



# Examining the Factors Affecting the Implementation of a Paperless Port System

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## ABSTRACT

*The introduction of a paperless port system (PPS) was to inject potency in the clearance system as the former paper system had too many human interactions and delays in handling hard documents. To avoid these visible irregularities in line with the ever-changing port working environment and the effects of massive corruption in the ports, the factors that affect the implementation of PPS must be carefully studied. The main objectives of this study are to examine the implementation process of PPS in Ghana and present appropriate recommendations for decision making. The analysis reveals that the main factors that influence the implementation of PPS are; network connection, complicated procedures, and lack of stakeholder training, and the least factor that affects the implementation of PPS is the availability of resources. The results of this analysis could be of great benefit for other member states in West and Central Africa, in developing prudent policies as initiated by the government to boost the overall port efficacy for prompt socio-economic development.*

**Key Words:** Paperless port, Digitalization, Information Technology.

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## 1. INTRODUCTION

Since the last century, international trade continues to expand and remains the world's main cornerstone - as reported by the United Nations conference on trade and development [1]. In international trade, goods and services cross borders and this involves the passing of information between relevant parties - private companies and public bodies, manufacturers, providers of transportation, customs, enforcement agencies, retailers and buyers – as a key factor for efficient operation. Paperless trade refers to the digitization of information flow through electronic distribution of trade data [1]. Digitization helps in transforming paper based reporting system in ports into an electronic format thereby speeding up trade and reducing cost especially in West Africa with landlocked states [2]. For the sharing and reuse of fully electronic communications by shareholders in maritime operation in ports in West Africa, all information needs to be clearly described [3]. To achieve this, trading partners must be willing to share and interpret individual data item proactively [4]. Over the past decade, countries all over the world have adopted the paperless port system (PPS) in line with continuous debate on reforms made by ports to check and facilitate operations and e-trade [5]. In Ghana, the government has encouraged the implementation of PPS by mandating the appropriate authorities – Ghana Ports and Harbors Authority (GPHA) and Ghana Community Network System (GCNet) - to promote the interest of all stakeholders [5].

The GPHA is the national port authority playing a vital role on the economy of some landlocked countries in West Africa by overseeing all freight and maritime related activities in Ghana. However, there have been high corruptions registered in the past due to lack of PPS in place for smooth and transparent financial transactions. Also, the Takoradi and Tema ports have recorded in the past, a corruption index of 3.50 each, attesting to the high level of corrupt activities ongoing at the port, thereby driving the government's response for immediate implementation of PPS [1, 6]. These corrupt activities in ports have led to underdevelopment, restrictions of business competition and lack of foreign investment [5]. Again, PPS reduces the bureaucratic processes, thereby hindering the flow of information as required in this modern age of technological innovation [7]. The adoption of electronic or paperless processes has reaped great benefits in other sectors both in the private and government milieu such as businesses, meetings, voting, and health facilities [7]. In 2017, GPHA launched the automated paperless program to assist importers in clearing goods in less than 48 hours [8]. Such innovation has been applauded as the main instrument in driving the maritime financial sector, allowing both the banking operators and maritime stakeholders to re-adjust appropriately for better integration [8]. To further curb the occurrences of corrupt practices in GPHA, the Tema port integrity campaign was

set up to raise awareness among workers to demonstrate accountability [9]. The continuous use of this campaign remains instrumental for workers in the maritime community to continuously embrace the use of PPS despite possible challenges in the system such as internet connectivity breakdown, and the issuance of incorrect invoices [10, 11]. The factors that affects the implementation of PPS in West African port can be classified under political, technical, financial and human resource management [12, 13]. The main objective of this study is to examine the implementation process of PPS in Ghana, and present appropriate recommendations for decision making.

## **2. LITERATURE REVIEW**

Compared to its neighbors, Togo, Benin and Senegal, the costs of trading or doing business in Ghana are high [16]. The World Bank on doing business index, ranked Ghana, one hundred and fifty eight (158) in the area of trading across borders, compared to Benin ranked, one hundred and thirty six (136), and Togo ranked, one hundred and twenty one (121) [14]. This ranking takes into consideration the time and costs it takes to export and import, and the cost associated with documentary compliances [14]. The high cost of doing business was mainly associated with the number of documents involved in the import/export business coupled with the number of agencies interactions with the shipper on document submission for import/export business [14]. Freight forwarders are faced with the situation of having to move from one agency's office to another to physically submit documents and wait for approvals, permits or licenses for trade transactions process leading to delays and long queues in most custom offices [13]. In the trade transaction process, this physical contact with government officials created the environment for bribes [13]. Shippers also took advantage of the system to evade the payment of duties, thereby causing revenue loss to the government [14]. To address these challenges, the government, launched the PPS with the overall objective of reducing time spent in clearing goods in the ports. However, due to the advancement in global technological developments in international trade, there is the need to continuously revise these technologies [15]. Nearly every business organization has implemented a policy to use computers and networks for its business activities [16]. In the shipping sector, the port community system (PCS) have been developed in Turkey in order to enhance the communication between ports and other port related institutions with the goal of gaining competitive advantages against leading ports [17]. This study compared a simulation model to capture the differences and advantages between conventional port logistics business and a conceptual model where a hypothetical PCS is in place. The results showed that PCS improves the quality of information, productivity and operational efficiency in the ports [17]. Again, radio frequency identification technology (RFID) has been applied in a port base container logistics for efficient operation due to the advent of IT network technologies coupled with port growth [18]. RFID is an automatic system for storing, reusing and distinguishing data used in container terminals to manage logistical operation thereby saving time and reducing any process-prone errors [18]. The result revealed an increased in efficiency of deliverance of service via documented and authenticated image checking of the database system [18]. A study conducted by the University of Ghana on evaluating the impact of PPS on the performance of employees using a qualitative approach, revealed the need to have a proper IT infrastructure and an effective strategic employee training & capacity building with the goal of setting standards that would improve service delivery in ports [10]. In the University of Ghana again, researchers further analyzed the economic impact of port digitalization with results showing that PPS can help increase government revenue and keeping corruption low [2]. This is not the case for Ghana alone but also for developed economies such as the UK with increased number of fraud cases on bills leading to most ports developing technology to assist in cargo delivery [14]. In the implementation of PPS, there is a need for a strong political will, government strategic plan, and the ability to integrate relevant banking transactions with port stakeholders. Although there are several challenges in the operation and implementation of PPS in West African ports, the benefits significantly outweighs these shortfalls. The future however of PPS is made complicated with political interferences, whereby changes in government regime leads to changes in the technical agencies that implements PPS. The need for the availability of local technical skills remains a top concern and a global approach must be adopted in harnessing these skill in making sure that operational excellence in achieved.

## **3. METHODOLOGY**

The factors identified in the literature review that affects the effective operation of a typical PPS is presented in Table 1 to help generate the appropriate questionnaires. Questionnaires were designed and administered to identified experts and stakeholders for this exploratory study, with two different questionnaires for the operators of GCnet and that of the end users. Participants and experts were from the maritime trade and transport industry, government ministries of transport and trade, departments of maritime administrators, shipper's council, clearing agents, freight forwarders, custom officers, revenue authority, GPHA, trade associations, and related personnel directly or indirectly involved in the implementation of PPS. An information sheet was issued to participants on the research topic and the purpose of the research. Participants were also issued a consent form to seek their consent before the interview was conducted. The study involved at least ten (10) respondents drawn from each of the relevant

stakeholders in the population of the study – two data instruments were employed - and it was required that each participant had some experience with the PPS. A questionnaire was used to gather data from the targeted population and secondary data regarding the impact of the implementation of PPS was used to help unravel the actual state of the system. The findings of this qualitative research cannot be extended to cover a broader population for the reason that, these findings are not tested to establish if they are statistically significant or are by chance. Also, due to security reasons, some participants did not elaborate much on responses beyond a certain measure.

**Table 1: Factors affecting the implementation of PPS in West Africa**

<ul style="list-style-type: none"> <li>● <b>Unreliability of network systems</b></li> </ul>	<p style="text-align: center;"><b>Technical Changes</b></p> <p>Internet service providers not working appropriately. GCNet, Westblue network servers down.</p>
<ul style="list-style-type: none"> <li>● <b>Banking transaction problems</b></li> </ul>	<p>GPHA needs banks to share transaction data with GPHA to cut the paper work.</p>
	<b>Integration Challenges</b>
<ul style="list-style-type: none"> <li>● <b>Converting from a paper based system to the paperless system</b></li> </ul>	<p>This will require government to come up with training programs for all stakeholder employees.</p>
<ul style="list-style-type: none"> <li>● <b>Lack of resources to implement the change</b></li> </ul>	<p>Private stakeholders not in the capacity to change to a paperless system in a short time.</p>
<ul style="list-style-type: none"> <li>● <b>Lack of technical knowhow of the end users and the stakeholders</b></li> </ul>	<p>Stakeholders are all mostly trained in a paper dominated system so converting to a paperless system is difficult.</p>
<ul style="list-style-type: none"> <li>● <b>Complicated</b> <ul style="list-style-type: none"> <li>□ procedures and document requirements</li> </ul> </li> </ul>	<p>Complicated interface of the system has also been a factor making it difficult for end users.</p>
<ul style="list-style-type: none"> <li>● <b>Support/training</b> <ul style="list-style-type: none"> <li>□ for staff and clients</li> </ul> </li> </ul>	<p>Organizing training workshops to ensure that all users of the platform understand the system.</p>

#### 4. RESULTS AND DISCUSSION

A total of seventy-five (75) questionnaires were administered - twenty-five (25) to freight forwarders, thirty (30) clearing agents, five (5) transporters, five (5) shippers, and five (5) customs officials - out of which five (5) participants - failed to answer all questions in the questionnaires. Forty five (45) responses were from the end users (stakeholders) and twenty (20) from the technical team of GCNet platform. A greater proportion of participants were between thirty (30) to thirty nine (39) years of age with about ninety (90) % male respondents. For the respondents sampled, a combined total of twenty-five (25) had over ten (10) years’ working experience in the maritime trade industry, seventeen (17) had seven (7) to nine (9) years of experience and nineteen (19) had four (4) to six (6) years’ experience in the maritime industry. Considering the working experience of the respondents, it can be concluded that majority had the capacity to fully appreciate and give an independent evaluation of the factors that can affect the implementation of PPS. In improving efficiency in Ghana’s shipping and logistics operation, forty one (41) % of the respondents indicated with affirmation the positive impact of PPS and also indicated that PPS has drastically reduced the cost of doing business for port users leading to savings on rent and container demurrages. Seventy (70) % of respondent had technical challenges associated with GCNet portal, with twenty (20%) on operational customs services and ten (10) % with the integration of other stakeholders fully into the GCNet system. Ninety-eight (98%) of the responded that corruption had been reduced in the port due to implementation of PPS. An overwhelming response was registered on lack of training programs and workshop for end users in overcoming the challenges of a smooth transition from a paper based to a paperless system. Although results shows that there has been an improvement in the compliance levels, reduction in cost, and reduction in the time to clear goods, however, there is still the need to streamline the procedures for cargo clearance. The reduced time in transaction has been cited as the main cause of reduction in the cost of doing business as well as improving trade competitiveness in ports. However, the operation of PPS requires continuous improvement through stakeholders’ engagement.

## 5. CONCLUSION

The introduction of PPS has improve the working environment in the ports and brought along trade competitiveness needed in a vibrant developing economy by allowing greater stakeholder involvement through a single platform. The findings reveals that the cost of doing business in the port has been reduced due to lesser transaction time and automation process. In addition, it is gratifying to notice that the payment of demurrage and inspections in the ports has significantly reduced. The recommendation on a smooth running of the PPS based on the result analysis of this study are : (1) The need for continuous cooperation among major stakeholders in the cargo clearing process; (2) continuous brainstorming among internal and external stakeholders on proactive action plans to visualize the imperative shortcomings and future challenges in PPS with the change of political atmosphere; (3) formal guidelines to be developed at the governmental level on regulatory and technological updates/requirements of PPS; (4) building requisite capacity among customs officials and major stakeholders to help in efficient operations of PPS; (5) putting in place a robust feedback mechanism; and (6) provide appropriate legislative backing and sanctions as appropriate.

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