR). All income generating Agencies are allowed or budget some percentage of their income for the CSR.

Agencies like Central Bank of Nigeria (CBN), Nigeria National Petroleum Corporation (NNPC), Nigerian Communications Commission (NCC), Nigerian Ports Authority (NPA), Federal Inland Revenue Service (FIRS) etc. have been leveraging such provision in the past to support government disaster period like we currently have.

### **NIMASA support**

According to Isichei Osamgbi (Head, Corporate Communications) of NIMASA;

- Volunteers, 6 Vessels, 4 Ambulances, Medical Consumables and Personnels
- NIMASA has donated 20 ventilators to fight the COVID 19 pandemic in Nigeria.
- N50 million to fight the virus scourge in the country; with N30 million going to the Federal Government Committee on COVID-19 Intervention and N20 million to aid the Lagos State Government's effort to control the spread of the virus.
- NIMASA has volunteered its 6 fast intervention vessels to be committed to facilitate transport logistics support in the maritime sector, just as volunteers from the Agency will be deployed to join first responders from the Nigerian Centre for Disease Control (NCDC), Lagos and other states in managing the spread of the pandemic.
- The Ventilators are equipments that assist patients in breathing, a process sometimes referred to as artificial respiration, which are basically needed at this time to help fight the disease.
- The Agency has also volunteered four fully equipped brand new Ambulances, four Hilux trucks and four 36 seater coaster buses to support and facilitate land based logistics in the Federal capital Territory, Lagos, Delta, Rivers, Cross River and Kaduna States.
- Other medical equipment the Agency donated to enhance the fight against the COVID 19 in Nigeria include, 60 Beds, 20 Patient ICU Monitors, 20 Oxygen Concentrator, 10 Infusion pump, 10 Syringe pump, 20 Oxygen giving set, 10 Suction machine and 100 set of personal Protective Equipment PPE

### **NSC support**

Provision of Bus shuttle to convey port's stakeholder for hitch-free operation to decongest the port.

This was done in liaison with the Lagos State Task Force to give PASS for relevant stakeholders.

### **Other stakeholders**

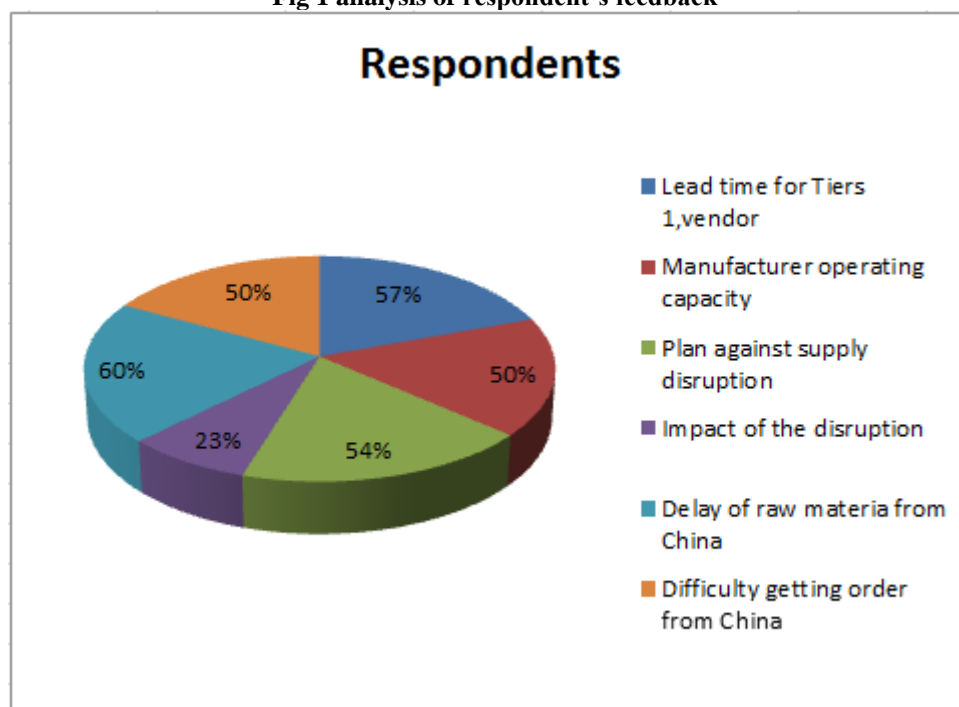
Strategic meeting were held which involves officials of the Department of Petroleum Resources, DPR; Independent Petroleum Marketers Association of Nigeria, IPMAN; Nigerian National Petroleum Corporation, NNPC, and the National Association of Road Transport Owners, NARTO, and issues on the distribution of products with a view to protecting citizens were discussed like provision of adequate mega filling stations to

meet oil demands of growing population and help in boosting distribution of products without threatening the investments of independent marketers

Other donors according to Federal Ministry of finance, as Published on 28<sup>th</sup> of March, 2020. Were Aliko Dangote, Femi Otedola, Abdul Samad Rabiu, Tony Elumelu, Jim Ovia, NNPC, UBA, GTB, Zenith, Access Bank etc.

### 3. 1 Research area

Fig 1 analysis of respondent’s feedback



(Source: Researchers field research)

Breaking down the results of its survey, ISM says these key trends emerged:

- 57% of firms noted longer lead times for Tier 1, China-sourced components, with average lead times more than doubling compared to the end of 2019.
- Manufacturers in China report operating at 50% capacity and with 56% of their normal staff numbers.
- Over 54% of respondents *do not* have a plan in place to address supply disruption from China.
- Of those, 23% of companies report current disruptions.
- Of the companies expecting supply chain impacts, the severity anticipated increases after the first quarter of 2020.
- Six in 10 (60%) respondents are experiencing delays in receiving orders from China.
- More than half (50%) are having difficulty getting supply chain information from China. (Bridget McCrea, 2020)

Table 3: Raw respondent feedback

Factors	Respondents
Lead time for Tiers 1, vendor	57%
Manufacturer operating capacity	50%
Plan against supply disruption	54%
Impact of the disruption	23%
Delay of raw materia from China	60%
Difficulty getting order from China	50%

(Source: Researchers field research)

**Table 4:Chi-Square test on SPSS 17**

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	24.000 <sup>a</sup>	20	.242
Likelihood Ratio	18.729	20	.540
N of Valid Cases	6		

a. 30 cells (100.0%) have expected count less than 5. The minimum expected count is .17.

(Source: Researchers field research)

We could conclude that the CHI square test carried out on data was not significant at 0.17 level (2-tailed  $p > 0.0005$ ) of significance. ( $X^2=24$ ,  $df=20$ ).  $P$ -value  $> 0.05$ ; indicates weak evidence against the null hypothesis (The  $P$ -value is not significant, indicating that there is no association between the variables) so we conclude that there is no significance difference between COVID 19 pandemic outbreak and negative impact on supply chain operations (for the first week of lock down), This might be as a result of the following reasons;

- I. Availability of underline economic challenges impacting on supply chain operations before COVID 19, might make it difficult to feel the heat of COVID 19 during first week of economy shut down. Some of the example of the existing underlining economic challenges are declining foreign reserve, falling global oil price, Excess Crude Account balance ,dependence on crude oil proceeds, heavy debt portfolio, debt servicing, slow pace of foreign direct investment, Fiscal indiscipline and heavy monetary burden.
- II. Larger percent of supply chain in Nigeria are food related which are regarded as essential commodity and are exempted from the economic shut down. Also the chunk of consumable food like rice, Beans and Garri are grown in Nigeria, hence the supply chain disruption may not significantly affect staple food.
- III. This may also indicate that majority of factories and Industries in Nigeria falls between essential or emergency shipment which are exempted in the total lock down
- IV. The survey was conducted during first week of lock down and COVID19 impact may not really be felt during this period, the impact will be more if the lock down continues unabated. As seen in the advanced economy of the world, that had already embarked on 3 weeks lock down are counting their losses.
- V. Due to unstable economic and political situation, most manufacturing Organisation in Nigeria are speculated to keep 2 months and above safety stock which coincidentally, takes care of broken chain (first week of economic shut down) along their supply chain.

**III. CONCLUSION:**

The safety stock of Raw material, WIP and finished product for most industries in Nigeria appears adequate to bridge the pandemic vacuum gap, for first one week of economic shut down and probably the second week. If the lock down goes beyond those tolerance level, Organisation will want to adjust which may come in terms of either Organisation folding off, retrenchment of staff or increase in unit cost of products.

**Table 5: Directional Measures on SPSS 17**  
**Directional Measures**

			Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Nominal by Nominal	Lambda	Symmetric	.889	.109	4.382	.000
		FACTORS Dependent	.800	.179	3.464	.001
		RESPONDENT Dependent	1.000	.000	3.464	.001
	Goodman and Kruskal tau	FACTORS Dependent	.800	.000		.458 <sup>c</sup>
		RESPONDENT Dependent	1.000	.000		.458 <sup>c</sup>
	Uncertainty Coefficient	Symmetric	.931	.043	11.700	.540 <sup>d</sup>
		FACTORS Dependent	.871	.074	11.700	.540 <sup>d</sup>
		RESPONDENT Dependent	1.000	.000	11.700	.540 <sup>d</sup>
	Ordinal by Ordinal	Somers' d	Symmetric	-.138	.346	-.397
FACTORS Dependent			-.143	.357	-.397	.691
RESPONDENT Dependent			-.133	.336	-.397	.691

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on chi-square approximation

d. Likelihood ratio chi-square probability.

(Source: Researchers field research)

**Table 6: Symmetric measures**  
**Symmetric Measures<sup>c</sup>**

		Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Nominal by Nominal	Phi	2.000			.242
	Cramer's V	1.000			.242
	Contingency Coefficient	.894			.242
Ordinal by Ordinal	Kendall's tau-b	-.138	.346	-.397	.691
	Kendall's tau-c	-.139	.350	-.397	.691
	Gamma	-.143	.357	-.397	.691
N of Valid Cases		6			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Correlation statistics are available for numeric data only.

(Source: Researchers field research)

#### IV. Conclusion

In conclusion, with the current global pandemic, it's going to be a tough year for businesses and some of the action points to engage in to review supply chain strategies.

**Below are some of the key highlights to consider:**

- Identify all key suppliers and their locations to make adequate contingency plans to ensure the continuation of supply
- Communicate with logistics providers about potential impacts and mitigating strategy
- Review all active contracts and understand potential liability and how best to manage the legal risk
- Devise response strategy to clients/customers
- Review and Update inventory policy and planning parameters



- Review the possibility of low demand on long term plans
- Enhance inbound materials visibility
- Evaluate alternative outbound logistics options and secure capacity
- Focus on production scheduling agility
- Conduct global scenario planning
- Understand the demand impact specific to your business
- Confirm short-term demand-supply synchronization strategy
- Prepare for potential channel shifts
- Evaluate alternative inbound logistics options
- Enhance allocated available to promise capability
- Open channels of communication with key customers
- Prepare for the rebound
- Conduct global scenario planning
- Illuminate the extended supply network
- Understand and activate alternate sources of supply
- Prepare for plant closure

## V. RECOMMENDATION

- Devoting resources for supply network mapping as a risk-mitigation strategy
- Shifting focus in supply chain success function for not just cost savings, but revenue-assurance
- Supply chain disruption should be part of supplier performance metrics
- Migration to a true change, to a more real-time, data-driven and predictive model.
- Re-launching Industry 4.0 (the 4<sup>th</sup> industrial revolution) and the digital transformation of industries by taking advantage of COVID-19 crisis to accelerate faster than expected.
- 24 hours virtual and online customs clearance in all Nigerian port
- Government support to domestic airlines to create an enabling environment to bounce back quickly
- Advocate for a harmonize national code for essential items for easy proactive customs clearance.
- Consideration of shipping company appeal to NIMASA, NPA, NSC on voyages less than 14 days in the marine notice review in order to avoid undue delay and port congestion (Kenneth Jukpor, 2020)
- The shipping companies and crew agencies must carry out a risk evaluation on crew changes in advance and confirm the seafarers' health condition in an agreed specific day before they go on board.
- Ensure comprehensive background on existing and new domestic staff hires
- Regular guidelines for vessels calling at the Nigerian Ports and for airport cargo with supply chain disruption in view, which is similar to the one done recently by NIMASA for COVID 19 pandemic. This should be in line with the International Maritime Organisation (IMO) and with best global practices.
- Leveraging advanced technologies such as the artificial intelligence, robotics, and 5G, DSNs are designed to anticipate and meet future challenges.
- Special insurance for Business interruption, this will benefit business owners whose businesses are interrupted as a result of any lock down due to a pandemic. This may be similar to COVID-19 expected payment worth the sum of \$141 million or half, to be made to Wimbledon (one of the world's major tennis championships) on insurance pandemic cover. This insurance policy was taken to guard against losses if Wimbledon should have to be canceled in the event of a worldwide pandemic (B. Adegbaaju, 2020)

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