

# The Impact of E-Commerce on the Performance of Logistic Service Providers in Ghana

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## Abstract

Since the introduction of information technology in the late 90's, e-commerce and logistics have gained weight throughout the world. Ghana has experienced the arithmetic growth of e-commerce since the 21<sup>st</sup> century. Although, majority of Third-Party Logistic companies are from Europe and USA (FedEx, DHL, UPS, etc), there have been the introduction and development of some local 3PL (OMA Ghana Ltd, McDan Shipping, etc.). The research's had the main objectives were to: (1) explore the inventory management model practiced by the e-commerce companies in Ghana; and (2) assess the impact of e-commerce on the performance of logistic service providers in Ghana. The study concluded that: Almost 85% of e-commerce companies in Ghana preferred Jointly Managed Model. Also, there was positive correlation between e-commerce and the performance of logistic service providers in Ghana. The study further recommended that; the Government of Ghana should help in providing credible housing addressing system to enhance local home-to-home delivery of goods and services; and the e-commerce companies should work hand in hand to enable online payment system on their platform by providing SSL securities and Data Protection services.

**Keywords:** E-commerce, Logistics service providers, E-commerce in Ghana.

**DOI:** 10.7176/JESD/11-10-04

**Publication date:** May 31<sup>st</sup> 2020

## 1.0 INTRODUCTION

For sometimes now, companies in Ghana have to face the fact that not paying notice to their costs and performance will not allow them to stay on the market. The clients' needs are consistent and possibly more challenging than before. The use of logistics tools and supply chain management is regarded as among the best ways to improve business (Lakatos, and Nemeth, 2013). The present background is that of great business opposition and of a gradually, dynamic, and globalized economy; companies need to find procedures and management methods that increase the development of efficient organization with enhancing results. This paradigm has been the subject of several studies, which focused their attention to the purpose and the different effects as well as the meaning of each of the companies' competitive achievement (Stock et al., 2000; Banon, and Sanchez, 2002; Norek et al., 2007). Basically, e-Commerce refers to any form of business transaction conducted online. The most popular example of e-Commerce is online shopping, which is defined as buying and selling of goods via the internet on any device. However, e-Commerce can also entail other types of activities, such as online auctions, payment gateways, online ticketing, and internet banking. Chaffey, (2010) explained e-commerce as "all electronically mediated information exchanges between an organization and its external stakeholders". In the quest to develop services towards the e-commerce direction, business organizations in developing and developed countries are making efforts to develop organizational structures to coordinate e-commerce services. Logistics according to the council of logistics is defined as "that part of supply chain process that plans, implements, and controls the efficient, effective, forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer requirement". In ordinary language the same can be defined as right product, at the right place, in right time, and in right condition. However, supply chain consists of all stages that are required to satisfy the customer request. It starts from supplier passing through manufacturer, distribution, retailer, and finally reaches the customer. The supply chain management is the oversight of materials, information and finances as they move in the process from supplier to manufacturer to wholesaler to retailer to customer.

### 1.1 Statement of the Study

Logistics is the management of the flow of goods between the point of origin and the point of consumption in order to meet some requirements, for example, of customers or corporations. The resources managed in logistics can include physical items, such as food, materials, animals, equipment, and liquids, as well as abstract items, such as time, information, particles, and energy. The logistics of physical items usually involves the integration of information flow, material handling, production, packaging, inventory, transportation, warehousing, and often security. The complexity of logistics can be modeled, analyzed, visualized, and optimized by dedicated simulation software. The minimization of the use of resources is a common motivation in logistics for import and export.

The retail sector experiences high transaction and stock turnover. Increasing the operational efficiency of the

supply chain results in huge savings and is the key towards remaining competitive or even gaining competitive advantage and revenue growth (Casati and Shan, 2001). Over a period of time, Ghana has seen a tremendous increase in the logistic companies which has necessitated the need to efficiently deliver goods whilst ensuring the competitiveness of the logistic companies. This will be only possibly if ecommerce is efficiently employed. In a competitive retail industry, the right information technology and telecommunication infrastructure will be an immense difference and huge competitive advantage over competitors in terms of cost savings, productivity and inventory management (Mansoor, 2010). Chopra and Van Meigham (2000) agreed and emphasized that companies need to fully understand how e-business affects their revenues and supply chain costs. There is need to identify potential operational and sector collaboration areas that require enhancement, make technological infrastructure and investment prioritization decisions for better supply chain performance.

Although, there is considerable body of literature on ecommerce, it largely reflects more on other sectors and little on logistics. Even those that focused on logistics were focusing on other continents and not Africa. For instance, Thomas et al., (2019) focused on their attention on airport; Xiao and Peng (2015) focused on e-commerce in China; Arora (2003) focused on India; and Kherback and Mocan (2016) focused on Romania and e-commerce on SMEs. This study contributes to the body of literature in the following ways; contributing literature in the case of e-commerce and logistic service providers in Ghana. The study will also observe and explore the various e-commerce platforms already practiced by some of the logistic companies in Ghana; it will also attempt to identify Inventory Management Models practiced amongst the e-commerce companies in Ghana. Finally, this study will advance the body of literature on ecommerce by highlighting the effect of e-commerce on the performance of Logistic Service Providers.

The major objective of the study is to reveal the effect of e-commerce on logistics service provision in Ghana. The specific objectives are to identify key e-commerce in Ghana, to explore the inventory management models practiced amongst the e-commerce companies in Ghana and to explore the effect of e-commerce on the performance of logistics service providers in Ghana. The objectives were changed into research questions.

## 2.0 LITERATURE REVIEW

### 2.1 Logistics Service Providers (LSP) in Ghana

The growth of Logistic Service Providers is widely acknowledged and attributed to reasons such as the varying and distinct logistics needs of different companies (Fuller, et al., 1993). Sheffi (1990) suggested that the primary reasons for the growth of 3PL services are the need for more professional and better-equipped logistics services and the cost savings gained. Other reasons for the growth of 3PL usage are the lack of competency required for the development of key specialist skills within the organisation Bolumole (2001), lack of technological expertise and computerised systems that currently drive logistics operations (Bardi and Tracy, 1991). Out of sheer necessity, logistics management has evolved from its traditional operational orientation to a strategic orientation Kohn, et al., (1990), driving the attainment of core corporate goals. As a result, most 3PL providers have become specialists through differentiation, and the scope of services encompassing a variety of options ranging from limited services, e.g. transportation, to broad activities covering the full spectrum of a supply chain and operating across international borders.

The Logistic market in Ghana, largely dominated by US and European firms, has experienced the distinct waves of entrants Berglund, et al., (1999) over the last two decades. The first wave dates back to the 1980s or even earlier with the emergence of “traditional” logistics providers, whose competency centred on effective transportation or warehousing. The second wave dates from early 1990, when a number of network players, e.g. DHL, TNT and FedEx, started their logistics activities. The third wave dates from the late 1990s where a number of players from areas of information technology, management consultancy and even financial services are working together with players from the first and second waves. Besides the rapid growth, the choice of logistics partners by organisations engaged in logistics outsourcing has also been subjected to a number of studies. For example, Roberts (1994) reported that the level of service provided, quality of the people and cost are the three most used evaluation criteria when choosing a qualified logistics contractor of which the emphasis is on the quality of people, particularly in the operational area. However, it is generally agreed that outsourcing need not be an all or nothing proposition, with fleet management, warehouse management and shipment consolidation being the most frequently observed outsourced logistics function. With the dynamics of change and organisational issues associated with supply chain management, more recent studies in 3PL have focused on the strategy development by 3PL service providers (e.g. Hertz & Alfredson, 2003) and the process of 3PL integration with customer relationship management Knemeyer et al., 2003). As indicated earlier, there have been a few studies on logistics in the SSA region. According to UCC (2017), the biggest Logistic Service Providers in Ghana are: DHL, UPS, FedEx, OMA Ghana Ltd, APK Couriers Ghana Ltd, Ghana Postal, Modern World Logistics Ltd, McDan Shipping, etc.

### 2.2 E-commerce

The last few years have witnessed a technological revolution and up gradation reverted with the wide spread use

of the Internet, web technologies and their applications (Mishra et al., 2017). Electronic Business (e-commerce) as an important part of the information technological revolution became widely used in the world trade and services in general. As a result, many researcher, theories and analysts have tried to define the concept of e-commerce (Ritter, 1992; Gunasekarana et al., 2002; Fitcher, 2003; Shahriari et al., 2015; Khan, 2016). From the aforementioned concept above, e-commerce basically, is the purchase of goods and services online by a customer, and being delivered to the end customers. The rising incomes and perquisites and the various variety of goods and services that can be bought over the internet is making purchasing online more attentive, attractive and convenient for consumers all over the country (Mishra, et al., 2017). For developing countries like Ghana, e-commerce offers considerable opportunities and challenges in recent times. Ecommerce in Ghana is still in growing stage, but even the most-pessimistic projections indicate a booming and considerable growth in near future (Mahapatra, et al., 2015).

The growth of e-commerce in Ghana is being driven by customer choice & improved convenience with the help of internet the vendor or merchant who sells products or services directly to the customer from the portal using a shopping basket system or digital cart & allows payment trough debit card, credit card or electronic fund transfer payments (Henry, et al., 2004). In present times e-commerce market & its space is increasing in demand as well as an impressive display or range of a different type of services. E-commerce is already appearing possible in all areas of business, customer care services, new product development and design (ibid). E-commerce business is growing in Ghana because of wide range of product with minimum and optimum price wide range of suppliers & customers through internet (Laudon, 2000; Henry et al., 2004; Mishra et al., 2017). In this modern time every business units want to join online business because it is increasing with ratio of internet users in India (Manoranjan, 2010).

### 3.0 METHOD

This study adopted cross-sectional research design and descriptive research design method. The study also used a mixed approach. The study used both qualitative and quantitative data and methods of analysis. Questionnaires, secondary data and interviews were used to collect data. The study area is Ghana, a West African country located along the Gulf of Guinea and the Atlantic Ocean. The study's population includes all e-commerce and logistic service providers in Greater Accra- region. The study used purposive sampling method to select respondents for the study. Qualitative data was gathered using interview guide whereas quantitative data was collected using questionnaire. Collected data were analysed using Impact Analysis, Exploratory Data Analysis, and ANOVA. The results were represented using tables, diagrams and matrices etc. Below are descriptions of the tools used for the analysis.

### 4. RESULTS AND DISCUSSION

The study conducted a reliability test on the questionnaire used for the study. The Cronbach's Alpha measured the internal consistency with an  $\alpha = 0.749$  indicating relatively high internal consistency of the questionnaire. The KMO for the study is 0.810 which implies a high sample adequacy with the figure being closer to 1 than 0. A total number of 10 companies were sample for the research. 30 individuals were also administered questionnaires.

#### Platform Ranking

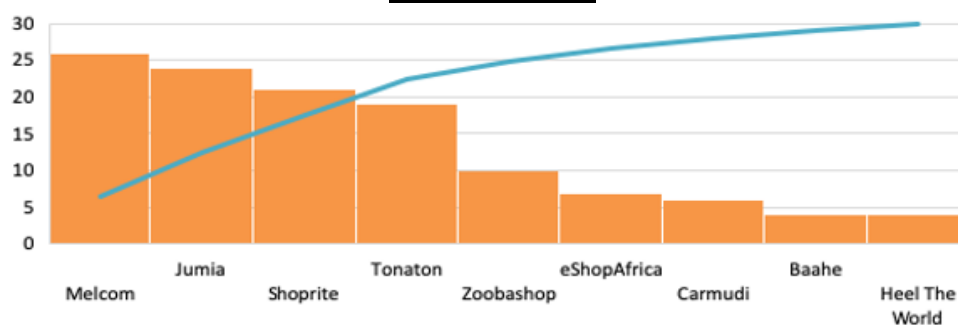


Figure 1. E-Commerce platform ranking

The first objective was to identify key E-commerce platforms in Ghana. According to respondents, Melcom was paired 26 times representing 21.50% followed by Jumia pairing 24 times with 19.80%. International company Shoprite came third as the most e-commerce platform used by Ghanaians with 21 pairs representing 17.40%. The key e-commerce platforms in Ghana were: Melcom, Jumia, Shoprite, Tonaton, and Zoobashop. These rankings were premised on many factors such as User Interface of these E-Commerce platforms (24.1%), Online Discount Prices (24.1%), Website Fraud Protection (19.5%) and the reputation of the E-Commerce company. The nature of e-commerce in Ghana shows that most are retail chains, export/import companies, followed by logistics and transport service providers. Few of them were manufacturing companies and IT firms. The study also identified

some challenges that hinder e-commerce services in Ghana; inadequate infrastructure in the country, ineffective home delivery services, and poor home addressing systems. The most used inventory management system by the best e-commerce companies in Ghana is the Jointly Managed Inventory (JMI). About 61.5% of the companies used JMI as compared to other inventory management models. The study conducted a regression analysis to ascertain the effect of e-commerce on the performance of Logistics Service Providers (LSP) in Ghana.

The study conducted two regressions, one with the primary data collected through the questionnaires and the other through secondary data collected to represent e-commerce and its effect on LSP. The study used nine independent variables. Beta Coefficient explained the relative important of the factors in terms of their contribution to the variance of the Six (6) factors.

Coefficients					
Model		Unstandardized Coefficient		Standardized Coefficient	Sig
		B	Std. rror	Beta	
1	<b>Constant</b>				
	E-Commerce has enhanced the corporate image of your organization	2.038	0.000	0.991	0.000
	The design and development of an e-commerce system has helped us achieve our business objectives	0.346	0.000	0.166	0.000
	Our e-commerce projects have helped us meet our corporate business objectives	-0.538	0.000	-0.345	0.000
	E-Commerce has reduced our business process costs	1.154	0.000	0.512	0.000
	E-Commerce has improved our business process	1.385	0.000	1.014	0.000
	E-Commerce has increased our employee's productivity	0.154	0.000	0.098	0.000
	E-Commerce has increased our company's profitability	0.442	0.000	0.333	0.000
	E-Commerce has increased our company's annual sales	-2.269	0.000	-1.088	0.000
	E-Commerce has increased our company's overall Business Performance	-0.019	0.000	-0.011	0.000

Table 1: Regression for e-commerce and its effect on LSP. (Dependent variable E-commerce)

E-commerce has enhanced the corporate image of your organization (B=2.038) carried the heaviest weight in explaining Benefit of effect of E-commerce on the performance of logistics service providers in Ghana, followed by E-commerce has improved our business process (B=1.385), followed by E-commerce has reduced our business process (B=1.154), followed by E-commerce has increased our company's profitability (B=0.442), followed by the design and development of an e-commerce system has helped us achieve our business objectives (B=0.346) and lastly, E-Commerce has increased our employee's productivity of these logistic companies (B=0.154). However, there were non-reactive variables that were not dependent on the emergence of e-commerce. There was no evidence that the emergence of e-commerce in Ghana has increased the overall company's annual sales (B=-2.269). Our e-commerce projects have helped us meet our corporate business objectives (B=-0.538), and there was non-linear regression with regards to E-Commerce has increased our company's overall Business Performance (B=-0.019). These non-reactions could be attributed to the inadequate infrastructures in Ghana, poor addressing systems in Ghana and poor road networks (UCC, 2017).

The second regression conducted by the study was based on secondary data collected by the researcher on imports of Ghana and the penetration of internet in the country. Internet penetration was chosen to represent e-commerce since the availability of internet is inevitable to e-commerce success. The choice of imports is to ensure the LSP are represented in their service of shipping goods ordered online into the country. There was a regression output for the usage of internet, import of goods and services and money supply. The dependent variable is imports of goods and services in Ghana and the independent variables are internet usage and money supply. The regression output shows that there is a positive relationship between imports of goods and services and internet usage.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Internet usage	0.581259	0.196006	2.965519	0.0069
Money Supply	1.353156	0.106159	12.74654	0
<b>R-Squared</b>	0.23125			
<b>Sig.</b>	0.01202			

Table 2: Regression for Internet penetration imports (Dependent variable: import)

This implies when the number of citizens using internet or having access to internet increases the import of

goods and services also increases. The relationship is significant with a significant value of 0.0069 which implies the relationship is significant less than 1% level of significant. The study also has an R-squared of 0.23 which implies about 23.12% of imports is explained by the two independent variables. Since the internet is a major contributing factor e-commerce patronage, increase in internet usage will increase e-commerce. Since internet usage increases imports, the increase in imports will affect the services of shipping companies, hence logistics services provided by shipping companies is influenced by e-commerce activities.

The study also conducted an interview for the main Logistics Service Provider of the country (Ghana Post). The organization's core mandate was to provide mail service for Ghanaians. Due to changes in the nature of their business, the organization moved into other models of operation. From the interview the researcher identified e-commerce led to the creation of a new company from Ghana Post to what is now known as Express Mail Service (EMS). EMS is the courier division of Ghana Post (GP). Due to increased demand for goods and service online and the need for those goods to be delivered to customers timely EMS was created to answer the call for delivery. EMS has several packages that the organization created due to the changing nature of the online business. EMS services also include an agency service where other businesses use the courier provider to complete their businesses. These include mostly online shops, kitchens, restaurants that receive orders electronically and deliver them through the courier service of EMS. Other services include priority services, contract, same day delivery, students' service and court process service.

The increase in demand to deliver goods for agencies whose products are ordered online led to the creation of a distinct department under EMS to provide the quickest service. *SpeedLink* was created by the organization to attend to only domestic orders. The *SpeedLink* service aids EMS to deliver packages to organizations and clients who need their services delivered with urgency. Corporate documents, court documents, parcels for organizations and some medical facilities use the *SpeedLink* service.

A significant effect that e-commerce has had on the activities of EMS and their mother company GP is the need to create a new business model which provides an online business platform. The organization has integrated the downstream and the upstream model. The organizations that send packages through EMS (online shops and other agencies) and the individual or organizations who receive packages from EMS have trusted the organization. This has enabled the organization to create its own e-commerce service. The e-commerce service of EMS involves bringing together various e-commerce platforms together on a unified platform where customers can shop online and their orders are automatically delivered by EMS. This innovation was due to the need for the organization to gradually integrate the logistics chain upward to increase the revenue of the organization.

## 5. CONCLUSIONS AND RECOMMENDATION

### 5.1 Conclusion

The most prevailing consistent result was that; there was a positive correlation between e-commerce and the performance of logistic service providers in Ghana. This research extended the existing body of literature in the following;

In Ghana, most people prefer to shop from Melcom, Jumia, Shoprite, Zoobashop and Tonaton ahead of the other E-commerce companies such as Baahe, eShopAfrica, Heel The World, Carmudi, etc. their choices were premised on; Data Protection Ability, company's reputation and ability, and easy accessibilities.

Almost all of these E-Commerce companies preferred Jointly Managed Inventory Model because it provides shared risk advantage – these companies keep some of their stocks with the manufacturers. In this model, the risk of these stocks being expired is limited or totally eliminated. The model presents a two-way benefit to both the customer (e-commerce) and supplier (manufacturer, distributors, retailers). When the supplier gets to know that the customer has exhausted their inventory, the supplier then replenishes the customer – the customer reduces or eliminates the risk of stock out. This model reduces uncertainty that could possibly arise with stock out. Also, so long as the supplier continuous to provide stocks and reduces uncertainty, the supplier will keep the customer/client to provide win-win situation for both parties. This model will also increase productivities for the suppliers and increase their overall annual sales for both the E-commerce companies and the suppliers.

This research also widened the body of literature concerning e-commerce and logistics but assessing the impact of e-commerce on the performance of logistic service providers in Ghana. It was concluded that there was strong positive correlation between e-commerce and the performance of logistic service providers. It was concluded that e-commerce positively impacts the performance of logistic service providers in the following ways;

- a. E-commerce has enhanced the corporate image of their organizations
- b. E-commerce has reduced their business process costs
- c. E-commerce has improved their business processes
- d. E-commerce has increased their company's profitability;
- e. E-commerce has in a way helped achieve the business objectives.

Although, there were no reactions to the variables of: e-commerce has increased the annual sales of their companies; and e-commerce has helped these companies to meet their corporate business objectives. These non-

reactions could be attributed to inadequate infrastructures in Ghana or the inability of respondents to provide such information. Despite that some of the variables did not react, there was an evidence of strong positive effect between e-commerce and the performance of logistic service.

### 5.2 Recommendation

After the various data analysis and literature review, the following recommendations could be made:

The Government of Ghana should result to solving and unclear House Addressing System. Although, in late 2018, the Government started with the Nationwide National Identification Registration, these data should be shared with the industry to allow for proper addressing allocation system to enhance the development of the e-commerce industry;

The E-commerce companies should allow and accept Credit Card Payment System online and should provide Data Protection and Enhanced Security to avoid Credit Card Theft;

Logistic Service should capitalize on the New Addressing System provided by the Government. Of Ghana (GhanaPostGPS) to provide local delivery services to their clients;

All stakeholders (Government of Ghana, Industry players, etc) should come together to develop this industry due to the geometric rise in the use Internet of Things in Ghana.

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