



The Impact of the Covid-19 Pandemic on the Operation of Logistics Companies in Nigeria

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Abstract:

The effects of Covid-19 on the industrial sector are numerous and have caused widespread complications for businesses and economic activities since 2020. With logistics, supply chains and transportation, the study to examine what impact the Covid-19 pandemic has had on the operation of logistics companies in Nigeria. Employing qualitative data collection and analysis, two managers from five popular logistics companies were interviewed and their responses were thematically analyzed using Nvivo qualitative analytical software. Findings of the study revealed that: (1) these consequences take on a positive and negative light within the context of how LSP operations were affected, their responses to the rapidly changing business environment and their prioritisation of worker health and safety, (2) the pandemic had a significant impact on the operations of logistic service providers, leading to changes in business models, increased operational costs, and disruptions in supply chain management and (3) logistic service providers have implemented new technologies and processes to increase efficiency and ensure the continuation of their operations. Overall, the study of the impact of the Covid-19 pandemic on the operations of logistic service providers in Nigeria highlights the significant challenges faced by the industry and it also underscores the importance of innovation and adaptation in the face of adversity, and the resilience of the logistic service industry in Nigeria.

Keywords: Logistics, Covid-19, Supply chain, pandemic, operations.

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1 INTRODUCTION

Disasters are negatively themed events that disrupt economic and social activities in areas where they occur. The most notable disaster of the last five years; the Covid-19 pandemic was a strong example; bringing the world to a standstill and impacting national and regional economies in short-term and long-term ways.

The World Health Organization (WHO) reports that the Covid-19 pandemic has spread to more than 220 nations since it first appeared in December 2019. By the end of 2020, there had been more than 82 million confirmed cases of Covid-19 of which 1.8 million were fatal (World Health Organization, 2020; Nagy, Banyak and Illes, 2020). All the relevant nations have put measures in place to stop the virus's spread because the year 2020 was about mitigation for the entire planet (Ivanov, 2020). Most nations in the globe concur that the main objective of the mitigation approach (which entails travel bans, interim shutdowns or closures of companies and stores, and the forced isolation of populations) to the pandemic is to try to stop the virus from spreading and causing an increasing number of patients, safeguarding society from harmful physiological impacts in the process (Elnahass, Trinh and Li, 2021). These limits put in place because of the outbreak have also had significant negative economic feedback on nations all over the world. One such feedback, a drop in global commerce is expected to take place, dropping from 32% to 13%, according to the World Trade Organization (WTO) (Jackson *et al.*, 2020).

Every sector of the economy, particularly the logistics and transportation sectors, has been significantly impacted by these constraints (Loske, 2020). Due to the pandemic, these sectors have been faced with stringent operational conditions; reduction in freight and passenger transportation, alteration to customer demand for goods and services as well as re-evaluation of customer-supplier relationships during the pandemic lockdown (Kim, 2021). Because transportation and logistics are vital component of most sectors, the impact of Covid-19 was hardest felt within these sectors since changes in industrial, and financial operations meant there would be less reliance on logistic supply chains (Atayah *et al.*, 2021; Loske, 2020).

For developing countries like Nigeria, the logistic sector represents one of the cornerstones of almost all economic activities. Logistics are a vital part of service and

goods delivery via the transportation of goods/services from its production point to its point of use. Because transportation and logistics are vital component of most sectors, it stands to reason that the pandemic will invariably impact logistics unfavourably. This study aims to examine and determine the impact of Covid-19 on company logistical processes.

1.1 Problem statement

The impact of Covid-19 on the industrial sector is numerous with far reaching complications for business operations and economic activities from 2020 onwards. Logistics, supply chains and transportation have been observed to be some of the hardest hit of the sectors on a macro- and microeconomic level. However, there is a knowledge gap as regards the precise impacts of the pandemic on the logistical process that are affected in daily business operations as well as its implications for businesses. This study aims to provide information in that regards so that policy formulators and stakeholders in academia and the professional sphere can come up with veritable solutions to prevent future occurrences.

1.2 Aim of the study

The aim of this study is to examine what impact the Covid-19 pandemic has had on the operation of logistics companies. The research question of the study is:

- What positive and negative consequences has Covid-19 had on the operation of logistics companies?

1.3 Demarcation

This study focuses on logistic companies operating in Nigerian namely: GIG logistics, DHL, FedEx, UPS and NIPOST and how the Covid-19 pandemic impacted their operations during and post lockdown.

1.4 Presentation of the companies

The following companies will be used as study points in this research.

DHL Nigeria

DHL Nigeria is a subsidiary of DHL International whose mission is to streamline, reshape, and revolutionise logistics in Nigeria (DHL Nigeria, 2020a). It makes investments in the ideas of manufacturers and innovators who develop fresh approaches to simplify logistics (DHL Nigeria, 2020b). DHL Nigeria handles local and international logistics and supply chain management, acting as a logistics middleman from production suppliers to the clients. The company is headquartered in Lagos, Nigeria with several sub-outlets across Nigeria (DHL Nigeria, 2020a; b).

FedEx

FedEx (also known as the Federal Express) is a US-domiciled logistics and courier company that has heavy patronage in Nigeria (FedEx Nigeria, 2020). It is an international courier service provider best recognised for its effective shipping solutions and for introducing a system that allows customers to trace their shipments as they travel. Prior to a shipment reaching its recipient, FedEx makes sure to give customers access to real-time updates on the precise position of their items in transit. The company is primarily based in Lagos and South-Western Nigeria (Ikenwa, 2019).

GIGL

GIGL is a courier and logistics service company founded by Techpreneur Chidi Ajaere in 2012 and headquartered in Lagos (GiG Logistics, 2022). As a subsidiary of the GIG Group, the company efficiently carries out deliveries, on-board transport services, importation, packing, mailroom operations, and relocation services are just a few of the services and goods offered by GIGL (GiG Logistics, 2022). Being a locally based business, GIGL excels as a logistics company with a thorough understanding of the region in terms of business and cultural perspectives. GIGL employs innovative technological approaches to good transport, freight and supply chain management (Hotels.ng, 2020).

NIPOST

The Nigerian Postal Service, often known as NIPOST, is an extra-ministerial business outfit that is owned and run by the government and oversees the management of Nigeria's postal system (NIPOST, 2020). Headquartered in the Nigerian capital, Abuja; it manages upwards of 3,000 post offices and employs more than 12,000 personnel. Like most competing logistics companies, NIPOST offers e-commerce deliveries, courier, freight and mail services on a local and international scale.

UNITED POSTAL SERVICE (UPS)

An American international transportation, distribution, and supply chain management corporation, United Parcel Service (UPS, stylised as ups), was established in 1907. The company has a storied history in courier messaging of telegraphs and letters, before evolving into the UPS; a Fortune 500 firm that has one of the largest courier networks in the world (United Parcel Service, 2020). In recent years, UPS is more globally recognized for its ground shipping services and the UPS Store, a retail network that helps with UPS packages and sells equipment to small businesses. Additionally, UPS provides two-day or overnight air shipping options, as well as delivery to post office boxes through UPS SurePost, a company that transfers items to the US Postal Service for final mile delivery (United Parcel Service, 2020).

2 THEORY

This chapter addresses the concepts and theoretical considerations surrounding logistic companies and how the Covid-19 pandemic affected their operational productivity and by extension their profitability. The chapter is divided into the conceptual section which will address the concept of logistics (as an industry on a global and national scale), logistic companies (also known as logistics service providers), Covid-19 and its effects on the performance and profitability of logistic companies.

2.1 Previous studies

Global social and economic systems have been devastated by the Covid -19 pandemic. The effects of this pandemic, or "great shock," have affected global supply networks and manufacturing systems (Chen, 2020). There are several uncertainties and hazards on a

worldwide scale due to globalisation, which intensifies the process of supply chain interdependence and causes problems for both persons and the global supply chain.

The lockdown measures enacted by governments globally succeeded in halting the spread of the viruses but at great economic cost in global and national levels. According to projections, the global economy lost between 0.1% and 0.4% of its GDP in 2020, sending it into a recession reminiscent of the economic depression of 2017 (Abdul & Mia, 2020). The impacts of lockdown, which also hurt the banking system, included significant economic issues such the suspension of economic business, tourism, job losses, and supply-chain damage (Leduc & Liu, 2020). In many affected economies, for instance, the limits put in place in the wake of the pandemic increased the systemic risk of the banking sector (Rizwan *et al.*, 2020), even though the epidemic may still have significant economic repercussions in the future (Goodell, 2020). Furthermore, firms in the tourism sector, aviation sector, arts and entertainment, hospitality sector, and sports industry suffered enormous losses because of the travel restrictions placed on the people's free movement across many nations. Over \$4 trillion in total losses were expected to have occurred internationally. Many governments in industrialised nations, notably those in the USA and the UK, responded by providing fiscal stimulus packages that included subsidies for people' social welfare, while the monetary authorities provided credit relief to aid enterprises during the pandemic (Jones *et al.*, 2020).

Businesses particularly those based in the transportation and logistics sectors were heavily affected. Mounting cargo backlogs in freight forwarding and carrier logistics severely hampered the distribution of goods and services on local, national and global scale. The disruption that the pandemic brought to distribution and supply chains sent ripples throughout the system, causing mounting losses, furloughing of staff and in extreme cases, the shutdown of businesses within the sector. Corroborating this, Mogaji *et al.* (2021) notes that the underlying problems with pre-pandemic transportation, logistics, and economic systems in many emerging economies globally, which made matters worse for them during the pandemic. Logistics and transportation had ground to a halt as the movement of personal and goods across the world was affected.

In developed countries, economic interventions via stimulus packages were made for businesses by the government and this helped keep them afloat. Notable examples according to Jones *et al.* (2020), included Canada, Germany, USA and the United

Kingdom. The USA and the United Kingdom in particular, responded by providing fiscal stimulus packages that included subsidies for people's social welfare, while the monetary authorities provided credit relief to aid enterprises during the pandemic (Jones et al., 2020). The situation was direr in developing countries as such packages were non-existent, leading to businesses shutting down due to heavy economic losses.

2.2 Logistics and Supply Chain Management

Logistics is often considered to be the lifeblood economic growth within nations as they facilitate a pathway by which goods and services reach consumers from producers. According to Dekker, Bloemhof and Mallidis (2012), several disciplines, including sales, management of supply chains (SCM), procurement and delivery, corporate planning and strategy, finances, operations research, and general administration, provide key theoretical and conceptual underpinnings for logistics. However, Bensassi *et al.* (2015) observed that the relative dearth of analyses that directly establish the statistical assessment of the influence of this industry on global commerce can be explained by the absence of a broadly recognized definition of the business of logistics both nationally and regionally. Most current studies simply consider how various supply chain components affect global trade (Akopova *et al.*, 2017; Bondarenko *et al.*, 2017).

The *sensu lato* definition and conceptualization of logistics when it comes to supply chain management centres on logistics as a process that proposes, executes, and regulates the effective and productive forward and reverse storage and flow of products, services, and related information between the production point and the point of consumption to meet customer's specifications" (Council of Supply Chain Management Professionals, 2012 cited in Hayaloglu, 2015). Mangan, and Lalwani (2016) defined logistics simply as a precise coordination of a complicated process involving several people, resources, or facilities is what is referred to as logistics. Further elaborating on the logistic process, Mangan, and Lalwani, (2016) broke logistics down into the process of organising, carrying out, and overseeing the steps necessary to convey and store commodities, services, and information from their point of origin to their site of consumption. Sever and Abasiz (2017) define logistics as a broad category of activities; with transport, customs duties, warehousing, handling, insurance, packing, stocking and management of inventory, customer services management, and client-specific services are among these core services. This means that logistics encompasses the entire process of good and

service production, its inventory management and supply chain distribution (Amaje, 2020).

Currently, logistics has a significant impact on the economies of the vast number of economies, having an impact on several areas including transportation infrastructure, storage technologies, communication and information technology, shipping services, management of supply chains industry and goods, imports and exports of services, and more. Akdogan and Durak (2016) confirms this by noting that the global economy between 2008 and 2013 has grown by 4-5% due to the influence of the logistic sector. According to Hayaloglu (2015), logistics is now a significant component of trade and is actively contributing to this development. Furthermore, the gross domestic products (GDP) of first world countries now include logistics at a significant scale, which has an impact on other economic factors such as the inflation rates, borrowing costs, production, and the price and availability of energy. On the other hand of the technological and development divide, logistics in third world countries has grown in impact; influencing several areas including transportation infrastructure, storage solutions, communication and information technology, packaging services, supply chain, industry and products, imports and exports of services, and more. Thus, the growing influence of logistics in the global economy has prompted its use in the creation of the Logistic Performance Index (LPI) (Sharipbekova and Raimbekov, 2018). The LPI makes use of factors such as agricultural and general industrial availability, trade and investment; transportation services and infrastructure, telecommunications and export services just to mention a few. The complex interplay of these factors are reflective of the nation's economic development (Sharipbekova and Raimbekov, 2018).

As a result, the growth of the logistics industry is important, offering benefits for development and growth. Logistical expenditures also alter how businesses and nations operate. This alteration by logistics occurs on local and international scales due to globalisation, making it necessary for nations to strengthen their logistical capabilities. Investments made by nations in this area have given them a considerable competitive edge in relation to international trade since logistical advances have made production, distribution, and marketing easier. A crucial step in achieving cost and effectiveness benefits for nations is precise and efficient coordination of logistics operations. Typically, investments in logistical capabilities may be carried out by the government (through the establishment government-run logistic firms) or privately-run logistic companies. The

contributions of these state and non-state actors would develop into what is called the “logistic industry” or “logistic sector of the economy”.

The logistics sector is one of the major contributors to the growth of the national and global economy (Rashid, Ngalawa, and Cil, 2016). Sever and Abasiz (2017) refers to the logistic sector as one of the top three sectors of global importance in the 21st century. The growth of industries including manufacturing, international trade, agriculture, mining, and other related fields depends greatly on the logistics sector. The advancements in management, technology, and infrastructure used in different countries' logistical businesses are not the same. In 2009, Wang Liping's research compared the logistic industries of China and other nations in terms of their approaches to managing their businesses (Wang Li-ping, 2009). Additionally, Serdar *et al.* (2004) cited by Rashid, Ngalawa, and Cil, (2016) investigated benchmarking logistics between nations and demonstrate that there are some commonalities between these nations' logistical systems.

2.3 Outsourcing Logistics

Within the business environment, company logistics is an important part of product and service production. It facilitates the ease of doing business while providing a pathway through which customers satisfaction can be attained. However, the operational costs of in-house company logistics may be too much to bear, particularly for small- and medium scale enterprises (SMEs). To counter such a conundrum, the company would usually opt for the outsourcing of its logistics. Patel and Aran (2005) cited by Kalinzi (2016) refer to outsourcing of logistics wide-ranging and can cover many areas including the outsourcing of products as well as services. The outsourcing of the logistics operations was defined by Van Laarhoven, Berglund, and Peters in 2000 as functions that include at least management, transportation execution, and warehousing and are carried out by a logistics company on behalf of a customer (Iborida *et al.*, 2021). Inventory control, communication services, and occasionally supply chain management are also included as additional tasks. In a similar spirit, Allen and Tyndall described logistics outsourcing in 2002 as the process when a business hires a third party with the required expertise to carry out ongoing logistics tasks that might have been handled internally. Typically, this is a long-lasting, dependent, and profitable interaction (Iborida *et al.*, 2021).

Since the 1990s, it has become common practice to outsource business operations required for the manufacturing of goods or the delivery of services to suppliers with greater capacities for their implementation (Wan *et al.*, 2015). Business organizations outsource a variety of tasks, including human resource management, the production of parts used in manufacturing processes, information technology support, logistics management, accounting management, employee feeding, and procurement services (Qing, Meng, and Goh, 2014). Most of these tasks were outsourced in the early 1990s because organizations lacked the capacity to complete them efficiently, but as time has gone on, outsourcing of these tasks has become necessary to concentrate on core competencies and cut costs (Watt, 2014).

2.4 Logistic Companies (Logistics Services Provider)

Given that the logistics process comprises supplying the appropriate amount and quality of products (or services) at the appropriate location at the appropriate time, for the appropriate client, and at the appropriate cost, logistics occupies a critical role in the supply chain management process. Over time, companies have realized that it was more cost effective to outsource their logistics to businesses that operate within the supply chain; called logistics companies or logistic service providers.

A logistics company or logistics service providers is an organization that plans, maintains, and regulates the supply chain for another business. Contingent on the contractual agreement signed by the two parties involved, the logistics company may operate during the supplier acquisition, warehousing, shipping, order processing, and delivery phases. Additionally, it is emphasised that LSP play a significant part in enhancing the supply chain's overall competitive edge (Fulconis *et al.*, 2006). More specifically, LSPs provide superior logistical performance, i.e., reduced costs, higher quality of service, as well as increased flexibility, independent of the type of supported business (Switala, 2012). By doing this, companies influence not just the actions of their clients but also the degree of pleasure of other supply chain partners.

Existing research demonstrates that there are numerous instances of LSP classification (Saglietto, 2013). The most typical division criterion is competence in logistics services. A notable illustration of such a separation is the categorization created by Lai (2004). Using the operating service capabilities of each form of LSP as a criterion, the author

identified four different types. Traditional freight forwarders, transformers, full-service providers, and nichers are included in this. LSPs can also be identified by their capacity to address issues and adjust to client requirements (Paczek, 2012,). The part LSPs play in the supply chain is another factor that could be taken into consideration. In this instance, the type of logistics collaboration is typically what determines the classification of LSPs, as Jeszka (2009) notes. In the context of supply chain integration, for instance, Fabb-Costes and Roussat (2011) identified three sorts of LSPs: facilitator LSP, integrated LSP, and operational integrator LSP.

According to Lib, Millen, and VanWassenhove (1993) and Coyle, Bardi, and Langley (1996), logistics service providers (LSPs) are businesses that execute logistics-related tasks that were previously carried out internally while also bidding for the distribution of timely and accurate data between supply chain players. third-party logistics providers (3PLs), carriers, non-vessel-operating common carriers (NVOCC), and fourth-party logistics providers and international freight forwarders (IFF) are the most prevalent forms of LSPs. From the simplest to the most comprehensive, Jacques Pons (cited in John and Capgemini, 2016) proposes the classification of logistics service providers into 5 categories:

First Party Logistics

The 1PL (First Party Logistics Providers) category refers to businesses who manage their own logistics operations and have their own warehouse and vehicle fleet (Farahani, 2011). This is still acceptable today if the business has unique requirements for goods and warehouses or if the drivers conduct duties other than operating the truck (manufacturing, fitting, modification of the sold product). All companies that running their supply chains and inventory using technological and management approaches (Kim, 2021).

Second Party Logistics

The traditional logistics service providers that guarantee the execution of physical logistics operations are known as 2PLs (Second Party Logistics Providers) (Hosie *et al.*, 2012). Their management system is only capable of monitoring the client company's account. They are the first category of service providers to have appeared in the 1980s, and they are primarily concerned with the growth of the transportation industry (Kim, 2021).

Third Party Logistics

Third-party logistics providers, or 3PLs, oversee a certain aspect of a company's supply chain. In addition to ensuring that the job is carried out, they are also responsible for planning and establishing connections with other chain segments (Joseph *et al.*, 2010; Sohail and Malikakkal, 2011). The 3PL has gradually built concentric circles of high added value services, which enables them to complete activities that are more and more diverse, such as cross docking, co-manufacturing, delayed product differentiation, co-packing, and tracking and tracing of goods delivery (Hosie *et al.*, 2012).

Independent businesses that offer a purchasing organization a single or a variety of logistical services are referred to as third party logistics (3PL). 3PL providers are legally obligated and accountable to carry out the contracted logistics processes of the purchaser even though they do not control the goods or services they distribute (Hertz and Alfredsson, 2003). Knemeyer and Murphy (2004) further described 3PLs as a supplier-third-party connection that, in contrast to basic service providers, offers more tailored offerings, covers a wide range of service tasks, and is distinguished by a longer-lasting and more advantageous relationship. On the other hand, third party was characterized by Mortensen and Lemoine (2008) as simply using an outside entity to handle all or some of the company's material management and distribution channels.

According to a John and Capgemini (2016) report on the state of 3PL, businesses and their 3PL vendors are shifting away from transactional interactions and toward meaningful collaborations. The study also finds that the strategic nature of interactions between businesses and logistic outsourcing providers has significantly improved.

Contracting businesses might seek out specific elements from third-party logistics service vendors. These elements come from the tasks that businesses desire to outsource. According to Njagi and Ogutu (2014), operational integration enables the use of customer information for demand management. They consist of warehouse operations, inventory control, shipping operations, storage, and integrating activities (Göl and Atay, 2007). According to the contractor's unique needs and the state of the market for such services, 3PL suppliers frequently customize these elements.

Fourth Party Logistics

The 4PL (Fourth Party Logistics Providers) emerged in the late 1990s and are distinguished by the lack of any physical assets they possess. They might function as a form of 3PL that plans and coordinates physical flows that are carried out by physical operators (2PL) or supply chain providers (3PL) who innovate and lower global costs by using their own resources, as well as by competing with other rival service providers. As a neutral provider of logistics services within the supply chain, 4PL works to utilise all available resources effectively and sustainably while integrating all involved parties (Hingley *et al.*, 2011; Mukhopadhyay and Setaputra, 2006; Win, 2008). Minimizing individual inefficiencies while simultaneously improving the effectiveness of the overall actor network is one of the 4PL's goals. Planning the supply chain and transportation are the major tasks. Utilizing IT platforms and networking allows for this planning (Mammitzsch and Francyk, 2012). As a result, it is necessary to have the necessary expertise and consider the demands of the sector (Bourlakis and Bourlakis, 2005).

As functional upgrade to the 3PL, 4PL oversees tasks that go beyond 3PL, such as logistics network research, design, and planning. While a 3PL service provider now only offers logistics services that involve coordinating distribution from one location to another, 4PL providers enable businesses to get superior expertise in transportation, warehousing, and other logistics-related industries (Groznik and Xiong, 2012). To enable their clients to fully outsource their logistics management activities, 4PL businesses are providers with the capacity to oversee resources, value delivery procedures, and technology for their clients. The 4PLs do not compete with 3PLs since, because of their investment and specialisation, they have greater knowledge in their disciplines (Groznik and Xiong, 2012). To find and offer their clients the "best in class" services, 4PL providers use the solutions developed by 3PL rather than owning assets for transport or warehousing.

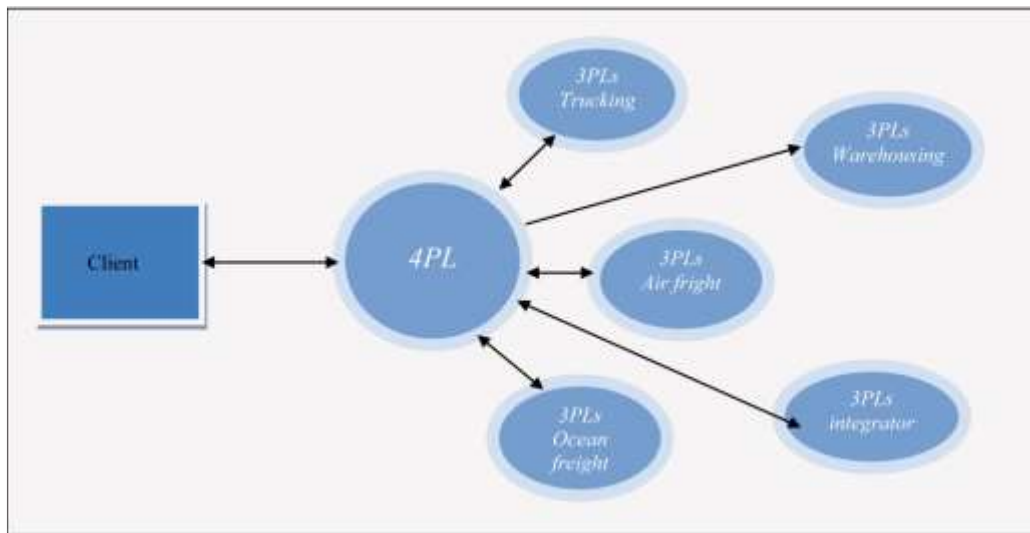


Figure 1: 4PL as a solution integrator overseeing 3PL logistics processes.

Source: Groznik & Xiong (2012).

Fifth Party Logistics

Recently, the 5PL has entered into the market as a company setup that offers logistics services and prepares, organises, and executes logistics plans on account of many other businesses (Farahani, 2011). Essentially, 5PL advances the development of complete logistic integration; an idea introduced by a Morgan Stanley report that concentrated on offering e-logistics services for the full supply chain (Ho and Lim, 2001). The electronic supply chain coordination and data management are highlighted in this approach.

5PL combine the requests of the 3PL and others into a bulk volume, which is also known as a logistics aggregator, to negotiate lower pricing with several airlines and shipping firms. Assets are not used in this kind of logistics. Normally, it functions flawlessly across all disciplines. To fully control the information sharing between clients, suppliers, and 3PL, they had to retain the expertise of experts in supply chain and logistics integration. On behalf of an ordering customer, the 5PL develop, plan, and carry out logistics solutions in the areas of information systems and application software.

5PL businesses operate virtually entirely online. As a result, these kinds of entities lack common assets. They don't actually exist, but they do make up a web-based system that communicates information to the chain of participants it controls. Based on the information they receive from 5PL in real-time, individual members control different supply chains inside the network. The goal is to provide these logistic services using best-

of-breed solutions such as shipping, forwarding, warehousing, and other services. The establishment of virtual firms is necessary for the planning, coordinating, and transformation of particular supply chains into supply networks (Gattorna *et al.*, 2004). The advantages of a 5PL roadmap include innovation in service, performance, pricing, and supply chain value, which is limited with 4PL services (Al-Kharusi, 2010).

Due to the fact that 50–70% of logistics-related activities are outsourced, LSPs are responsible for a sizeable share of the logistics industry's digital transformation (DT) (Langley, 2019). LSPs can act as designers of future Industry 4.0 flows and the skeleton for the expansion of e-commerce (Delfmann *et al.*, 2018). LSPs must adapt their strategies, cultures, and business models in order to fully capitalise on the potential presented by new technology and undergo a digital transformation (Kembro *et al.*, 2018).

Despite the abundance of data explain the operational models that LSPs are built on, there is a dearth in academic literature pertaining to strategic management (Wang, Persson and Huemer, 2016). Supply chain frameworks frequently refer to logistics service providers (LSPs) as supporting players for manufacturing enterprises and non-value-adding entities, and mainstream literature frequently defines logistics management as a component of supply chain management (Rabinovich and Knemeyer, 2006). This shows that LSPs have mostly been ignored in the stream of research on strategy and value development.

2.5 Functions and Roles of Logistics Service Providers Within the Supply Chain

Using their expertise and experience, logistics service providers can coordinate with numerous vendors to provide a one-stop solution to the convoluted supply chain operations. A third-party logistics provider offers a range of services that would otherwise necessitate the customer company hiring a sizable number of additional staff (Guidolin and Filha, 2022). A customer can concentrate on their core skills and then expand when their supply chain is managed by a 3PL provider. Several of the responsibilities and roles performed by logistic service providers as stated by Ross (2015) are listed below:

1. Expertise/Knowledge: Logistics service providers handle all transit needs, from origin through distribution to end consumers. Highly skilled experts with in-depth expertise of tariff schedules and customs laws know how to guarantee the best and most effective delivery path.

2. Management of Warehouses: Service providers now assist with warehousing budgeting, design, technology installation, and other tasks that can improve space use and streamline warehouse needs. One of the few services that these service partners are progressively offering is inventory management services.

3. Services for Documentation: There is no doubting that successful international trade depends on the free movement of products. These businesses assist in setting up a business by taking care of all the paperwork and legal procedures for doing business internationally.

4. Internet: Using their strategically positioned distribution networks, logistic service providers aid companies in expanding into new markets. These service providers may offer advice on feasible economic markets since they have in-depth understanding of the many rules and regulations that govern them (Guidolin & Filha, 2022).

5. Value-Added Services: It is more convenient to export when vendors offer support services like labelling and packaging. Real-time tracking systems are also used by these suppliers to share control and visibility over shipments and inventory.

6. Cost-cutting: Logistics service providers can show themselves to be cost-effective by freeing up resources, offering Turnkey solutions at a low price, providing flexible, customised services, and much more. To offer the company a comprehensive service package, they remove needless trade restrictions, determine the best tariffs, and extend shipment insurance (Guidolin & Filha, 2022). There is no denying that a firm can significantly cut expenses and increase its ability to turn a profit by outsourcing supply chain operations to logistics service providers.

Sub-contract carriers, logistics service providers, and logistics service intermediaries are the three functional categories that Stefansson (2006) divides logistics service providers into (Cui & Hertz, 2011). Carriers, logistics intermediary companies, and third-party logistics providers are all considered to be providers of logistics services by Cui and Hertz (2011).

Carrier modes of LSPs focus on the transport aspect of logistics. They provide transportation services and physically transfer goods or materials between locations (Coyle, Bard & Novak 2000, cited in Hertz & Cui, 2011). Based on empirical evidence, Stefansson (2006) lists some services that carriers offer, including inbound and outbound

transportation, door-to-door service, contract delivery, transportation administration, handling of paperwork, scheduling of transports, tracking and tracing data, and customised services. Additionally, the author refers to carriers as asset-based operators because they often own the majority of their assets or lease the vehicles or equipment they need to operate. Moving goods from one place to another results in time and place benefits (Stefansson, 2006). According to Cui and Hertz (2011), carriers make significant investments in a variety of transportation infrastructures, equipment, and means-of-transport, and are also quite effective at using them. Shipping companies, airlines, and trucking companies are some examples of carriers (Cui & Hertz, 2011).

Logistics service providers may serve to consolidate good distribution and facilitate transport-customer relations through the role of logistics intermediary. Logistics intermediaries provide duties related to freight forwarding and are often non-asset-based service providers. They do, however, spend mostly in IT systems and construct representative offices across the globe in order to coordinate their numerous clients and carriers (Cui & Hertz, 2011). A freight forwarder is a trade expert who handles a variety of tasks to make shipments easier (Murphy & Daley, 2001). Obtaining transportation services and combining smaller cargo from diverse shippers into bigger ones, then shipping them to their intended destinations at a competitive price, are the main tasks of a freight forwarder (Lai & Cheng, 2004). Logistics service intermediaries, according to Stefansson (2006), are a group that concentrate on managing logistics operations. They do not physically handle the items themselves; instead, they search for the best carriers or third-party logistics service providers to perform such services.

LSPs can also offer services directly through the 3PL model. The carriers, logistics intermediate companies, and other service providers are coordinated by third-party logistics service providers. These service providers act as a mediator between the seller and the buyer, providing transportation and warehousing services as well as other tasks like deconsolidation, cross-docking, picking, and packing, customs procedures, real-time tracking data, insurance services, payment services, tendering and contracting carriers, and forwarding services (Stefansson, 2006).

These functions indicate the diverse roles that LSPs can play within the local and international supply chain.

2.6 Operations of Logistics Service Providers

Transporting finished items from the manufacturer to the final customer is referred to as a logistics operation. Managing ecommerce inventory and filling and shipping orders make up the full outbound and inbound logistics operation (Hosie *et al.*, 2012). To maximise logistics, inventory management, warehousing, and order fulfilment are all essential. Smaller business owners often manage logistics operations themselves, as opposed to larger organisations, which may have professional logistics directors. Logistics Operations are divided into three main categories as seen in table 2.1 below.

According to table 2.1, LSP operations are delineated across three main services; goods movement services, material business services and professional services. Each of these three services have their subcategories highlighting the type of logistic systems it runs on, their operational model as well as their roles in the supply chain structure.

Table 2.1: Operational categories offered by Logistic Service Providers

Goods Movement Services	Materials Businesses Services	Professional Services
Third party logistics (3PL). Movement of items and storage services	Lead logistics provider (4PL). Consolidates and optimises logistics services for a shipper	Financial services for shippers' supply chains
Transport services	Freight managed services – consolidation, chartering and brokering of transport	Freight insurance and risk management advice
Freight forwarders and customs brokers	Event logistics services for large public events	International trade legal services
Logistics infrastructure manager and/or operator	Manufacturing services providers (MSP)	Technology services
Materials handling support services	Logistics assets support including maintenance of logistics equipment	Education and training services
	Procurement services	Government departments and agencies. Develop policy and regulations for logistics services

2.7 Theoretical review

The advent of the Covid-19 pandemic affected two main categories within the logistics industry, operations and supply chains. The pandemic affected the operational aspect of logistics companies by restricting human activities that would drive the proper functioning of these companies while disrupting the supply chains that these companies operate on in the economy. Considering these effects, two theories will be employed

within this study: The stakeholder theory which will address the impacts of the pandemic on the human resource aspects of the logistic companies and the Resource dependence theory which will address the impact of crises situations on company vital external resources that are important for running logistics and supply chain processes.

2.7.1 Stakeholder Theory

The supply chain creation rationale for stakeholder management places companies at the centre of a union of stakeholders. According to Freeman (1994), a company's stakeholders include any group of people who have an impact on or are negatively impacted by the company, including its shareholders, vendors, personnel, consumers, competition, local communities where the company works, regulatory bodies, and so on (Touboulic and Walker, 2015).

From buying to human resources and every other department inside an organisation, Covid-19 has had a significant impact on a wide range of organisational aspects. It has become more challenging for businesses to maintain their workforces because of new laws and regulations. Many of them are ceasing operations and terminating employees, which further pushes the economy into a tailspin and toward a new crisis with persistent socioeconomic ramifications (Obrenovic et al., 2020).

Many organisations may consider the Covid-19 epidemic as a crisis. Hermann (1963) defined a crisis as "an unforeseen danger to high-priority organisational principles, providing a short response time." An organization's employees might be thought of as a high priority value. They are the working parts of every organisation, notably the blue-collar workers in charge of its daily operations. Each organisation has constituencies on whom it depends for success, according to Philips (1997). We might refer to these groups as stakeholders. Therefore, all entities that have an impact on a business both internally and externally are considered stakeholders. Stakeholders also include employees.

According to Phillips (2007), the managerial team must prioritise serving the common interests of the firm's stakeholders over serving the interests of society. These stakeholders can range from the society in which the organisation operates to the workers who support it. The company has a duty to make sure that its employees are following the best course, not just for society.

Employee participation in operations must be complete for an organisation to operate at its peak efficiency. This is challenging given the present pandemic, as newly enacted legislation and health and safety requirements severely restrict the speed at which any meaningful work can be accomplished. Employees perform the same type of job that they are expected to undertake under normal conditions but either get laid off or have their hours decreased. Continuous work can result in a lower workforce, which can lengthen the lead times for the tasks and raise the likelihood that uncertainties will arise.

Small chores, which often take relatively little time to do, might occasionally take significantly longer due to social distance and the demands of health and safety. The bullwhip effect, which is a constant storm over today's corporations in this uncertain industry climate, can be exacerbated by a reduction in workforce and task management delays caused by a lack of said workforce in a logistics firm where there is a lot of reliance on interpersonal interactions to ensure the sustainability and integrity across the supply chain.

2.7.2 Resource Dependence Theory

Most businesses have outsourced and expanded various manufacturing and supply chain activities, which has increased their reliance on international suppliers and complexity and made them more susceptible to supply chain disruptions (Bozarth and Handfield, 2016, p. 226). These interruptions may result from a variety of external factors beyond the company's control, including calamities like the Covid-19 pandemic and other natural disasters.

This phenomenon of dependence is explained within the resource dependence theory. Building on a social alternate theoretical perspective, resource dependence theory (RDT) offers cross management as a strategic function to circumstances of uncertainty and reliance between market participants (Heide 1994). RDT focuses on how some corporations become dependent on others for needed resources along with goods and substances and how businesses can manage such relationships (Jajja et al., 2017). It is frequently believed that the unequal interdependence present in such connections is essential for reducing environmental uncertainty (Ketchen and Hult 2007). Because supply chain participants frequently collaborate to achieve shared objectives and become more dependent on one another, RDT places a strong emphasis on the impact of

pandemics on the resources that may have an impact on logistics businesses' operating capacities. The availability of goods, information, and the demand for them along the supply chain are examples of these resources.

This paradigm is especially important seeing that logistics and transportation industries were some of the worst affected by the pandemic lockdown. This impact meant that operational activities of logistic companies would have been minimized to the lowest percentages or lost altogether due to the disruption of good, personnel and information.

2.8 Summary

This section is focused on the extensivity of literature explored on the back of the research topic. The review of these concepts and theories emphasize the “cause and effect” relationship of Covid-19 pandemic on the operational capabilities of the Nigerian logistic sector. Information in this chapter has shown that the coronavirus pandemic has a net negative effect on the activities of Nigerian logistic companies as emphasized by economic sector data. Considering this, it is pertinent to note that this study is novel with important implications for investigating the operational ability and eventual survival mechanisms of logistic firms in Nigeria during the pandemic.

3 METHOD

Examining the variables related the to the impact of Covid-19 pandemic on productivity and operations of logistic companies based in Nigeria is an important research focal point that would provide much needed information on the far- and wide-reaching effects of the pandemic. This examination would entail the employment of procedures deeply rooted in quantitative and qualitative epistemology and is necessary to provide objective information that can be used by researchers and government policy teams accordingly. This chapter details the research methodology employed to conduct the research. It entails the choice of research method, the respondents, an overview of the interview guide, research approach, analysis of data, validity and reliability of data and ethical issues.

3.1 Choice of method

First, in order to remove the ambiguity that is frequently connected with the utilization of research methodologies, especially by young researchers, the two ideas of research design and research methodology need to be explained.

The research design can be simply described as a set of principles that guides the research process.

According to Leedy(1997), a research design is a blueprint for a study that provides the overarching framework for data collection. It is described as a strategy for choosing participants, research locations, and data collection techniques to address the research topic by MacMillan and Schumacher (2001). They also suggest that a good study design aims to produce outcomes that are deemed reliable. According to Durrheim (2004), research design is a framework for strategic action that connects the execution of the research strategy and the research questions. Furthermore, Kothari (2007) refers to a research design as a blueprint for data collection, calculation, and study. Furthermore, in a structured analysis, a research design is normally tailored to address investigative questions, so it plays an important role in the exploration of relationships between variables and the description of factors that affect the phenomenon being studied (Saunders et al., 2009). For this research study, the research approach to be employed is the cross-sectional design.

Cross-sectional designs is chosen for this study because the problem the study is centred on can only be effectively studied within realistic settings. In such studies, there is a measurement of the relationship between the causative variable and the outcome (Setia, 2016). Cross-sectional studies can be either descriptive or analytical. According to Setia (2016), cross-sectional research methodology employs the random sampling method; however, depending on the research design, additional approaches, including multistage, systematic, and convenience sampling methods, may be used.

For any research design to be implementable, it requires an effective and highly applicable research method. Considering the myriad of research methods utilizable under the cross-sectional research design, the researcher will be using the interview method due to the qualitative nature of the study. Due to interview data being derived from

conversation, comments and dialogues, the analysis of such data are often deductive in nature. Interpretation of such data is dependent on the use of selected theories and facts to define data.

3.2 Respondents

The respondents within the study are the middle-level managers of the five selected logistics service companies. Two managers per company will be selected from branch office locations subjected to convenience sampling.

3.3 Questionnaire - Interview guide

The interview to be carried out will be divided into the introductory and main interview sections. The introductory section would entail the basic details of the chosen respondents such as name, position, years of experience, certifications, and gender. This would provide a reflection of the respondent's exposure to company operations. The main interview section would comprise of questions relating to company operations before, during and after the pandemic. The format of the questions can be found in the Appendix section of the study.

3.4 Research approach

The chosen research approach for the study is qualitative. Qualitative research aims to understand phenomena as they naturally occur by simultaneously examining a variety of its facets. Utilizing inductive reasoning, qualitative reasoning relies on the extraction of data using conversational and open-ended communication (Creswell and Creswell, 2018). Due to the open nature of the qualitative research approach and its inductive background, research techniques such as interviews, study and focus groups, participant observation and document analysis are usually employed. For this study, the interview technique will be used (Palmer and Bolderston, 2006).

By definition, an interview focuses on the collection of data through the use of inquiries. Two or more persons participate in interviews, one of them is the interviewer who uses this technique. There are various kind of interviews, which are frequently distinguished by their degree of structure. In structured interviews, questions are asked in a prearranged

sequence. Semi-structured interviews occur somewhere in between unstructured interviews and free-form interviews. This study will employ the use of interviews so as to extract information that may not be accessible using the structured interview format (Creswell and Creswell, 2018).

3.5 Analysis of the data

The qualitative section of the primary data involves the use of in-depth interview to extract information from the sample population. The information would then be collated and analyzed using the Nvivo qualitative data analysis software. The Nvivo software is an application used to analyze information from conversational activities such as interviews, dialogues and forum interaction. Supporting mixed and qualitative research, Nvivo allows you to collect, organize, analyze and visualize unstructured or semi-structured data. This is done through the use of codes to create themes, identify and trace relationships between elements and themes within the research (QSR International, 2022).

According to O'Neill (2022), coding is a technological approach to handling qualitative data extracted from interviews and other qualitative sources. Key words, phrases and sentences are used to create base codes which are then employed in creating word nodes. These nodes are then categorized according to the themes inherent in the study and are represented in the form of word frequency tables, word matrices and project maps to provide insight into the thematic analysis. Study themes originate from the research questions which serve as the foundation of the research.

3.6 Validity and reliability

Validity and reliability measurements of the proposed instrument to be used will be done by the sharing of interview guide copies with randomly selected employees of logistics service companies (Sileyew, 2019). To establish the reliability coefficient of the instrument, the Cronbach-alpha test/method will be conducted to determine the face, concurrent and content validity.

3.7 Ethics

Research ethics entail the application of fundamental ethical concepts to research activities, such as the planning and carrying out of research, respect for society and other people, the use of assets and research materials, scholarly misbehavior and the administration of research (Resnik, 2020). Furthermore, research ethics are important for building research support and funding, facilitating collaborative work between researchers (University of Stirling, 2019; Resnik, 2020). Finally, ethics of research ensure that researchers remain transparent and accountable to the society.

Each participant received a briefing both before and after their participation. The aim of the study was fully and accurately disclosed to the participants. A briefing sheet and a consent form, both of which were signed before to the interviews, were used to gain permissions. They were informed about the recording session as well. Every interviewee had the right to depart at any point during the process.

Information was cut up into manageable chunks, and the recorded interview was stored in a safe place with backup data preserved separately. File transfers are encrypted, and files are password-protected. After the analysis was finished, files were removed and destroyed using destruction software. A chunk of this work's Appendix contains quotes from the interview.

4 RESULTS

The study aims to examine and determine the impact of the Covid-19 pandemic on the operations of logistic service providers. Using the qualitative research approach and interview method, the study attempts to provide veritable and verifiable answers to the research question stated below:

- Research question: What positive and negative consequences has Covid-19 had on logistic companies?

The interview session was executed with participants who were willing to provide the relevant information needed for the analysis of the data for the study. 10 respondents (from 5 of the most well-known logistic service providers) were interviewed and their data collected. Following thematic analysis of the interview via Nvivo software, the

participants were able to provide answers that were directly related to the answering of the research question.

The interview comprised of twelve questions; three, which were preliminary in nature and nine, which were centered on answering the research question. In answering these questions, this section would be divided into biodata and thematic analytical sections.

4.1 General Biodata of the participants

The participants selected for the study are experienced professionals that have over 4 years of experience in managing the branches in their care (with the exception of NIPOST) and all have a minimum of bachelor’s degrees as their first qualification. Table 4.1 below contains the information about the information of the ten (10) participants that were interviewed during the study.

Table 4.1: Detailed Information on Participant Background.

Participant	Gender	LSP	Location/Area	Position in Company
1	Male	DHL	Sabo, Lagos Mainland	Depot manager
2	Male	UPS	Gbagada	Depot manager
3	Female	DHL	Lekki	Branch manager
4	Male	NIPOST	Sabo, Lagos Mainland	Communications officer
5	Male	FEDEX Redstar	Opebi	Depot manager
6	Male	GIGL	Osolo way, Isolo	Branch manager
7	Male	GIGL	Gbagada	Branch manager
8	Male	UPS	Ikeja	Branch manager
9	Male	FEDEX Redstar	Ikeja	Depot manager
10	Male	NIPOST	Surulere	Communications officer

***LSP: Logistic Service Provider**

Each of the branches selected were all located in Lagos state, Nigeria for ease of accessibility.

4.2 Thematic analysis of Interview

From the interview, there was a general consensus that the Covid-19 pandemic and its attendant lockdown had consequences for logistic service provider (LSP) or logistic companies. Information gleaned from the interview further revealed that the answers provided by the participants can be categorized in themes using a coding structure that made use of the interview answers. Each of these themes would then provide a perspective into answering the research question. The two themes that are created are:

1. Operations of the LSPs before, during and after the Covid-19 pandemic and,
2. The effect of the pandemic on the LSPs.
3. Alteration of business models as LSP Response to pandemic effects.

4.2.1 Theme 1: Operations of the LSPs before, during and after the Covid-19 pandemic

According to the interview participants, all the LSPs selected for the study are active players with massive market shares within the Nigerian logistic service sector. With the exception of NIPOST (a government parastatal) and GIG Logistics (private firm) which are Nigerian, all the LSPs (DHL, UPS and FedEx Redstar) are foreign based multinational companies that played active roles in the collection, distribution and delivery of goods from one party to another across Nigeria. Each LSP had strong patronage highlighting their popularity and reputation among the populace in an erstwhile competitive industry.

The operation schematic of LSPs is divided into three subthemes namely:

- (1) Operational time line,
- (2) Operational changes and,
- (3) Permanency of changes.

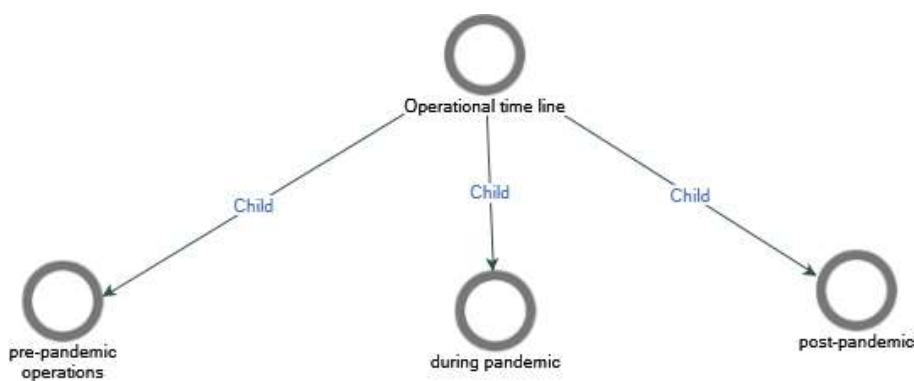


Figure 1: Project Map of LSP Operational time line.

Source: Nvivo version 14

Before the pandemic, the LSPs, according to the participants carried out predominantly delivery, freight and middleman services along the local, national and international logistics supply chain. The participants also indicated that they and the workers under their supervision operated directly from offices prior to the onset of the pandemic. Furthermore, the interview revealed the slight differences in the capacities of the different LSPs as revealed by the participants. Some LSPs such as UPS, DHL and GIGL were more dependent on technological aided operations than NIPOST before the onset of the pandemic. Also, all LSPs were observed to have enjoyed some degree of patronage from the Nigerian populace.

During the pandemic and its consequent lockdown, information from the participants of the interview revealed that each of the LSPs responded in unique ways to preserve their business integrities within Nigerian business space. After the initial lull in operations, all the LSPs increased their dependence on technologies that made remote work possible, promoted worker safety and improved non-contact delivery operations. While these strategies resulted in the alterations to their business models, these alterations differed in degrees based on two main factors: (1) their already existing dependence on technology in pre-pandemic operations, and (2) the adaptability of the existing business models to the current environmental and economic changes being ushered in by the global lockdown. One fallout from the pandemic as observed by participants representing Fedex Redstar and UPS was that jobs were lost either due to redundancy (as the business model was being altered) or due to the financial incapacibilities of the LSPs to keep paying staff, leading to staff furloughs, indefinite leaves or even firing of staff.

As observed by the comments of participants 3, 4, 6, 7 and 8, technological dependence became imperative for the continued profitability of the LSPs at national and global levels. Furthermore, remote work became more common among the organizational structure as the nature of the disease mandated social distancing between individuals. Social distancing is considered an effective non-pharmaceutical preventive measure that was effective in stalling the spread of Covid-19 disease among individuals and was the cornerstone idea behind the global physical and economic lockdown in 2020.

Admittedly, all participants indicated that administrative alterations were also made to facilitate the hitch-free transition from the physical office work hours to the more

technological based remote work. This meant surveillance and monitoring became more digitized while inventory and distribution networks were outsourced technological rather than being done in person. Also, the participants noted that it was during this period that e-commerce businesses began to thrive due to the increased dependence of individuals on social media platforms. This landmark event provided itself as an opportunity for these LSPs as confirmed by the participants of the interview.

Finally, the post-pandemic operations of the LSPs involved revival of conventional and e-commerce logistics. According to the participants, technological advancements to conventional logistics resulted in non-contact delivery services, cargo and shipment tracking via website visits. This reduced physical contact between customer and the workers, heavily reducing the probability the disease spreading via human contact with packages or human to human transmission. On the other hand, the rise of e-commerce provided a new avenue of income for them. Acting as logistic middle men for e-commerce sites and vendors, LSPs provided crucial services that facilitated the movement and delivery of items from the seller to their customers. This allowed the LSPs to survive by utilizing their unique attributes on the supply chain network to fill the middle man and delivery needs of the industry. This incursion into the e-commerce sector allowed them replace revenue losses accrued from other sections of their business.

Operational changes

Talking about changes to the operations of LSPs, all but one participant (participant 9) made submissions that alterations were made to their operational structures of their companies to accommodate for the pandemic impacts on their businesses. Operational changes listed by the participants were categorized into four broad groups, namely: (1) administrative, (2) the establishment of remote work, (3) the establishment of safety protocols and measures and (4) technological innovations.

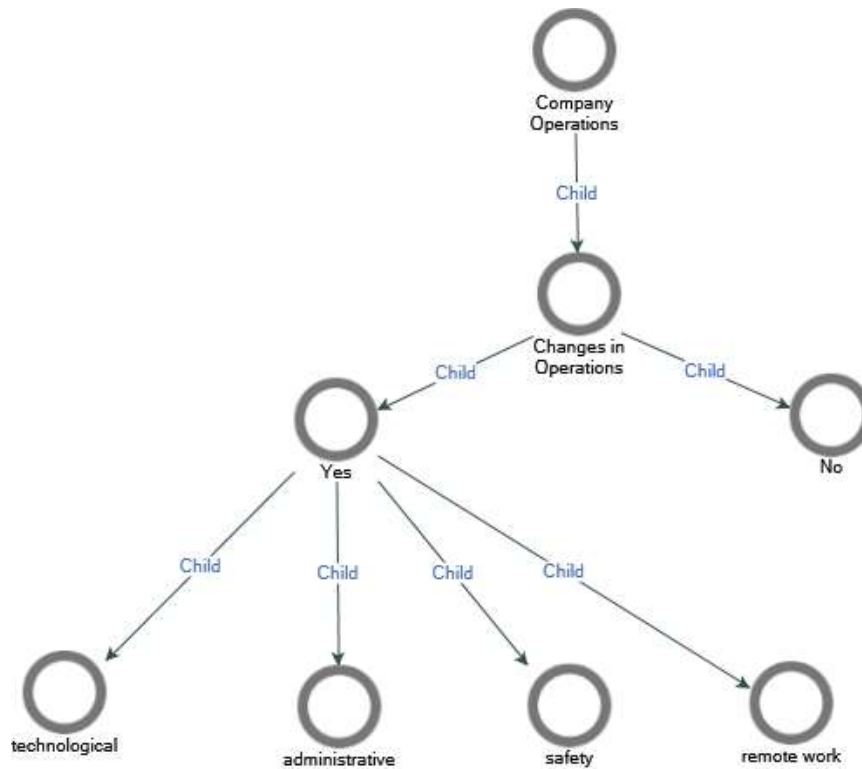


Figure 2: Project Map of LSP Operational changes.

Source: Nvivo version 14

Technological and safety changes were regarded as the two most common operational changes that were adopted by logistic service providers (LSPs).

The technological changes to the operational structure of LSPs according to participants vary in degree and could range from the increased dependence on information and technology infrastructure (to carry out more inventory and delivery related tasks using drone technology and automated machinery for warehouse storage and inventory, facilitate non-contact delivery and automated customer helpline functions) to digital platform workspace development (through which workers can monitor warehousing, delivery, customer service and staff operations). Using cloud technology and internet of things, LSPs like DHL, UPS and GIG logistics kept database logs of warehouse inventories, customer demands and a host of other important data, interfacing with already existing technological structures and making non-site operations very smooth, hitch-free and efficient. These changes facilitate the easier transition of workers from onsite responsibilities to remote work, thereby reducing the chances of disease spread among workers. Noting the comments of participant 8, there was an increased focus on the use of technological options during the pandemic. This was doubly important as most

of the office of the LSP that he/she represented had not yet resorted to technological advancements until the onset of the pandemic.

Changes to safety policies for the workers of the LSPs, according to the participants hinged on preventing (and reducing) the spread of the diseases among the workers under their care. According to participants 3, 5, 6, 8 and 9, non-essential workers are given leaves of absence for the entire duration of the pandemic while essential workers whose responsibilities could not be adapted to remote work were provided with living quarters in proximity to their offices and assigned to operational shifts (facilitate social distancing) which may depend on their nature of their work. However, participants 3 and 5 add that the reduced staff numbers actually doubled the workloads of the workers on site, accelerating exhaustion and worsening their mental health. It is also important to note that this work allocation may be variable, depending on the operational structure of the different LSPs within the study. Furthermore, the continued use of personal protection equipment (PPE) by workers in warehouses as mentioned by participants 3 and 7 are some of the changes to safety policies that have been noted in this study.

Others include improved communication by the management to the workers on possible changes to company policies, implementation of scheduled cleaning and sanitization service protocols to reduce the spread of disease pathogens, the provision of safety training for package handling, proper use of PPE and the proper sanitation of their workspaces.

Administrative changes to logistic companies as mentioned by participants 4 and 6 revealed concerted efforts by the management to adapt quickly to the changing business environment. Some examples of administrative changes within these LSPs as listed by the participants are: (1) the implementation of remote working through a digitized company platform, (2) the provision of digital platforms for customer service, delivery and distribution processes, (3) adoption of new technologies such as online tracking systems, digital signatures, and contactless payment options to reduce human contact, and (4) the implementation of flexible scheduling to reduce the number of people in the workplace at any given time. Overall, all participants noted that the Covid-19 pandemic has required logistics companies to adapt quickly and make significant changes to their administrative processes in order to continue operating safely and efficiently.

Remote work is considered a key organizational change because of its importance. According to participants, this change was necessary to protect employees from the virus and prevent its spread within the workplace. Remote work allows employees to continue working from home rather than coming into the office, reducing the number of people in the workplace at any given time and reducing the risk of infection. This change has been adopted by many logistics companies, particularly office staff who do not require direct contact with customers or packages. Remote work has also had an impact on the logistics industry in terms of employee productivity, as companies have had to adapt to the new working conditions. Companies have had to implement new policies and procedures to ensure that remote work is productive, including setting clear expectations for communication and availability, and providing employees with the necessary tools and technology to work effectively. Overall, remote work has been a key organizational change in logistics companies during the Covid-19 pandemic, and it's likely that this change will continue to be an important part of logistics companies' operations even as the pandemic subsides.

Permanency of Changes

According to information extracted from the interview of the ten participants from the five LSPs, 50 percent indicated that the changes made to the organizational structure and operations of these firms were permanent with long term outlooks for the businesses while 3 out of the remaining five participant indicated uncertainty on the permanency of these changes. The final 2 participants took up a more pragmatic view to these changes, admitting that some changes may be retained while some may be reverted as their utility was limited to duration of the pandemic. The participants who opined on the permanency of these changes supported their stance by stating that such changes had increased the adaptability and efficiencies of their LSPs in the face of economic uncertainty spurred on by the global pandemic. This consensus was especially strong on the technological and administrative changes that had been adopted by the firms to cut down cost while maximizing worker and technological efficiencies associated with the adjustments to their business models during and after the pandemic.

4.2.2 Theme 2: The effect of the pandemic on the LSPs

All participants of the study agreed that the Covid-19 pandemic had effects on the LSPs ability to conduct businesses during and after the pandemic-induced lockdown and that these effects were both positive and negative in nature. However, whether the effects were predominantly positive or negative remained inconclusive as 8 out of ten participants indicated that the effects were mixed. Furthermore, the majority of the participants were of the opinion that the general pandemic had both direct and indirect impacts on the operational capacity and business productivity of the LSPs. The impact type and duration of these pandemic aftereffects according to the participants raised concerns about the profitability of these businesses; a fact not lost on the participants as all ten participants indicated their awareness about the management executive's concerns during and after the pandemic. Based on these assertions three subthemes can be found within the main theme, and they are:

- (1) General pandemic impacts,
- (2) Effect on business operations and
- (3) Profitability concerns.

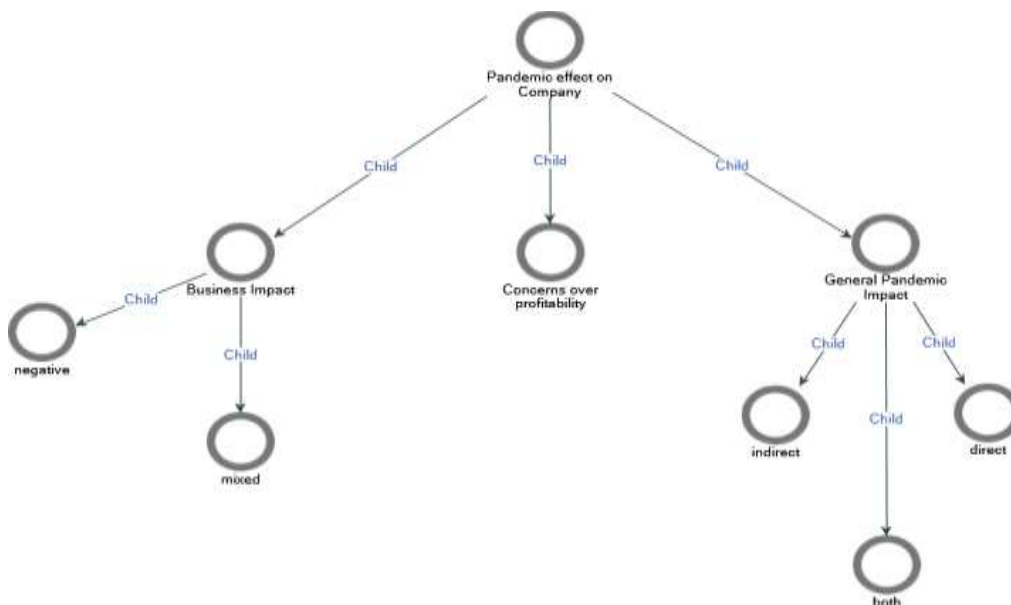


Figure 3: Project Map showing the effect of the Covid-19 pandemic on LSPs.

Source: Nvivo version 14

General Covid-19 Pandemic Impacts

The general impacts of the Covid-19 pandemic have been varied with short term and long-term effects on the LSPs. According to the participants, the pandemic disrupted

local, national and global supply chains, resulting in the decrease in the distribution and circulation of goods within the country. Following the global economic lockdown, there has been delays to production and shipping of goods, leading to product shortages. This has affected logistics companies' ability to fulfil orders and meet customer demand. Participant 3 notes that these product shortages have as caused changes in demand for certain products and shifting consumer behaviour, leading to changes in delivery and distribution processes for logistics companies. Furthermore, the pandemic according to participant 5 has led to changes in transportation, such as reduced capacity on ships and planes and increased demand for ground transportation. This has resulted in increased costs and reduced efficiency for logistics companies. Also, participants 5 and 8 opined that the pandemic has led to changes in regulations and laws, such as laws related to social distancing, PPE, and sanitation, which logistics companies have had to comply with.

Effect on business operations

As regards the effect of the pandemic on business operations of the LSPs, all participants indicated that the effects have generally been negative. However, some participants argue that there may 'silver lining' situations among the effects indicating that in some rare cases, the effects may be mixed. Based on information extracted from the interview, the pandemic effects on the business operations of the LSPs include but are not limited to: (1) reduction in profits which are mainly caused by disruptions to supply chains, capacity reductions on goods transport, middle man delivery services and e-commerce logistics operations, (2) reduction in staffing levels due to the pandemic, which can lead to increased workloads and stress for remaining workers, (3) increased expenditure for logistics companies, such as additional expenses related to PPE, sanitization, and online tracking systems, digital signatures, and contactless payment options to reduce human contact and increase efficiency as well as other technology vital to remote work and (4) increased pressure on delivery and fulfilment, with many companies having to adapt to changes in demand and supply chain disruptions.

Profitability Concerns

The onset of the pandemic according to participants was typified by a lot of uncertainties according to the participants. The sudden and widespread nature of the virus has led to widespread economic disruption, which has had a significant impact on the logistics industry.

According to participants 8 and 9, the disruption of operations was a massive source of concern to the management executives due to the pandemic. Participant 8 attributed these concerns to the drop in revenue due to (1) the disruption of the global supply chain, which in turn influenced a drop in consumer demand for services from the LSPs, (2) changes in consumer behaviour, as many people are now shopping online more and this has led to the shift of sales from physical stores to online platforms, and (3) the increased cost of health and safety measures to protect their employees and customers from the virus. These concerns according to participant could be alleged to have been predominantly financial in nature as the cost of staying afloat especially in a period of reduced or non-existent revenue took a toll on all companies including the LSPs. Furthermore, the changing face of business as noted by all the participants was accelerated by the pandemic-induced lockdown as physical shops were no longer accessible, paving way for the thriving e-commerce market.

4.2.3

Theme 3: Alteration of Business models as LSP Response to pandemic effects

According to the participants of the study, all the LSPs have altered their business models to adapt to the changing business environment spurred by the covid-19 pandemic. Based on the interview, two main alterations have stood out. The first is the shift of the LSPs towards e-commerce. With many physical stores closed or operating at reduced capacity, consumers have turned to online shopping in droves. This has led to an increase in demand for e-commerce logistics services, and many logistics service companies have adapted their business models to meet this demand by investing in new technologies and infrastructure to support e-commerce services.

Second is the increased dependence on technology by LSPs. Companies are using technology such as automation and artificial intelligence to optimize their operations, reduce costs, and improve efficiency. This includes using technology to track and monitor shipments, automate warehouse operations, and streamline logistics processes.

As indicated by participants 3, 6, 7, 8 and 9, technological adaptation has been vital to the survival of businesses during the lockdown, and this has been no different within the Nigerian business environment. Participant 8 in particular, emphasizes the changes in

operational technological dependence as mandatory for countries like Nigeria where a large chunk of their operations was yet to be automated.

5 DISCUSSION

The study aims to to examine what impact the Covid-19 pandemic has had on the operation of logistics companies. Using qualitative analytical approaches to the collated data, all ten participants provided information on the positive and negative consequences of the Covid-19 pandemic on the operations of logistic companies.

5.1 Discussion of results

Positive Consequences

Focusing on the positive consequences of the Covid-19 pandemic on LSPs, diversification of services, innovation and insertion in the e-commerce supply chain were some of the positive consequences as noted by the participants of the study. Diversification of services can be considered as an unintended consequence that comes with increased proliferation of e-commerce outlets and increase in online patronage of these outlets. The LSPs diversifying their businesses to cater online and physical logistic services allows them to be more agile and responsive to market changes. This is in line with the report of Pisz (2020) and Gu et al. (2022) who both observed that the pandemic and its attendant lockdown created opportunities which could be utilized with proper planning. Gu *et al.* (2022) specifically noted that opportunities as created by the changing environment when taken could improve on the possibilities of increasing their market share and business profit. This diversification was affirmed by some of the participants as already happening to the LSPs as reported in the study.

Innovation is another consequence that arose from the pandemic. The pandemic has forced many logistic service providers in Nigeria to be more innovative in their operations and find ways to cut costs. This has led to many companies investing in new technologies and strategies to optimize their operations, reduce costs, and improve efficiency.

Remote work and electronic administration of operations are simple examples of innovative uses of ICT tools and platforms during the period of the pandemic by the LSPs.

This affirms the observations of Galankis *et al.* (2021) Gultekin *et al.*, (2022) and Zondervan, Tolentino-Zondervan and Moeke (2022) on the need to LSPs to be innovative to stay afloat during the uncertain period that was some degree of technical and organizational innovation. Galankis *et al.* (2021) noted that the high risk and uncertainty that reigned during the pandemic was a strong enough reason for innovation by companies. Furthermore, Zondervan, Tolentino-Zondervan and Moeke (2022) add that these positive consequences affected the LSPs unequally as some had already been perfectly placed to take advantage of the demand shift.

Negative Consequences

Data from the study has shown that there is an overwhelming number of negative consequences of the Covid-19 pandemic on standard business, supply chain and commercial operations with LSPs being affected no differently.

The commonly highlighted negative consequences raised by the participants were centered around supply chain distributions, staff layoffs or furloughs, increasing expenditure or costs, increasing delivery delays (and its attendant pressures) and profitability concerns. For LSPs, the general consequence of the pandemic remains disruption to supply chains on local, national and global levels. These disruptions in the global supply chain, have made it difficult for logistic service providers to secure the goods and materials they need to operate. This has resulted in increased costs and decreased efficiency for many companies.

This observation within the study correlates with the observations of Leduc & Liu (2020). Leduc and Liu (2020) reported that supply chain damage is one of the many spill over effects that come from the moves by the government to halt the spread of the virus. Furthermore, Mogaji *et al* (2021)'s summary of Covid-19 direct impact on the economy highlighted supply chain disruptions as one of the early casualties. It is also important to note that supply chains were a major source of niche incomes for the LSPs and as such revenue losses were heavy. These loss of revenue alongside increased operational costs would place supply chain disruption as the foundation of all the other negative consequences.

Second, financial difficulties were being faced by all the LSPs at one point or the other of the pandemic period due to the economic downturn. These difficulties are often the cause of profitability concerns by LSP executives.

Financial difficulties as an impact on the business range from decreased revenue, reduced investment, to decreased access to third-party financing. Increased expenditures due to additional expenses related to PPE, sanitization, and online tracking systems, digital signatures, and contactless payment options are also adaptive approaches that necessitate financing as unexpected expenditure during the cause of the pandemic. An offshoot of such spending by LSPs would be the eventual reduction in staffing levels via furloughs and layoffs. These financial difficulties are among some of the effects of pandemic on global business operations stated by Rizwan *et al.* (2020).

Finally, increased delivery delays remain a consequence that was majorly observable at the peak of the lockdown, during which supply chains were fragmented and disrupted. These delays were attributed to the total shutdown of transportation and logistics lines on all levels, leaving items stranded in warehouses and taking longer to reach their destinations. As a result, the inability of these LSPs to complete their delivery tasks due to delays would have had a negative impact on the financial performance of many logistic service providers in Nigeria. Comparing the result of the study with Mogaji *et al.* (2021)'s observation of the economic impact of the pandemic, there is a congruence as the underlying problems with pre-pandemic transportation, logistics, and economic systems in many emerging economies set the stage for a delivery delays and failures during the pandemic. Logistics and transportation had ground to a halt as the movement of personal and goods across the world was affected.

Summarily, the Covid-19 pandemic has had a number of positive and negative consequences for logistic service providers in Nigeria, affecting their operations, revenue, and financial performance. Logistic service providers in Nigeria have been faced with many challenges as a result of the pandemic, but many have also been able to adapt and continue to provide logistics services to their customers.

Following the debilitating economic impacts that the Covid-19 pandemic had on Nigerian based LSPs, many logistic service providers in Nigeria have adapted their business

models to meet this demand by investing in new technologies and infrastructure to support e-commerce services. Changes made to business models have been largely centered on worker safety, increased efficiency and automated processing of customer requests and complaints. However, the researcher notes that the most potent reason for business model alteration was focused on the maximization of the e-commerce opportunities. The e-commerce market is still regarded as one of the faster growing commercial sub-sectors within the Nigerian economy, thus early pioneers of its logistics and supply chain connection to it would not only control majority market shares but have access to good revenue.

The incorporation of (or increased dependence upon) technology within the operations of the LSPs remain an important part to consider where alterations to business models are concerned. Technology saves time and is more efficient, leaving room for effective communication with customers (potential or current) while ensuring the smooth running of operations within conventional or e-commerce supply sectors.

5.2 Discussion of method

The study employed the qualitative approach through the use of semi-structured interviews which were used to acquire data that was then analyzed using the thematic analytical technique. Semi-structured interviews are a very useful method of gleaning qualitative data from interview participants however, the contributions made by the interviewees were subject to their willingness to reveal information while answering questions. Generally, most participants were cooperative while answering the questions with little or no need for prodding before providing veritable information that can be used for analysis. However, drawbacks noted during the application of the method is the subjectivity of the researcher and respondent fatigue. Interviewers may unconsciously bring their own biases and perspectives to the interview, leading to skewed results. Additionally, respondents may become fatigued during the interview, leading to a decrease in the quality of the data collected. This can be particularly problematic for longer interviews, or for respondents who are already stressed or uncomfortable.

Overall, both drawbacks were counteracted by purposeful objective reasoning on the part of the researcher and selection of appropriate time for the interview exercise by the respondents to allow them participate when it best suits them.

6 CONCLUSIONS

The study of the impact of the Covid-19 pandemic on the operations of logistic service providers provides a valuable understanding of the challenges faced by logistic service providers during the pandemic. Furthermore, the findings indicated that these consequences take on a positive and negative light within the context of how LSP operations were affected, their responses to the rapidly changing business environment and their prioritisation of worker health and safety.

The findings indicate that the pandemic had a significant impact on the operations of logistic service providers, leading to changes in business models, increased operational costs, and disruptions in supply chain management. Despite these challenges, the study also highlights the resilience of logistic service providers in Nigeria and their ability to adapt to the changing landscape brought on by the pandemic. The findings suggest that logistic service providers have implemented new technologies and processes to increase efficiency and ensure the continuation of their operations. While the study has some limitations, including the small sample size, self-reported data, limited perspectives, and single-case study, it provides important insights into the experiences of logistic service providers in Nigeria during the Covid-19 pandemic. The findings of this study can be used to inform future research and policy decisions related to the logistic service industry in Nigeria and beyond.

Overall, the study of the impact of the Covid-19 pandemic on the operations of logistic service providers in Nigeria highlights the significant challenges faced by the industry and it also underscores the importance of innovation and adaptation in the face of adversity, and the resilience of the logistic service industry in Nigeria.

6.1 Limitations of the study

The study is limited in several ways: First, the sample size of ten managers from five logistic companies is relatively small, and may not accurately represent the experiences

of all logistic service providers in the industry. This limits the generalizability of the findings to the wider population of logistic service providers in Nigeria. Second, the data collected in the study is based on the self-reported experiences of the managers, which may be subject to bias or recall errors. This may limit the accuracy and reliability of the findings. Third, the study only considers the perspectives of managers in logistic companies, and does not take into account the experiences of other stakeholders, such as customers, employees, and suppliers. This may result in a limited understanding of the full impact of the Covid-19 pandemic on the operations of logistic service providers. Finally, the study focuses only on the experiences of logistic service providers in Nigeria, and does not consider the experiences of providers in other countries or regions. This limits the ability to compare and generalize the findings to other regions or industries.

6.2 Suggestions for further studies

The following suggestions could contribute to a deeper understanding of the impact of the Covid-19 pandemic on the operations of logistic service providers in Nigeria and inform future policy decisions related to the industry:

1. Longitudinal studies that track the implications of the pandemic on logistic service providers across time would be extremely helpful in understanding the epidemic's longer-term implications on the sector.
2. The creation of comparative studies of the experiences of logistic service providers in other nations or areas would offer insightful information about the pandemic's effects on the worldwide industry.
3. To better comprehend the effects of the pandemic on the operations of logistic service providers, future research can take into account the viewpoints of many stakeholders, such as clients, staff members, suppliers, and governmental organisations.

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Appendices

Interview guide

Who will respond?	What do I want to know?	How do I ask?	Why do I want to know this?
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Initial Sample Group consisting of 2 Managers from the five selected Logistic service providers	1. Position in the company	May I ask about your role in the company?	To determine the perspective and exposure to company operations.
	2. Years of experience?	How long have you been working with the company?	To determine if the interviewee resumed the job before Covid-19 pandemic.
	3. Certification acquired?	Can I ask about your educational background and if you have any extra certifications?	To identify and determine the interviewee's competencies and as well as subjective assessment of company operations.
MAIN QUESTIONS			
Estimated sample size 10 participants	4. A brief description of the company's operations before, during and after Covid-19.	Can you please give an over view of your company's operations before, during and after the pandemic/lockdown.	To determine the changes in operations within the LSPs in relation to the three time periods.
	5. Any observable changes in operations between these time period.	Has there been an obvious changes to the way the firm operates since the onset of the pandemic?	To determine if the pandemic has affected the business model of the firm.
	6. Permanency of changes	Do you think these changes are permanent?	To determine if the alteration to the operations are temporal or permanent being part of a more widespread change to operations.
	7. The effect of covid on the business	Has Covid-19 affected the business	To determine the effects of covid on the business

		in any way? Whether directly or indirectly?	operations or profitability via direct or indirect mechanisms.
	8. The presence/absence of concerns over Covid's effect on business operations and profitability	Where there concerns about the effect of Covid on business operations and profitability?	To identify the presence of concerns over the possible effects of the pandemic on the operations of the LSPs.
	10. Positive or negative effects	Have the effects of the Covid-19 pandemic been wholly positive, negative or mixed? Please list and explain these effects.	To determine if the Covid-19 pandemic has had positive/negative/mixed effects on the business operations and profitability of LSPs.
	11. The duration of the effects	Can these effects be said to be long term, short term or mid term?	To determine the duration of the effects that the pandemic has business operations and profitability of LSPs.
	12. Government intervention	Did the government provide intervention packages for businesses to keep them afloat?	To determine if the government was actively involved in the financial survival of the LSPs in Nigeria.
	13. Internal alterations in adaptation to the current economic situation	Did the business develop an alternate model to adapt to the current economic situation post-Covid?	To determine the business flexibility of Nigerian based LSPs.

*Open-ended interviews will occur over a 1-week period targeted at managers working with the LSPs.

*Each interview should be conducted approximately 1 hour in length per participant.