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# Factors influencing the acceptance and patronage of E-commerce logistics operations in Nigeria

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## Abstract

**Background:** In the global world that is technologically driven, efficiency and productivity of businesses that have decided to embrace technology are achieved by e-commerce logistics (ECL). E-commerce logistics has received momentous attention in the developed countries but less attention in the developing countries. There have been some elements of uncertainty regarding the relevance of e-commerce logistics especially in the developing countries. To fill this gap, this study explored the factor influencing the acceptance and patronage of e-commerce logistics in Nigeria.

**Methods:** The following e-commerce and logistics businesses: Jumia, Konga, Kobo360, Breath2Wealth, Okrikah, DeliveryBros, Cartehub, STYLISTAA, and DayDone Limited, were explored in this study. The organizations were chosen because they were known for both e-commerce and logistics business. Qualitative research method and case study research design were employed for data collection through a purposive sampling technique. Primary data were targeted at two representatives from each organization.

**Conclusions:** The study found that external factors, political situation, government initiatives, economic situation, geographical situation, technology infrastructure, sociocultural situation, and public wakefulness have significant influence on the acceptance and patronage of e-commerce logistics in Nigeria. The study also found that many e-commerce companies also venture into distribution, thereby providing some level of logistics such as warehousing, packaging, and transportation, but they were not well informed that their operation is beyond e-commerce. It is therefore recommended that such organization should include logistics to their operation. E-commerce logistics organization should clearly state their terms and condition regarding the law of carriage which should be in accordance to the Nigeria law of Carriage.

**Keywords:** Technology acceptance, E-commerce logistics, Developing country, Nigeria

## Background

Transportation is concerned with mobility (Mladenović et al. 2020; Jean et al. 2006), particularly how mobility is taking place in the context of a wide variety of conditions. Mobility in this context is connected with the distribution of goods and services (Geels et al. 2017) without

which production (finished products that get to the final consumers) cannot be achieved (Akintayo 2010). Freight transport is a key element of a supply chain (Bruno 2017), and the execution of this type of transport is of major importance in other types of economies and businesses as it often makes possible their existence, operation, and good levels of performance (Sheller 2018; Crainic 1997). One of the means of achieving sustainable transport and distribution is the integration of more environmentally friendly modes of transport (Stevanovic and Mitrovic 2020) by combining different modes of transport (Allah

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et al. 2020). Parallel to the technological advancement in mobility toward distribution, the concept of e-commerce logistics cannot be overemphasized, as the definition of the constructs (e-distribution and e-commerce logistics) if intertwined is not far-fetched from each other.

Before conceptualizing the definition of e-commerce logistics, there is a need to understand the definition of e-commerce and logistics independently. According to Andrew (2021), e-commerce is a business model that allows organizations and individuals to engage in buying and selling of goods and services over the Internet, using computers, tablets, smartphones, and other smart Internet-enabled devices. This does not deal with distribution or logistics, but rather facilitate the linkage between buyers and sellers over the Internet (Diana et al. 2020).

In addition, logistics is a form of retailing which gives room for investing in logistical components and embarking on logistical activities. There is no specific definition of logistics; it is employed in diverse forms such as physical distribution, business logistics, materials management, procurement and supply, product flow, marketing logistics, supply chain management, demand chain management, and several more. There is, realistically, no 'true' name or 'true' definition that should be pedantically applied, because products differ, companies differ and systems differ. Logistics is a diverse and dynamic function that has to be flexible and has to change according to the various constraints and demands imposed upon it and with respect to the environment in which it works.

Many of these identified terms are used, often interchangeably, in the literature and in the business world. One quite widely accepted view shows the relationship as follows: Logistics = Supply + Materials management + Distribution. Logistics is concerned with physical and information flows and storage from raw material through to the final distribution of the finished product (Alan et al. 2006). It is defined as the physical and information flows, and storage from raw material through to the final distribution of the finished product (Xiang 2014).

There are issues with logistics, and these issues emanate and are prevailing in different organizations especially those dealing with commerce, retailing, and distribution (Committee 2018). According to Havenga (2018), logistics is defined as a major component of the supply chain process, which aids in the planning, implementation, and controlling of physical flow of goods. It also enhances the effective and efficient storage of goods. E-commerce logistics is therefore defined as the execution of both commerce and logistics over the Internet. It is the inclusion of logistical activities with e-commerce. Majority of the e-commerce businesses do not increase their scope to logistics because they don't want to incur any associated

risks regarding logistics. There is high risk associated with logistics because of the bad state of road networks which result to road congestion (Risk Management Society 2015). As a result of congestion, perishable goods may be lost in transit either through theft, or damage.

Apart from road congestion, poor road infrastructures and poor vehicle conditions are among other issues that hinder the effectiveness of logistical operations (Kruger and Luke 2015). Conventional approaches of managing and ensuring safety of vehicles consist of dynamics relating to the provision of driver training, ensuring effective health and safety procedures (Tiikkaja et al. 2020), and developing safety programs and policies (O'Sullivan and Sinnott 2016). Despite the initiatives and schemes that have been put in place to improve safety, the literature reveals that challenges are still in existence.

As a result of technological advancement and economic forces, the face of logistics changes such that there is a growing amount of space being made accessible at a minimal cost with improvements in transport speed, capacity, and efficiency (Fearnley and Aarhaug 2019; Jean et al. 2006); also with an increase in customers' expectation (Liimatainen et al. 2020), there are more classy options available to logistics service providers in various means (Andersson and Hasson 1998). With the development of industry 4.0, there has been emergence of networked communication, digitalization, data analytics, machine learning, and to name a few (Koch et al. 2014). The Industry 4.0 enhances the integration of various technologies to advance and transform the efficiency of logistics business dynamics (Vaidya et al. 2018; Wang and Pei 2014). As a result of Industry 4.0, the concept of e-commerce logistics was achieved for commerce and logistics to be electronically and technologically driven sequentially (van der Tuin and Pel 2020). The wide range activities of logistics such as storage, inventory management, materials handling, and order processing will be efficiently enhanced with e-commerce logistics.

Electronic commerce logistics or simply e-commerce logistics, which is rooted on information and communication technologies (ICTs), has the possibility of improving trade efficiency across the globe and integrating developing economies into a global economy (UNCTAD 1999). As a result, Chowdhury (2003) observed that there has been a significant growth of e-commerce logistics in developed countries in the last two decades and it is recently evidenced in the developing countries. It is the management of physical flows of an organization that sells goods via an online platform such as website, blogs, among all.

Most technologies, including e-commerce logistics, were developed in Western countries that have very heterogeneous backgrounds to those of developing

countries. The success of technology acceptance and patronage is mostly dependent on how it is employed by the users, and as a result, it is affected by the vigorous between the technology and the users (Unhelkar 2003). It is not surprising that although the acceptance and patronage of technology has always been thriving among youths in developing countries, there are cases of thefts, scams, and frauds encountered online. Furthermore, while e-commerce logistics have been advantageous for many years in the developed countries, there is still uncertainty in the significance of e-commerce logistics and its importance in the developing countries (Odedra-Straub 2003).

In the globalization era, understanding the acceptance and patronage of ICT as well as e-commerce logistics in the developing countries is becoming essential to increase the level of its acceptance and patronage. This, in turn, enhances the developed countries to do business deal with the developing countries more resourcefully. At this stage, Chowdhury (2003) noted that there are still scarcity of studies on the acceptance and patronage of e-commerce logistics technologies by developing countries. This study is carried out to fill the lacuna in the studies regarding technology acceptance and patronage by exploring the factors influencing the acceptance and patronage of e-commerce logistics operations in Nigeria.

For this study, Jumia, Konga, Kobo360, Breath2Wealth, Okrikah, DeliveryBros, Cartehub, STYLISTAA, and DayDone Limited were considered for this study. The organizations were chosen because they were known for both e-commerce and logistics business activities in Nigeria. Because of globalization, there have been different dynamics in business competition and there has also been a swift change in the level of investment in ICT growth. This advantage of ICT is not only felt (enhancing competitiveness) on businesses, but on other sectors of the economy. It is, therefore, pertinent to assess how these recent dynamics affect Nigerian organizations' attitude toward e-commerce logistics technology acceptance and patronage, since it is supposed that competition plays a key role in the growth of ICT (Singh 2000).

A few studies have been conducted to really investigate the factors of e-commerce logistics. Most of the available studies concentrated on e-commerce logistics (Bask et al. 2012; Masmoudi et al. 2014; Ramanathan et al. 2014). In fact, Ying et al. (2016) conducted a comprehensive review of the practice of e-commerce logistics in supply chain management by drawing lessons and insights from North America, Europe, and Asia Pacific. Many of these studies focused on examining the B2B business model and may be limited to e-commerce.

Ejdys and Gulc (2020) examined the interrelationships between usefulness of courier services, ease of

use of courier services, trust in courier services, service quality, and future intention to use courier services, with the use of electronic questionnaire to conduct interview. The study found a statistical significance between the following constructs: ease of use and trust in service; usefulness and trust in service; trust in service and service quality; and service quality and future intention to use the services.

Miraz et al. (2020) conducted a study on the affecting e-commerce logistics in Malaysia using trust as the mediating role. The study further analyzed the factors that influence blockchain users to utilize blockchain in e-logistic from a cross-sectional approach. The study found that there is a positive significant relationship between e-logistic, blockchain, crypto-currency, and trust.

Russo and Confente (2019) analyzed the significance of e-commerce logistics service quality and identified the key drivers for gaining customer satisfaction and loyalty with the use of Multiple Regression analysis. The study found that the site ease of use and the physical distribution service quality (PDSQ) were statistically significant in predicting the customer satisfaction, whereas other antecedents, such as the physical distribution service price (PDSP) and the product returns management (PRM), were not statistically significant.

Rajendran et al. (2018) conducted a study on the impact of logistics services on the e-shoppers' satisfaction, thereby determining the main logistics services elements that influences satisfaction of online shopper. Pearson correlation and multiple regression were employed for data analysis. The study found that service recovery, delivery service, and customer service positively influence the satisfaction level of e-commerce shoppers.

Also, limited researches may have been conducted on the acceptance and patronage of e-commerce logistics in Nigeria. Consequently, this study focuses on examining B2C business model of e-commerce logistics. In order to figure out current factors influencing the acceptance and patronage of e-commerce logistics business in a B2C model, this paper provides an all-inclusive review of e-commerce logistics business and provides insights into the extent at which e-commerce logistics is been accepted and used by Nigerian organization. The findings of this current study will contribute to the technology acceptance literature.

The literature search comprises of both primary and secondary sources that were published. In the review, the electronic databases such as ResearchGate, Academia, Scopus, Web of Science, and Google Scholar were employed for sourcing studies. The major keywords

employed were e-commerce, logistics, retailing, and business models.

## Literature review

### Dynamics of e-commerce logistics

E-commerce logistics enhances efficiency of logistical operation; it deals with right timing and is pertinent to determining a firm's competitiveness. It does not just reduce costs of transport and transit time, but also reduces the costs of overall production. It is crucial to note that in a situation whereby logistics services are inefficient, firms are likely to maintain higher inventories at each stage of the production chain, requiring additional working capital such that larger warehouses stores larger inventories. Gausch and Kogan (2001) estimated that developing countries could reduce the unit cost of production by as much as 20% by reducing inventory holdings by half. At the sectoral level, logistics is most essential for the electronic, pharmaceutical, automotive, and fashion clothing sectors, where timeliness is essential.

The largest component of logistics cost is transport cost which accounts for more than one-third of the total logistics cost. Nigeria's road transport market is populated by many small carriers with average fleet size of less than two trucks. Despite the fact that transport rates are low, the highly fragmented supply and demand for road transport services implies that short-haul truckers frequently return home empty and long-haul truckers have to wait for a longer time before getting loads, and this is gravely affecting the operating efficiency of logistics service providers. In a situation where payments to truck brokers are included, the cost of getting a backhaul load will be higher. The high cost of finding backhaul cargo makes the profit margin of running a goods carrier extremely thin after paying for fixed vehicle costs which includes cost of acquiring trucks, license fees, fuel cost, and costs of repair and maintenance among others.

Also, there is high variability of delivery time which would make it very hard to organize just-in-time (JIT) delivery for most goods, where inventories are kept to a bare minimum and inputs arrive at the factory only when they enter the production process. JIT is a technology that is well enhanced in the case of e-commerce logistics. When this technology is introduced, all the components involved in delivery can be monitored from time to time. A major role of e-commerce logistics is to assist in the production, consumption, distribution, or management of the 'supply chain' of goods and services. It can play an essential part in facilitating the global supply-chain process (Banomyong 2005).

The transactions of e-commerce logistics can be driven by information using ICTs, through computer networks

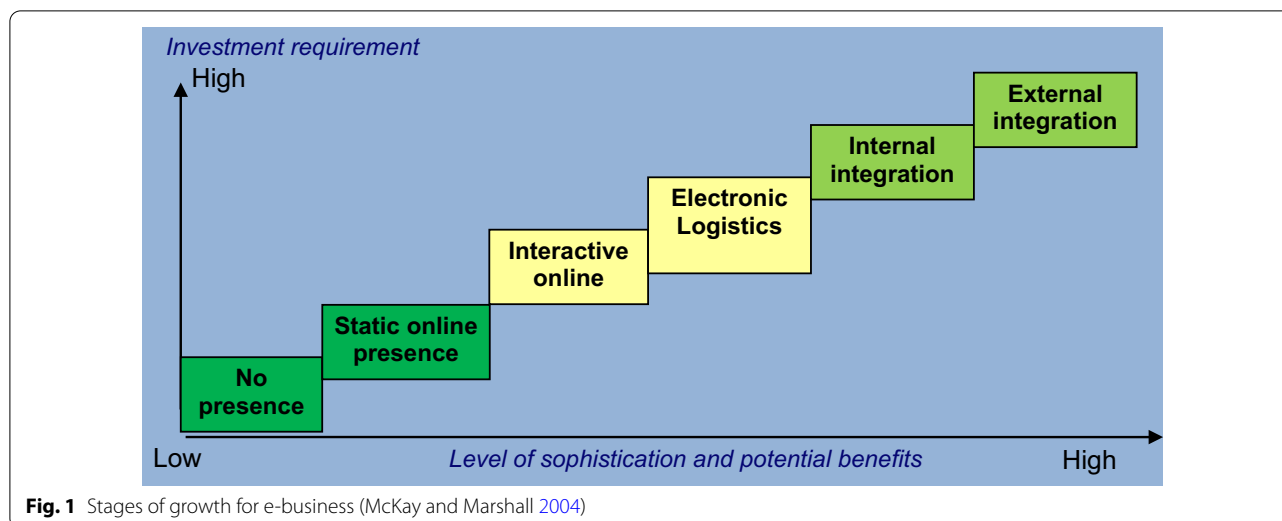
(such as Internet, intranet, and extranet) (Turban et al. 2006). It also entails activities such as collaborating with business partners, servicing customer online, and exchanging business documents within and outside an organization via the Internet (Barness and Hunt 2001).

Although e-commerce logistics is a relatively new concept, the activities are not new. The first e-commerce logistics application, Electronic Funds Transfer (EFT), was developed in the early 1970s to enhance funds to be allocated and channeled electronically between financial institutions (Johnston 1998). In the early 1980s, it was transformed to Automatic Teller Machine (ATM) so that financial transactions can be carried out with the use of computer network (Barness and Hunt 2001). After the ATM, Electronic Data Interchange (EDI) was developed in the late 1980s to enhance a wider application of e-commerce logistics across industries. Internet and the World Wide Web (WWW) enhance access to the Internet, and e-commerce logistics has grown considerably in the last few years (Turban et al. 2006).

McKay and Marshall (2004) put forward a model to show e-commerce logistics stages of growth, which was adapted from e-business stages of growth as shown in Fig. 1. The stages of e-business are usually unidirectional as influenced by information which enhances job opportunities. In the process, customer can select a product or products and be able to make feedback on the product ordered online. Those products are advertised via online platform particularly ads, and from which the customer decides to buy. The online platform was interactive as it provides personalized information to the customers and enhances customer choice. The personalized information was made available based on customer's profile.

It is important to note that transactions cannot be completed online. Goods must be delivered in a cost-friendly and safe manner, and customers and the organization must be able to manage their line of communication. This is Business-to-Consumer (B2C) development which focuses on improving the logistics and supply chain management efficiency by deploying JIT, quick response (QR), efficient consumer response (ECR), collaborative planning, forecasting and replenishment (CPFR) for various business activities (Kurnia and Johnston 2003a, b).

From this model, it was suggested that the higher the stage realized by an organization, the higher the required investment and the higher the benefits that can be derived. There are huge benefits that organizations can realize from their investment in the technologies of e-commerce logistics, which are extensively discussed in the works of the literature. Those benefits are productivity and efficiency gain by minimizing or eradicating human interference in different business operation (Abdolvand and Kurnia 2005), perfection in the communication



and information sharing within and between organizations with the use of EDI, email, information portal on extranet or intranet, global access to more suppliers and customers, improved and efficient customer service, effective business transactions and partner relationships, minimized business cycles, reduction in transaction cost, and improved and connected supply chain management (Barnes and Hunt 2001; Turban et al. 2006). These will enhance organizational competitiveness and improved performance in various dealings.

#### Models of e-commerce logistics business

In the e-commerce logistics business, Bolumole et al. (2015) posit that the two main types of business models are business to business (B2B) and business to consumer (B2C). Regarding B2B model, one business makes a commercial transaction with another business. Regarding the B2C model, all transactions between a business organization and intending customer are usually taken place on the business website (Mangiaracina et al. 2015). This is a dominant form of e-business model whereby consumers visit the website, explore the website information (product or service checking), and place an order to buy.

After the business organization received the purchase order, goods will be dispatched to the customer based on agreed terms. Examples of popular organization that make use of B2C business model are Amazon in China (Ta et al. 2015), Jumia in Nigeria. Those organizations are known for huge advertisement, large customer base, huge investment in product, responsive customer service (Nica 2015).

#### Differences between B2B and B2C models

One major characteristic is that the volume of business transactions in B2B is more than the volume of business transactions in B2C. In a supply chain process, many B2B transactions will be established involving different elements, particularly raw materials; in the case of B2C, only one transaction may be recorded, most especially the sale of the finished goods to the end user (customer). More risks are encountered through the purchase of B2B products than that of B2C products. This is so because the entire purchasing business can be at risk when products are wrongfully purchased (in terms and/or quantity) (Sila 2013).

The new approach of logistics (termed e-commerce logistics) have turn out to be the most viable means of improving the efficient flow of raw material (physically), reduction of associated costs central to distribution to achieve market value and final delivery. As a result, there is a need to explore the factors that enhances the adoption and patronage of e-commerce logistics among organizations that work within the dynamics.

#### Methods

This study employed a qualitative research method through personal interview to clarify the phenomenon regarding the factors influencing the acceptance and patronage of e-commerce logistics in Nigeria using Jumia, Konga, Kobo360, Breath2Wealth, Okrikah, DeliveryBros, Cartehub, STYLISTAA, and DayDone Limited. The organizations were chosen because they were carry out for both e-commerce and logistics business in Nigeria. Case study research design was employed because the study focused on organized population and on the experiences and perception of the respondents which are two



participants from each organization (Shona 2019; Yazan 2015; Vohra 2014; Tsang 2013). In this study, the organized organizations were Jumia, Konga, Kobo360, Breath-2Wealth, Okrikah, DeliveryBros, Cartehub, STYLISTAA, and DayDone Limited which were explored in this study. Purposive sampling was employed in this study because of convenience.

Questions were asked regarding the factors influencing the acceptance and patronage of e-commerce logistics in Nigeria using the selected organizations as earlier stated. The questions were in line with the following: external influence, political situation, government initiatives, economic situation, geographical situation, technology infrastructure, sociocultural situation, and public wakefulness.

**Results**

According to Simona (2021), the digital structure and operations in Nigeria is quite flourishing because the country has one of the biggest Internet economies in Africa. This is also enhanced with the population strength which has mostly of young people, good Internet coverage and infrastructure for mobile connectivity. It was further discovered that there are large number of unreached population in Nigeria with Internet patronage. As at 2018, Nigeria had 92.3 million Internet users; this figure is projected to grow to 187.8 million Internets patronage in 2023. The Internet penetration grows with 47.1% in 2018 and expected to reach 84.5% in 2023. This population of unreached users is locales in which either through lack of Internet facility or lack of relevance is yet to leverage the use of technology for their business transactions, most especially farming (Adeniran 2021; [www.daydone.com.ng](http://www.daydone.com.ng)).

E-commerce logistics has been the goldmine of commerce in the world with a market size point of 3.46

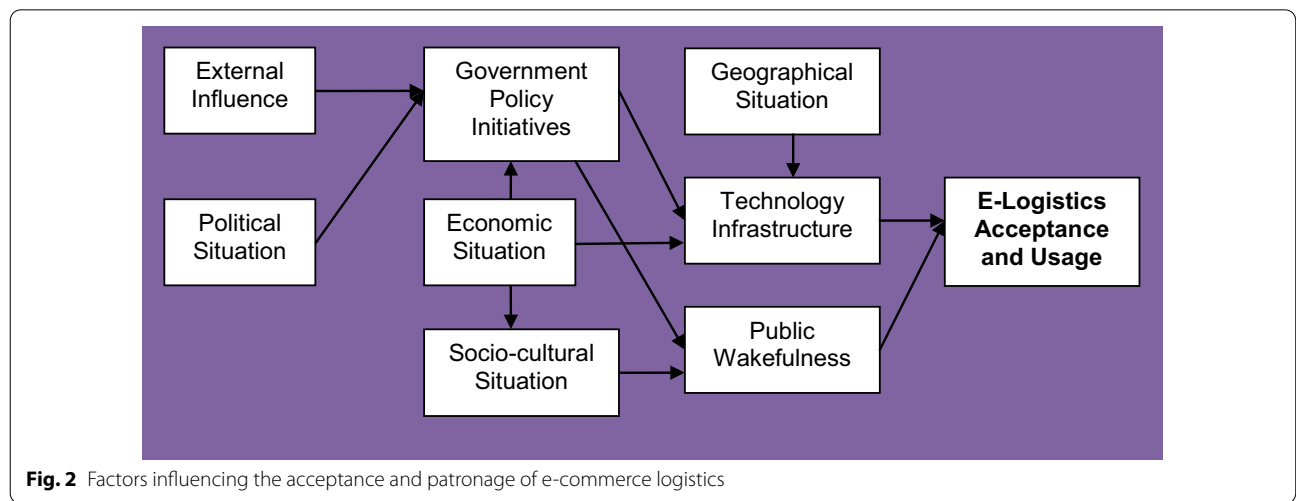
Trillion Dollars, and Nigeria presently with 13 Billion Naira which is expected to grow to 50 Billion Naira. This with e-commerce logistics integration is a huge market potential for e-commerce logistics. E-commerce logistics businesses are expected to bring technologies that are needed to succeed in Internet business and on its e-commerce logistics platform. Low returns from the monetary and physical investment can be countered using technology to promote the distribution chain of goods and products.

**Discussion**

**Factors influencing the acceptance and patronage of e-commerce logistics**

Based on the interview conducted by the researcher to the management of the selected e-commerce logistics businesses, it was revealed that they all agreed that external factors, political situation, government initiatives, economic situation, geographical situation, technology infrastructure, sociocultural situation, and public wakefulness have huge influence on the acceptance and patronage of e-commerce logistics in Nigeria. Some of the participants (managers) noted that many e-commerce companies venture into distribution, thereby providing some level of logistics like warehousing, packaging, transportation, but they were not well informed that their operation is beyond e-commerce. They recommended that such organization should include logistics to their operation so as not to shy away from being negligible for any loss or damage to goods.

It is pertinent to understand the factors that influence the adoption of e-commerce logistics vary from country to country. In the works of the literature, a number of factors have been discovered and are summarized in Fig. 2. This figure demonstrates the influence of individual



**Fig. 2** Factors influencing the acceptance and patronage of e-commerce logistics

factor on other factors, and they will be employed in developing a model of e-commerce logistics acceptance and patronage by developing countries in a subsequent phase of the study, united with other factors discovered at different levels which include organizational and industry levels.

#### **External influence**

The growth of e-commerce logistics in a country is influenced by other countries. For instance, the repute and dominance of credit card frauds in some countries resulted in blockages of many IP addresses by a number of commercial websites from dissimilar countries. This situation can lead to the expulsion of those countries from global business transactions and therefore, limiting the efficacy and convenience of e-commerce logistics (Hidayat 2004).

#### **Political situation**

Political situation is a key factor for e-commerce logistics growth. In a country with political instability, it is less likely that government can fully look toward developing e-commerce logistics by examining the greatest opportunities there in (Dedrick et al. 1995).

#### **Government initiatives**

Generally, government initiatives are imperative in the acceptance and patronage of e-commerce logistics and other ICT devices (Molla 2005). These initiatives can be in terms of promoting ICT education, ICT patronage, and the establishment of ample regulatory framework for the operation of e-commerce logistics which will not exclude tariff, taxation for revenue generated through Intellectual Property Protections and e-commerce logistics. Government initiatives are influenced by many factors such as the country's political situation, economic situation, and external influence from other countries.

#### **Economic situation**

Economic situation is widely identified as a major driver for e-commerce logistics acceptance and patronage. The GDP and income per capita are dominant indicators for measuring the economic performance of a country. Since e-commerce logistics depends on some technological infrastructures which are highly expensive for many developing countries, those countries with adverse economic situation may not be able to get along in the sweeping transformation involved in e-commerce logistics (Dedrick et al. 1995). The socioeconomic situation of a country will also be affected by the economic situation.

#### **Geographical situation**

Geographical situation of a country can be a stimulus or hindrance to technology the development of infrastructural development. In countries that entail many small islands, hills, and valley, the development of technology infrastructures can be intricate. On the other hand, the essence of having such infrastructure is also noteworthy for effective communication and business transaction among the parties that are geographically separated (Minges 2002).

#### **Technology infrastructure**

The success of e-commerce logistics depends more on the technological infrastructures. Examples of those infrastructures are telecommunication infrastructures which are required to facilitate connections of different parties and regions within and across countries (Molla 2005). E-commerce logistics also depends on the efficient, reliable, and secure logistical infrastructures within a country. It is pertinent to note that online payment infrastructures must be secured to prevent illegal dealing especially frauds (Boerhanoeddin 2000).

#### **Sociocultural situation**

The acceptance and patronage of e-commerce logistics depends on the social and cultural environment. In some countries, people regard shopping as a form of recreation, and therefore, B2C approach of e-commerce logistics is difficult to idealize (Boerhanoeddin 2000). Equally, the availability of IT skills, the level of education, the level of individual's Internet penetration, and android phone patronage within the society influence the growth of e-commerce logistics (Raffa et al. 2002).

#### **Public wakefulness**

A lack of wakefulness of the patronage and potential benefits of ICT can also militate against the growth of e-commerce logistics (Molla 2005). Many people in some developing countries are only awake and sensitized to the limited applications of e-commerce logistics such as email, chat, and browsing websites (Minges 2002), and as a result, organizations have not fully considered tapping the potentials of e-commerce logistics to enhance effectiveness of their business operations.

#### **Conclusions**

This study explored the factor influencing the acceptance and patronage of e-commerce logistics in Nigeria through a qualitative research method, and personal interview. The following e-commerce logistics organizations were purposively selected in Nigeria: Jumia, Konga, Kobo360, Breath2Wealth, Okrikah, DeliveryBros,

Cartehub, STYLISTAA, and DayDone Limited. The organizations were chosen because they were carry out for both e-commerce and logistics business in Nigeria.

Case study research design was employed because the study focused on organized population and on the experiences and perception of the respondents which are two participants (managers) from each organization. The questions were asked in-line with the following: external influence, political situation, government initiatives, economic situation, geographical situation, technology infrastructure, sociocultural situation, and public wakefulness (Additional file 1).

The study found that all the participants agreed that external factors, political situation, government initiatives, economic situation, geographical situation, technology infrastructure, sociocultural situation, and public wakefulness have huge influence on the acceptance and patronage of e-commerce logistics in Nigeria. Some of the participants noted that many e-commerce companies venture into distribution, thereby providing some level of logistics like warehousing, packaging, transportation, but they were not well informed that their operation is beyond e-commerce. The study recommends that such organization should include logistics to their operation so as not to shy away from being negligible for any loss or damage to goods. E-commerce logistics organization should clearly state their terms and condition regarding the law of carriage which should be in accordance to the Nigeria Contract of Carriage. Finally, the e-commerce logistics should be conscious of the external factors, political situation, government initiatives, economic situation, geographical situation, technology infrastructure, sociocultural situation, and public wakefulness in their business operations.

#### Abbreviations

ECL: Electronic commerce logistics; B2B: Business to business; B2C: Business to customer; IT: Information technology; ICT: Information Communication Technology.

#### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s42269-022-00816-x>.

**Additional file 1.** Consolidated criteria for reporting qualitative studies (COREQ).

#### Author contributions

AOA designed the introduction, literature, and methods and analyzed the data, FOA designed the literature and proofread the article, and SOO proofread the article. All authors read and approved the final manuscript.

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Not applicable.

#### Availability of data and materials

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request, but cannot be made publicly available in order not to go against the declaration of confidentiality made to the participants.

#### Declarations

##### Ethics approval and consent to participate

Not applicable.

##### Consent for publication

Not applicable.

##### Competing interests

The author declares that there is no competing interest.

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#### References

- Abdolvand N, Kurnia S (2005) The EPC technology implications on cross-docking. In: San Diego international systems conference, USA
- Akintayo SB (2010) Transport economics. S. Asekoye & Co Press, Zaria
- Alan R, Phil C, Peter B (2006) The handbook of logistics and distribution management, 3rd edn. Kogan Page Limited, London
- Allah Bukhsh Z, Stipanovic I, Doree AG (2020) Multi-year maintenance planning framework using multi-attribute utility theory and genetic algorithms. *Eur Transp Res Rev* 12:3. <https://doi.org/10.1186/s12544-019-0388-y>
- Andersson T, Hasson P (1998) Why integrated transport system? Organization for Economic Cooperation and Development, Paris
- Andrew B (2021) Electronic Commerce (E-commerce). Investopedia. Accessed from <https://www.investopedia.com/terms/e/ecommerce.asp>
- Banomyong R (2005) The impact of port and trade security initiatives on maritime supply-chain management. *Marit Policy Manag* 32(1):3–13
- Barness S, Hunt B (2001) E-commerce and V-business. Butterworth Heinemann, London
- Bask A, Lipponen M, Tinnilä M (2012) E-commerce logistics: a literature research review and topics for future research. *Int J E-Serv Mob Appl (IJESMA)* 4(3):1–22
- Boerhanoeddin Z (2000) E-Commerce in Indonesia. Retrieved from <http://www.isoc.org/inet2000/cdproceedings/7/c/>
- Bolumole YA, Frankel R, Naslund D (2015) Developing a theoretical framework for logistics outsourcing. *Transport J* 46(2):35–54. <https://doi.org/10.5325/transportationj.46.2.0035>
- Bruno PP (2017) Evaluation of performance indicators of intermodal freight transport chains. Técnico Lisboa, University of Lisbon, pp 1–10
- Chowdhury A (2003) Information technology and productivity payoff in the banking industry: evidence from the emerging markets. *J Int Dev* 15(6):693–708
- Committee IR (2018) Skills forecast 2018 transport and logistics, s.l: Australian Industry Standards, p 3
- Crainic TG (1997) Planning models for freight transportation. *Europ J Operational Res* 97(3):409–438
- Dedrick J, Goodman S, Kraemer K (1995) Little engines that could: computing in small energetic countries. *Assoc Comput Mach* 35:21–26
- Diana M, Pirra M, Woodcock A (2020) Freight distribution in urban areas: a method to select the most important loading and unloading areas and a survey tool to investigate related demand patterns. *Eur Transp Res Rev*. <https://doi.org/10.1186/s12544-020-00430-w>
- Ejdys J, Gulc A (2020) Trust in courier services and its antecedents as a determinant of perceived service quality and future intention to use courier service. *Sustainability* 12(21):9088. <https://doi.org/10.3390/su12219088>



- Fearnley N, Aarhaug J (2019) Subsidising urban and sub-urban transport—distributional impacts. *Eur Transp Res Rev* 11:49. <https://doi.org/10.1186/s12544-019-0386-0>
- Geels FW, Sovacool BK, Schwanen T, Sorrell S (2017) Sociotechnical transitions for deep decarbonization. *Science* 357(6357):1242–1244
- Guasch JL, Kogan J (2001) Inventories in developing countries: levels and determinants—a red flag for competitiveness and growth. Policy Research Working Paper 2552. The World Bank. <http://elibrary.worldbank.org/doi/book/10.1596/1813-9450-2552>
- Havenga JH (2018) Logistics and the future: the rise of macrologistics. *J Transp Supply Chain Manag* 12:1–10
- Hidayat AS (2004) Green supply chain event organizer (GSCEO). *Int J Sci Res Pub (IJSRP)* 8(7). <https://doi.org/10.29322/IJSRP.8.7.2004.p7934>
- Interview with the founder of DayDone Ltd., Adeniran, Adedayo (2021)
- Jean-Paul R, Claude C, Brian S (2006) *Geography of transport systems*. Routledge, London
- Johnston RB (1998) *Trading Systems and Electronic Commerce*. Eruditions Publishing, London
- Koch V, Schrauf S, Geissbauer R, Kuge S (2014) Industry 4.0 and opportunities and challenges of the industrial internet. Price water house Coopers Aktiengesellschaft Wirtschaftsprüfungsgesellschaft. <https://doi.org/10.1016/j.futures.2014.12.002>
- Kruger S, Luke R (2015) Current issues in the transport and supply-chain environment in South Africa. *J Transp Supply Chain Manag* 9(1):1–3
- Kurnia S, Johnston RB (2003a) Adoption of efficient consumer response: key issues and challenges in Australia. *Supply Chain Manag Int J* 8(2):251–262
- Kurnia S, Johnston RB (2003b) Adoption of efficient consumer response: key issues and challenges in Australia. *Supply Chain Manag Int J* 8(2):251–262
- Liimatainen H, Pöllänen M, Nykänen L (2020) Impacts of increasing maximum truck weight—case Finland. *Eur Transp Res Rev* 12:14. <https://doi.org/10.1186/s12544-020-00403-z>
- Mangiaracina R, Marchet G, Perotti S, Tumino A (2015) A review of the environmental implications of B2C E-commerce: a logistics perspective. *Int J Phys Distrib Logist Manag* 45(6):565–591
- Masmoudi M, Benaissa M, Chabchoub H (2014) Optimisation of e-commerce distribution system: problem modelling and exact resolution. *Int J Bus Perform Supply Chain Model* 6(3–4):358–375
- McKay APJ, Marshall P (2004) A study of the progression of e-business maturity in Australian SMEs: some evidence of the applicability of the stages of growth for e-business model. In: 7th Pacific Asia Conference on Information Systems, 10–13 July 2003, Adelaide, South Australia
- Minges M (2002) Kretek internet: Indonesia case study. Retrieved from [http://www.apjii.or.id/dokumentasi/id\\_cs.pdf](http://www.apjii.or.id/dokumentasi/id_cs.pdf)
- Miraz MH, Sharif KIM, Hassan MG, Hasan MT (2020) Factors affecting E-commerce in Malaysia: the mediating role of trust. *J Adv Res Dyn Control Syst* 12(03):111–120. <https://doi.org/10.5373/JARDCS/V12SP3/20201244>
- Mladenović MN, Leviäkangas P, Roncoli C, Hänninen S (2020) Rethinking transport—towards clean and inclusive mobility (highlights of the 2020 transport research arena conference). *Eur Transp Res Rev* 12:45. <https://doi.org/10.1186/s12544-020-00434-6>
- Molla A (2005) Exploring the reality of e-commerce benefits among businesses in a developing country. University of Manchester, Precinct Centre, Manchester, UK. <http://www.sed.manchester.ac.uk/idpm/publications/wp/di/index.htm>
- Nica E (2015) Environmentally sustainable transport and E-commerce logistics. *Econ Manag Financ Mark* 1:86–92
- O'Sullivan E, Sinnott D (2016) Transport safety seminar 2016. Dublin, Health and Safety Authority, ppt
- Odedra-Straub M (2003) E-commerce and development: whose development? *Electron J Inf Syst Dev Ctries* 11(2):1–5
- Raffa KF, Aukema B, Bentz B, Romme WH (2002) Cross-scale drivers of natural disturbances prone to anthropogenic amplification: the dynamics of bark beetle eruptions. *BioScience* 58(6). <https://doi.org/10.1641/B580607>
- Rajendran SD, Wahab SN, Ling YW, Yun LS (2018) The impact of logistics services on the e-shoppers' satisfaction. *Int J Supply Chain Manag* 7(5):461–469
- Ramanathan R, George J, Ramanathan U (2014) The role of logistics in E-commerce transactions: an exploratory study of customer feedback and risk. In: *Supply chain strategies, issues and models*. Springer, pp 221–233
- Risk Management Society (2015) Is fleet safety your risk management blind spot? *sl. RIMS*
- Russo I, Confente I (2019) E-commerce logistics service quality in the digital era: key drivers for gaining customer satisfaction and loyalty. *Skyline Bus J* 14(1):49–60
- Sheller M (2018) *Mobility justice: the politics of movement in an age of extremes*. Verso Books, London
- Shona M (2019) How to create a research design. Retrieved from <https://www.scribbr.com/research-process/research-design/>
- Sila I (2013) Factors affecting the adoption of B2B E-commerce technologies. *Electron Commer Res* 13(2):199–236
- Simona V (2021) E-commerce in Nigeria—statistics and facts. Accessed from [https://www.statista.com/6786/e-commerce-in-nigeria/...](https://www.statista.com/6786/e-commerce-in-nigeria/)
- Singh AD (2000) Electronic commerce: some implications for firms and workers in developing countries. International Institute for Labour Studies, Geneva
- Stevanovic A, Mitrovic N (2020) Impact of conflict resolution parameters on combined alternate-directions lane assignment and reservation-based intersection control. *Eur Transp Res Rev* 12:6. <https://doi.org/10.1186/s12544-020-0394-0>
- Ta H, Esper T, Hofer AR (2015) Business to Consumer (B2C) collaboration: rethinking the role of consumers in supply chain management. *J Bus Logist* 36(1):133–134
- Tiikkaja H, Liimatainen H, Pöllänen M (2020) Satisfaction with general functionality and safety of travel in relation to residential environment and satisfaction with transport modes. *Eur Transp Res Rev* 12:32. <https://doi.org/10.1186/s12544-020-00423-9>
- Tsang EWK (2013) Case study methodology: causal explanation, contextualization, and theorizing. *J Int Manag* 19(195):202. <https://doi.org/10.1016/j.intman.2012.08.004>
- Turban E (2006) *Electronic commerce: a managerial perspective*. Prentice Hall, Englewood Cliffs
- UNCTAD - United Nation Conference on Trade and Development (1999) *Can Electronic commerce be an engine for global growth? Electronic commerce and the integration of developing countries and countries with economies in transition*, International Trade, 19–23 July 1999, Geneva
- Unhelker B (2003) Understanding the impact of cultural issues in global E-business alliances. In: 4th International web conference, 24–25 Nov 2003, Perth, WA
- Vaidya S, Ambad P, Bhosle S (2018) Industry 4.0—a glimpse. *Procedia Manuf.* <https://doi.org/10.1016/j.promfg.2018.02.034>
- van der Tuin MS, Pel AJ (2020) The disruption transport model: computing user delays resulting from infrastructure failures for multi-modal passenger & freight traffic. *Eur Transp Res Rev* 12:8. <https://doi.org/10.1186/s12544-020-0398-9>
- Vohra V (2014) Using the multiple case study design to decipher contextual leadership behaviors in Indian organizations. *Electron J Bus Res Methods* 12:54–65
- Wang L, Pei Y (2014) The impact of continuous driving time and rest time on commercial drivers' driving performance and recovery. *J Saf Res* 50:11–15. <https://doi.org/10.1016/j.jsr.2014.01.003>
- Xiang L (2014) Operations management of logistics and supply chain: issues and directions. *Discrete Dyn Nat Soc*. 1:1. <https://doi.org/10.1155/2014/701938>
- Yazan B (2015) Three approaches to case study methods in education: Yin, Merriam, and Stake. *Qual Rep* 20(2):134–152
- Ying Y, Xin W, Ray YZ, George QH (2016) E-logistics in supply chain management: practice perspective. *Changeable, Agile, Reconfigurable & Virtual Production*. *Procedia CIRP* 52:179–185. <https://doi.org/10.1016/j.procir.2016.08.002>

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