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The Impacts Of Port Characteristics And Port Logistics Integration On Port Performance In Ethiopian Dry Ports

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Abstract

Purpose: Thi paper identifies the impacts of port characteristics and port-logistics integration on port performance in the case of Ethiopian dry ports.

Research Mehodology: To complete the study, we used structural equation modeling to test the relationship between port characteristics and port-logistics integration with port performance. Moreover, Statistical Package for Social Science is also used to filter indicators. Apart from this, the study was conducted in three dry ports of Ethiopia having a sample of 279 employees.

Results: The finding shows that port characteristics such as port infrastructure, port connectivity, and port privatization have significantly impacted port performance. Also, port-logistics integration has an impact on both port operational performance and port efficiency.

Limitations: The main limitation is that the study focused only on three dry ports of Ethiopia which do not include other dry ports in the country.

Contribution: Ethiopia suffered forced dependency on transit countries after a blooded war with Eritrea which resulted in customs delays at port. To reduce this, the study suggests that Ethiopia should coordinate in developing joint infrastructures, and formulating unfettered rules and regulations with its transit countries.

Keywords: *Port characteristics, Port logistics integration, Port operational performance, Port efficiency*

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1. Introduction

Due to the landlocked ness, the port operation in Ethiopia has been dependent on Djibouti in which almost 95% of importing and exporting operations carried out started from the blooded conflict with its northern corridor transit neighbor, Eritrea where 75% of Ethiopian import and export operation passed through Assab port until 1997 with a duty-free. Thereupon, Ethiopia has incurred high transport costs and paid huge demurrage fees to Djibouti, large economies of scale remain unexploited, and production, therefore, is inefficient (Ali, 2021; Debela, 2013; Forozandeh, 2021).

Lahiri and Masjidi (2012) argue that approximately 20% of the countries in the world are landlocked and they are distributed as approximately 40% of the world's low-income economies and less than 10% in the world's high-income countries. Undoubtedly, the statistics show that there is the existence of unique economic problems in landlocked countries.

Unfortunately, these countries experienced transit delay, dependency on transit countries (Faye, McArthur, Sachs, & Snow, 2004); limited regional integration, institutional bottlenecks (Alemu & Dachito, 2020), and quality problems (Carmignani, 2015); (Charuka, 2014), infrastructural constraints, and cumbersome border crossing (Charuka, 2014), longer cargo dwelling time and inefficiency of a crane at the terminal in turns add pressure on hinterland which reduce the productivity of port terminal and reduce port performance.

The East Africa Logistic Performance Survey (2014) report shows that the average time takes for the truck to leave the port (turnaround times), and deliver cargo to a designated destination within east African countries is very high. This makes the region record the lowest average logistics performance indexes. The work of Nyema (2014) also mentioned that the efficiency of the container terminal is affected by the high regulatory burden. To conclude, this problem is intensified due to the lack of intermodal connectivity and one-stop border crossing mechanisms in the region.

Surprisingly, sub-Saharan African customs delays are the longest average of 12 days in the region as compared with 7 days in Latin America. Exceptionally, Ethiopia recorded the longest delays in the region where the trader has to wait more than 30 days for customs to clear goods and it makes challenging for Ethiopian traders and customs operators (Kassahun, 2014). This is mainly due to forced dependency on transit countries, complicated customs procedures, complex bureaucracy at the port, and lack of efficient infrastructure characterized by a missing link from one road to another have played a major role in the custom delay in Ethiopia.

Wilmsmeier, Hoffmann, and Sanchez (2006) noted that better port infrastructure may improve efficiency, but increase port charges and also the overall transport costs. Port privatization may lead to new investment, but it may also coincide with reduced public subsidies, leading to higher charges to port users and their finding shows that increases in port efficiency. Port infrastructure, private sector participation, and inter-port connectivity all help to reduce the overall international maritime transport costs. Wilson, Mann, and Otsuki (2003) found that port efficiency has a strong impact on bilateral trade flows. The United Nations Office of the High Representative for the Least Developed Countries noted that LLDCs pay more than double what the transit countries incur in transport costs and take a longer time to spend and receive cargo from abroad (UN-OHRLLS, 2016).

In reviewing studies, we found that several research gaps have had in this area; for example past studies were focused on examining the effect of port resource and sustainability practices on port operational performance (Bonaya, 2021); port supply chain integration and its relationship with port performance (Abadli, Kooli, & Otmani, 2020; Han, 2018; Song & Panayides, 2008; Tongzon, 1995; Woo, Pettit, & Beresford, 2011) to mention a few. Subsequently, there are several studies on seaports, but very limited on dry ports especially in landlocked countries, for instance, port integration into global SCs (Alavi, 2019). Host, Pavlić Skender, and Mirković (2018) also assessed port logistics integration challenges and approaches. Other studies were also conducted on the roles of dry port operations on container seaport competitiveness (Jeevan, Chen, & Cahoon, 2019). Especially, Shi (2015) reveals that the port logistics research is still in the immature stage and the definition of port logistics has not yet reached a consensus. In conclusion, this paper contributes one stage ahead in this topic.

Likewise, few empirical studies have confirmed the positive roles of logistics performance between the quality of port infrastructure and national economics. Therefore, our study aimed to fill these gaps by exploring the effect of port characteristics and port-logistics integration on dry port operational performance and terminal efficiency in which previous studies have focused on the effect of some port characteristics on maritime transport cost (Wilmsmeier et al., 2006) and seaborne trade (Munim & Schramm, 2018). And this paper investigated the antecedents of port efficiency of dry ports that may improve port terminal efficiency.
Hence, this paper addressed the following four research objectives:

1. To examine the effects of port characteristics on the port operational performance of Ethiopian dry ports.
2. To investigate the effects of port logistics integration on the port operational performance of Ethiopian dry ports.
3. To explore the effects of port characteristics on the port efficiency of Ethiopian dry ports.
4. To investigate the effects of port logistics integration on the port efficiency of Ethiopian dry ports.

2. Literature review

2.1 Port Characteristics of Port Operational Performance

Investments in port infrastructures lead to equivalent improvements in port performance in turn enhancing port efficiency by enlarging the port's capacity (Garcia-Alonso & Martin-Bofarull, 2007). Usually, container handling equipment is viewed as the main machines for dry ports as well as seaports, and they can greatly influence both the container handling capacities and, in turn, the performance of dry ports (Chandrakant, 2011). Ports' surface infrastructure condition is crucial to port performance (Clark, Dollar, & Micco, 2004; Turner, Windle, & Dresner, 2004). The port's strategic location, accessibility, state-of-the-art facilities, and equipment are some of the factors crucial in making the port one of the world's largest and most modern container ports; port infrastructure improvement in terms of stockpile location, labor, and flexibility (loading) is mainly improved the operational performance of a given port (Rozar, Razik, & Sidik, 2018).

A study by (Cheon, Song, & Park, 2018) shows that a shift in port business landscapes and escalating environmental selection due to global competition requires ports to delineate aggressive strategies and actions to avoid rivals' threats and to shed operational inefficiency. According to Cullinane and Wang (2009), most ports made high infrastructure investments to reduce operational costs and improve service quality, which are important determinants of terminal performance. Moreover, Liu (1995) states port ownership and management is one of the characterizing factors that influence port performance and efficiency.

We also argue that port characteristics (i.e. port infrastructure, port connectivity, and port privatization) affect the operational performance of dry ports through port service quality, flexibility, delivery dependability, and cost minimization. Dry ports having adequate infrastructure such as container handling equipment, enough terminal size and forklifts will reduce truck/train stationing at the port, this in turn avoids congestion and allows quick services. Further, port connectivity also influences better port performance including speed and reliability of container handling services:

H1: Port characteristics have a significant effect on port operational performance

2.2 Port Characteristics of Port Efficiency

Terminal productivity studies, especially those concerned with the measurement of technical efficiency in container handling operations, mainly adopt container throughput as the single output variable. In this way, higher levels of container throughput will indicate greater levels of efficiency, with the same amount of inputs (Haralambides & Gujar, 2012). Thus, port efficiency also depends on port productivity which is affected by infrastructure efficiency (e.g. crane efficiency). Terminals will improve existing infrastructures, operation management, loading efficiency, and time performance to sustain their productivity (Rozar et al., 2018).

The efficiency of the dry port also logically depends on productivity, which is largely determined by the crane efficiency. Tongzon (1995) considers crane efficiency as a determinant of seaports' efficiency. Park and De (2015) also indicate that efficient crane operations can greatly influence the competitiveness of the port. In some cases, machine efficiency is considered together with the number of container handling equipment and considered as one determinant of the performance of the dry ports (Chandrakant, 2011). Reducing costs in the port requires the work of reducing bureaucracy in the port operation and improving managerial structures as well as obtaining managerial support. Otherwise, ports may incur high transitory costs under excessive instability which requires strong strategic capital planning capabilities and risky new investments, without the benefits of instantly increased market share (Delmas & Tokat).

Ports should invest in new and existing infrastructure to maintain port efficiency and productivity. Port privatization is another determining factor of port efficiency (Dube, 2022); Yuen, Zhang, and Cheung (2013) found that the private sector involvement in managing ports can escalate the efficiency of the container terminal, while the container terminal whose share completely belongs to local people is less efficient. Further, they suggested that the port management model involving the private sector has increased the efficiency of the container terminal. De Oliveira and Cariou (2015) mentioned that private involvement plays a greater role in improving the effectiveness, efficiency, and ports productivity:
H2: Port characteristics have a significant effect on port efficiency

2.3 Port Logistics Integration on Port Operational Performance
Sundaram and Mehta (2002) identified that integrated logistics enables reaching goals related to all logistics chain partners, decreasing lead times and on-time delivery of cargo to consignees, lower final prices of products, as well as better quality and better services. For example, integration in terms of information enhances better communication between different port logistics partners and allows sharing of information, eventually assures the quality of port services and reduction of port operation costs(Naab & Bans-Akutey, 2021). The relatively poor performance of many landlocked countries can be attributed to distance from the coast (Faye et al., 2004). This is due to the lack of an intermodal system, a long distance from the sea, and poor regional integration. The intermodal system is an antecedent of the port networking system and also represents the transportation arm of the port logistic platform. The information system is responsible for fast efficient planning, stowage, tracking of shipments, and pre-notification of port entry and departure (Bagchi & Paik, 2001). This is often considered the major factor in the port organization affecting port operations (Helling & Poister, 2000). Besides**,** Song and Panayides (2008) show the effect of port logistics integration on port performance:
H3: Port- logistics integration has a significant impact on port operational performance

2.4 Port Logistics- Integration on Port Efficiency
An integrated mode of transport reduces cargo delay at the port and a dry port also plays a pivotal role to integrate modes of transport and reduce border crossing mandatories. Apart from this, logistics integration in port has many implications such as improved service level, cost reduction, improve productivity and maximize efficiency. Pinmanee (2016) stated that organizational integration, institutional support, and resource integration are part of logistics integration activities. These integrations determine port productivity and efficiency. Chandrakant (2011) stimulated that congestion in the means of transport especially in trucks led to port inefficiencies, eventually decreasing the total throughput and leading to dry port failure (Charuka, 2014). Hence, to overcome the logistics facilities have to integrate and co-operate at a multimodal level. Importantly, the work of Notteboom (2004) confirmed that logistics integration has redefined port and shipping industries. Indeed, the linkages between dry ports and policies such as logistics policy, multimodal transport, and transportation and trade facilitation policy affect dry port efficiency:
H4: Port- logistics integration has a significant impact on port efficiency

Conceptual Framework of the Study

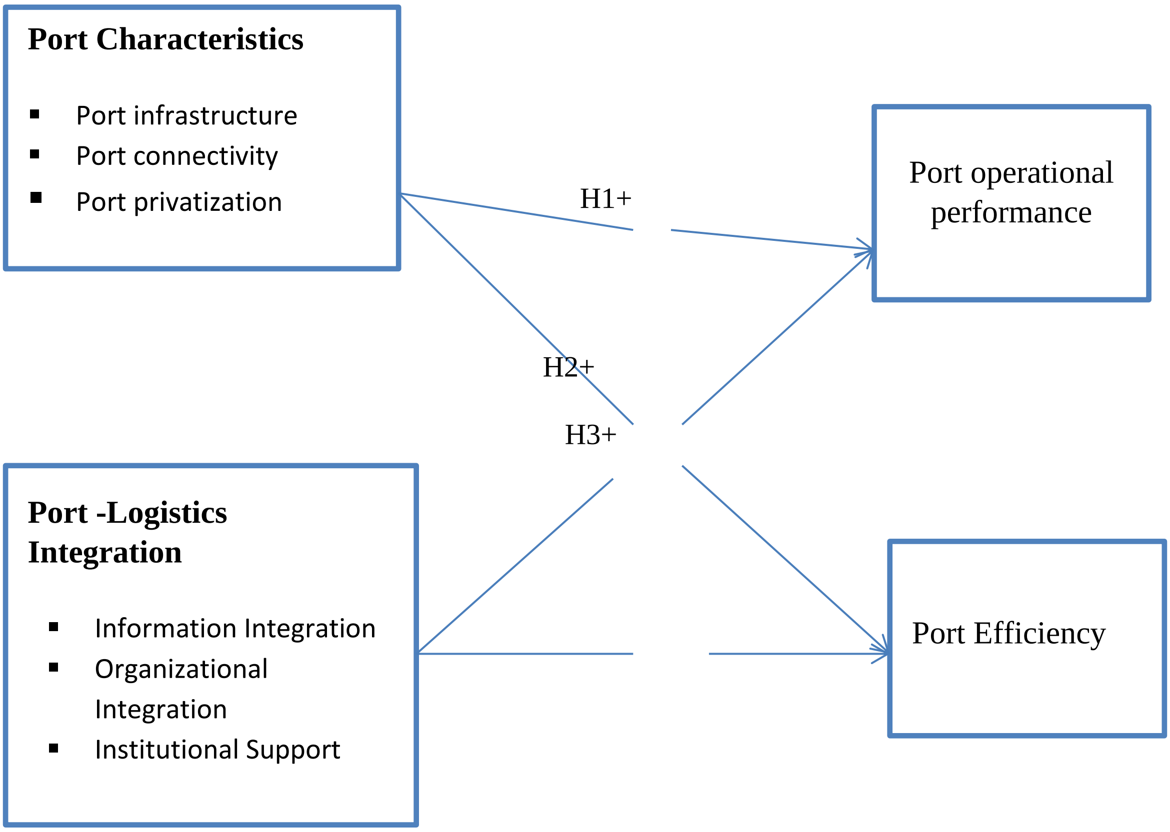

Figure 1: Conceptual model (source: Author elaboration)

3. Research methodology

3.1 Sampling and Data Collection

Three Ethiopian dry ports were the subject of this research. These are the dry ports of Mojo, Kaliti, and Kombolcha. We chose them based on statistics from the 2019-2021 throughput share of Mojo dry port (78.8%), followed by Kaliti dry port (11.9%), and Kombolcha dry port (2%) (Bonaya, 2021). We also used their current operational, functionality, and standards as a selection criterion for these three dry ports, such as human resource capacity, infrastructural development, terminal handling capacity from 2019 to 2021, and port equipment and overall facilities such as stackers, forklifts, container handlers, and terminal tractors. Finally, utilizing the purposive sampling approach of the non-probability sampling technique, we chose Mojo, Kaliti, and Kombolcha dry ports from six operating dry ports in the country.

The target demographic for this study was decided to be 926 respondents from all dry ports. To be clear, all of the respondents in this target population are permanent employees of the three dry ports, and the reason for emphasizing this number is to reduce sample error and to select the most appropriate respondents who have worked in each dry port for many years and experience because we believe they have a wealth of knowledge and experience in port operation. Finally, Yamane's 1973 sample size determination formula with a 95 percent confidence interval and 5% acceptable error was used to establish the total target population of the 279-sample responder. To acquire data from sample respondents, standardized five-point Likert scale survey questions in both English and Amharic were employed. The survey questionnaires were distributed face-to-face in each research location over a single time in 2020. Following that, we issued 279 questionnaires to each dry port's transit operator, management, and staff in order to collect data. Finally, we used 246 questionnaires to continue the data analysis process after subtracting 21 non-returned and 12 improperly answered questionnaires.

Data analysis was conducted using SPSS to purify measurement items through explanatory factor analysis. To test the proposed hypothesis and explore the relationship between variables structural equation modeling was employed.

3.2 Factor Analysis

Explanatory factor analysis (EFA) was conducted to explore the interrelationship of variables, remove redundant; unnecessary items, and simplify interrelated indicators. Before this, Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity was conducted. The KMO noted a result of 0.909 indicated that the possibility to continue and perform factor analysis and there is the existence of good fit and observable variables are to be grouped into their underlying factor.

The factor analysis result presented in Table 1 shows that all items had a significant load value with their underlying factors above the cut-off point of 0.4. Apart from this, the Eigenvalue of one (1) and the value cumulative variance explained ranged from 45.10 to 87.10 indicating the amount of variance explained by each factor. We also tested the reliability of constructs using composite reliability and Cronbach alpha. Accordingly, composite reliability (CR) in table 2 indicated that the statistics satisfactorily meet the requirement of the minimum cut-off point (0.60) AVE is greater than 0.50 and the Cronbach alpha test is greater than the minimum threshold of 0.60.

Table 1. Explanatory factor analysis result

Constructs		F1	F2	F3	F4	F5	F6	F7	F8
	Port Characteristics								
Port Infrastructure	Our port has an adequate number of terminals		***.869***						
	Our port has adequate cranes and forklifts for loading and unloading containers		***.864***						
	Our port has an adequate cargo handling capacity		***.829***						
	We have enough trucks and trains for shipping cargo		***.820***						
Port Connectivity	Our port has well-established international connectivity							***.834***	
	Our port has well connectivity with other dry ports							***.827***	
	Our port has connected with industrial zones/regions							***.805***	
Port Privatization	Private companies invest in port equipment (e.g. crane, truck, forklift, etc.)			***.914***					
	In our port, private companies perform cargo handling operations			***.914***					
	There is a strong participation of private freight forwarders in our port			***.907***					
	Port-Logistics Integration								
Institutional support	Research for identifying and implementing the best practices in freight transport				***.889***				
	Our port facilitates leases to improve the logistics of cargo distribution				***.886***				
	Our port gains financial support from partners for logistics providers to build new facilities				***.849***				
Organizational Integration	Our port collaboratively works with its customers					***.843***			
						.816			

	Our port has encouraged teamwork within internal cross-functional teams in cargo distribution					*.715*			
	We have share skills, risks, costs, and rewards with our partners					*.672*			
	We have joint plans for prompt problem solving, maintaining long term relationships between partners								
Information Integration	We have shared useful information with our relevant logistics partners						***.840***		
	We have used advanced IT to book space for containers						***.832***		
	We have used advanced information technology to control container flow						***.775***		
	Port Performance								
Port Operational performance	We handle cargo on quoted or anticipated time	***.822***							
	We have a lower number of customer complaints	***.820***							
	We have provided reliable service consistently	***.812***							
	Our port is flexible in terms of volume and type of cargo	***.784***							
	Our port operation cost is low	***.766***							
Port Efficiency	Our port throughput per crane is high								***.806***
	We have a short train/truck waiting time								***.801***
	We have made efforts to increase cargo throughput								***.798***
Eigenvalue		**12.63**	**2.71**	**2.39**	**1.71**	**1.53**	**1.25**	**1.12**	**1.05**
Variance %		**45.10**	**9.68**	**8.52**	**6.12**	**5.47**	**4.45**	**4.00**	**3.78**
V. cumulative		**45.10**	**54.77**	**63.30**	**69.41**	**74.89**	**79.32**	**83.33**	**87.10**

Note: *Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) test = 0.909*

Source: (Alavi, 2019; author's own development, 2022

Table 2. Reliability test of constructs

Constructs	Cronbach alpha(α)	CR	AVE
Port Privatization	0.929	0.943	0.826
Port Infrastructure	0.940	0.941	0.799
Port connectivity	0.925	0.927	0.808
Information Integration	0.907	0.907	0.765
Organizational Integration	0.858	0.867	0.623
Institutional Support	0.964	0.965	0.901
Operational Performance	0.970	0.970	0.866
Port Efficiency	0.942	0.943	0.847

Source: (Own survey, 2021)

Respondent's Demographic profile

Nearly 66 percent of the 278 responses are men, while the remainder is women. Almost 63 percent of responders are between the ages of 26 and 35, with 5% being under 25 and 1.4 percent being over 55. According to table 1, over 83 percent of the respondents have completed their graduation. Employees were also discovered to have a lot of experience. Seventy-three percent of those polled had between six and ten years of experience. In addition, 4.3 percent of employees have more than 16 years of experience, while just 15.1 percent have fewer than five years.

4. Results and discussions

Structural Model

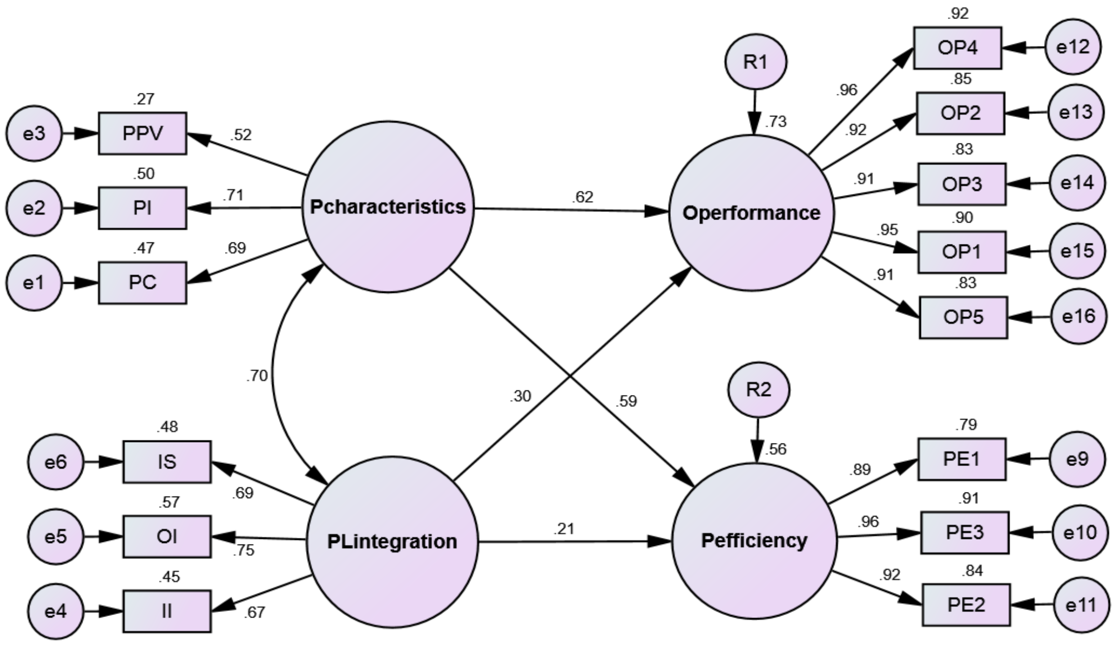

Figure 2. Structural model

Table 3. Goodness fit test of Structural model

Statistical fit index	***Cut-off point***	***Recorded result***
$\chi 2$		187.48
DF		72 (P <.001)
GFI	***≥0.90***	***0.898(marginal fit)***
AGFI	***≥0.90***	***0.851(marginal fit)***
NFI	***≥0.90***	***0.942(good fit)***
RFI	***≥0.90***	***0.927(good fit)***
IFI	***≥0.90***	***0.963(good fit)***
TLI	***≥0.90***	***0.953(good fit)***
CFI	***≥0.90***	***0.963(good fit***
RMSEA	***≤0.08***	***0.071***

Source: (Own survey, 2021)

From the path diagram depicted in figure 2, port characteristics have the highest path coefficient on port operational performance (O performance) which is 0.62 significant at $P < 0.001$. This indicated that a one standard deviation change in port characteristics would result in a 0.62 standard deviation change in port operational performance. In the same fashion, port characteristics (i.e. port infrastructure, port privatization, and port connectivity) boost the operational performance of Ethiopian dry ports through providing reliable port services consistently, on-time handling of cargo, reducing defects during handling and storing of cargo at the lowest operation cost.

Notably, our result is also supported by previous studies including Chandrakant (2011) where container handling equipment is viewed as the main machines for dry ports as well as seaports, and they can greatly influence both the container handling capacities and, in turn, the performance of the dry port. Also, Rozar et al. (2018) studies also show that port infrastructure improvement in terms of stockpile location, labor, and flexibility (loading) is mainly improved the operational performance of a given port. Further, as stated by Nicolae, Ristea, Cotorcea, and Nistor (2015), the main consequences of a low port performance are the speed reduction of operating the vessel and an increased residence time of the vessel at berth. They also added that reasons for poor port performance are time lost due to interruptions in operation, poor utilization of provided equipment, weak stacking and handling practices, insufficient training activity and / or its poor organization. Similarly, speed reduction in the operating of truck and train and an increased waiting time of the truck and train in dry ports will lead to low operating performance of the dry ports. This cause higher cargo handling cost in turn affects performance of ports.

Liu (1995) also suggested that port ownership and management is one of the characterizing factors that influence port performance and efficiency. The author also added that private ownership or management in port operation is more efficient than the public one because private ownership has a profit-driven objective, but public management has no more motivation to improve performance. Moreover, Barros and Athanassiou (2004) suggest that privatization has enhanced efficiency in ports. Based on the statistical result of the current study and the support of previous works, ***hypothesis (H1) was significant and supported***.

Additionally, port characteristics predict port efficiency with a path coefficient of 0.59 at $P < 0.001$. This shows that a one-unit change in port characteristics will result in a 0.59 increase in port efficiency. Besides, port characteristics such as (sufficient terminal size, adequate number of cranes and forklifts for loading and unloading of freights, enough trucks and trains for shipping cargos, involvement of private companies in port operation, intermodal connectivity with rail, highway, and road connectivity with other dry ports and connectivity with industrial zones) would increase port efficiency through maximizing port throughput of crane/trucks and reducing truck/train waiting time. Our finding is also consistent with a linear regression test conducted by Caldeirinha, Felicio, and Coelho (2006) that port efficiency is influenced by port infrastructure. ***Hence, H2 was supported.***

Further, from the results of structural equation modeling in figure 2, it can be understood that port logistics integration explains port operational performance with a path coefficient of 0.30 at $p < 0.01$ significant level. This shows when port logistics integration goes up by 1% standard deviation will result in a 30% change in port operational performance. This implied that port logistics integration includes; sharing information with logistics partners, the use of advanced information technology, sharing of skills, risks, costs, and rewards with partners, a joint plan for prompt problem solving and maintaining long term relationships between partners, working in collaboration with customers, obtaining financial support from institutions and research for identifying and implementing best practices in freight transport were improved Ethiopian dry port operational performance. Regarding this, Thai (2016) indicated that the level of information communication technology applications in port operations is an important element of port service quality. Logistics integration can benefit supply chain structure and firm performance in the long run (Abadli et al., 2020).

Undoubtedly, we also supported that port logistics integration increases port operation performance in terms of reducing port operating costs, maintaining better service quality, decreasing waiting time, on-time delivery of cargo, enhancing communication between logistics partners, and lowering transit or lead times. ***Therefore, H3 was supported***.

Concerning H4; it was indicated that port logistics integration significantly affects the efficiencies of dry ports. From figure 2, we observed that port logistics integration has a significant effect (0.21) on port efficiency at $P < 0.05$. In another way, it means that a 1% change in port logistics integration would lead to a 21% increase in port efficiency. Information integration, organizational integration, and institutional support in ports have enhanced port efficiency (i.e. increasing throughput and reducing train/truck dwelling time). For instance, information integration through enterprise resource planning can create communication networks between port partners, provide faster services, enabling better controlling and tracking of cargo. This in turn assures port efficiency by maximizing productivity and throughput.

The result is consistent with past studies Caldeirinha et al. (2006) shows that logistics integration influences port efficiency. We suggest that port logistics integration (information integration, organizational integration, and institutional support) improves dry port efficiency on throughput and reduces truck/train waiting time. ***Thus, H4 was accepted.***

Table 4. Summary of Hypothesis Results

H	Relationship	Estimate(Direct effect)	Hypothesis Result
H1	P Operational Performance <--- P Characteristics	.62***	Supported
H2	Port Efficiency <--- Port Characteristics	.59***	Supported
H3	P Operational Performance <--- Port Logistics Integration	.30**	Supported
H4	Port Efficiency <--- Port Logistics Integration	.21*	Supported
***** Significant at P < 0.001, ** Significant at P < 0.01, and * Significant at P < 0.05**			

Source: (Own survey, 2021)

5. Conclusion

To summarise, the finding of the study confirmed that port operational performance and efficiency are influenced by port characteristics and port logistics integration. Chiefly, port characteristics i.e. port infrastructure (cargo handling capacity, sufficient terminal size, adequate number of cranes and forklifts for loading and unloading of freights, and enough trucks and trains for shipping cargos); port privatization (involving private companies in cargo handling operation and participation of freight forwarder in the port); and port connectivity (having intermodal connectivity with rail, highway, and road, connectivity with other dry ports and industrial zones) highly influence port operational performance and efficiency with a standardized factor loading of 0.62 and 0.59 respectively. Secondly, they were also affected by port logistics integration with path coefficients of 0.30 and 0.21. Truly, this study implies that port operational performance and efficiency are largely explained by port characteristics (i.e. port infrastructure, port privatization, and port connectivity).

As a practical implication, Ethiopia should follow a renewable forward-looking approach with its neighbor transit countries and advocate strengthened partnership. In the same fashion, the dry port operation procedures must also improve its service offering approach by simplifying customs documents and formulating unfettered standardized rules and regulations to reduce customs delays at the port. Above all, the government should upgrade railway and road infrastructure and complete missing links to foster connectivity. Moreover, countries should have to coordinate to develop a joint infrastructure. Also, the country shall propose strategies to use the northern corridor that was used before a political war with Eritrea.

Limitation and Recommendation for Study

We believe that this study completed its objective, but there is some limitation that should be mentioned. On this occasion, this work concentrated only on three dry ports and does not include other ports in the country which are currently operating port functions. Thus, it will be better if future studies include those ports (namely, Semera and Wereta) to reach a more generalized conclusion. Coupled with, indeed for more than two decades Ethiopia was passing through dependency on Djibouti port, but now in 2021, the country had a miracle transition from landlocked country to seaborne by having 19% share of Berbera port. Consequently, we recommend future academicians conduct research on the roles of this port in the Ethiopian economy and make a comparative analysis when the port starts its full potential functional operation.

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Appendix
Amharic Version of Survey Questionnaires

ዲላ ዩኒቨርሲቲ

ቢዝነስና ኢኮኖሚክስ ኮሌጅ

የሎጂስቲክስና ትራንስፖርት አስተዳደር ትምህርት ክፍል

መጠይቅ

ምስጋና ለተሳታፊዎች

ስለ ትብብርዎ ከወዲሁ ልናመሰግንዎ እንወዳለን፡፡ የእርስዎ ምላሽና ተሳትፎ ይህ ጥናት እንዲሰራ ምክንያት ሆኗል፡፡

እኛ እንድሪስ አሊ. እና አባተ አየልኝ ከዲላ ዩኒቨርሲቲ የቢዝነስና ኢኮኖሚክስ ኮሌጅ የወደብ ባህርያትና የሎጂስቲክስ ትስስር በኢትዮጵያ ደረቅ ወደቦች ላይ ያላቸው ተጽዕኖ ዙሪያ ጥናት እያካሄድን እንገኛለን፡፡ እርስዎም ከጊዜዎት ጥቂት ደቂቃዎችን ሰጥተው ይህንን መጠይቅ እንዲሞሉ በትህትና እንጠይቃለን፡፡

ውድ ተሳታፊዎች፣ ይህ መጠይቅ የወደብ ባህርያትና የሎጂስቲክስ ትስስር በኢትዮጵያ ደረቅ ወደቦች አፈጻጸም ላይ ባላቸው ተጽዕኖ ዙሪያ መረጃን የሚሰበስብ ነው፡፡ የእርስዎ ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሠረተ ሲሆን የምንሰበስበውም መረጃ ሚስጥርነቱ የተጠበቀ እንደሚሆን እናረጋግጥልዎታለን፡፡ የእርስዎ እውነተኛና ዋጋ ያለው ምላሽ ለዚህ ጥናታዊ ጽሑፍ መሳካት ትልቅ ሚና ያለው ነው፡፡

አጠቃላይ ማሳሰቢያዎች

- ስምዎን መጻፍ አያስፈልግም፡፡
- ምርጫዎችን በሚያገኙበት ወቅት መልስዎን ማክበብ ይችላሉ፡፡

አድራሻ

ምንም ዓይነት ጥያቄ ካለዎት በሚከተሉት ቁጥሮች ሊያገኙን ይችላሉ፡፡ ስልክ፡- 09-10-06-22-70/ 09-60-26-08-54፤ ኢ-ሜይል፡- endrisali05@gmail.com/ abateay36@gmail.com

ውድ ጊዜዎን ሰውተው ስለተሳተፉ ከወዲሁ እናመሰግናለን፡፡

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ክፍል አንድ፡- ለወደብ ባህርያት መለኪያ የተወሰዱ መጠይቆች

እርስዎ ያሉበትን ደረቅ ወደብ ባህርያትን በተመለከተ እባክዎን ከሚከተሉት መግለጫዎች ጋር የሚስማሙበትን ወይም የማይስማሙበትን ደረጃ የሚወክለውን ቁጥር ያክብቡ።

የምርጫ ስኬሎቹ ባለ አምስት-ነጥብ የላይከርት ስኬል ናቸው። 1 = በጣም አልስማማም (በ.አ)፣ 2 = አልስማማም (አ)፣ 3 = መወሰን አልችልም (መአ)፣ 4 = እስማማለሁ (እ)፣ 5 = በጣም እስማማለሁ (በ.እ)

በወደብ ላይ የግል ተቋማት ተሳትፎ						
ኮድ	ጥያቄዎች	በአ	አ	መአ	እ	በእ
PPV1	በወደባችን ውስጥ የግል ኩባንያዎች የካርጎ ጭነት ያካሄዳሉ።	1	2	3	4	5
PPV2	በወደባችን ውስጥ ከፍተኛ የግል ጭነት ተሳትፎ ይካሄዳል።	1	2	3	4	5
PPV3	የግል ኩባንያዎች በወደብ መሳሪያዎች ላይ መዋዕለ-ንዋይ ያፈሳሉ (ለምሳሌ፡- ክሬን፣ የጭነት መኪና፣ ፎርክ-ሊፍት ወዘተ.)	1	2	3	4	5
የወደብ መሠረተ-ልማት						
ኮድ	ጥያቄዎች	በአ	አ	መአ	እ	በእ
P11	ወደባችን ጭነትን የመሸከም ብቃት አለው።	1	2	3	4	5
P12	ወደባችን በቂ ቁጥር ያላቸው ተርሚናሎች አሉት።	1	2	3	4	5
P13	ወደባችን ኮንቴይነሮችን ለመጫንና ለማውረድ የሚሆኑ በቂ ክሬኖችና ፎርክ-ሊፍቶች አሉት።	1	2	3	4	5
P14	ወደባችን ጭነትን ለማጓጓዝ በቂ መኪና እና ባቡር አለው።	1	2	3	4	5
የወደብ ግንኙነት						

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ኮድ	ጥያቄዎች	በአ	አ	መአ	እ	በእ
PC1	ወደባችን በጥሩ መልኩ የተለያዩ የመጓጓዣ ዘዴዎችን የሚጠቀም ትስስር አለው (ሀዲዶች፣ ቀለበት መንገዶች፤ መንገድ)	1	2	3	4	5
PC2	ወደባችን መልካም የሆነ የዓለም-አቀፍ ግንኙነት አለው።	1	2	3	4	5
PC3	ወደባችን ከሌሎች ደረቅ ወደቦች ጋር ጥሩ ግንኙነት አለው።	1	2	3	4	5
PC4	በሌሎች ወደቦች መካከል ጠንካራ ትስስርና የግንኙነት መረብ አለን።	1	2	3	4	5
PC5	ወደባችን ከኢንዱስትሪ መንደሮች ጋር ግንኙነት አለው።	1	2	3	4	5

ክፍል ሁለት፡- የወደብ ሎጂስቲክስ ትስስር መጠይቆች

የወደብ ሎጂስቲክስ ትስስር በተመለከተ እባክዎን ከሚከተሉት መግለጫዎች ጋር የሚስማሙበትን ወይም የማይስማሙበትን ደረጃ የሚወክለውን ቁጥር ያክብቡ።

የምርጫ ስኬሎቹ ባለ አምስት-ነጥብ የላይክርት ስኬል ናቸው። 1 = በጣም አልስማማም (በ.አ)፣ 2 = አልስማማም (አ)፣ 3 = መወሰን አልችልም (መአ)፣ 4 = እስማማለሁ (እ)፣ 5 = በጣም እስማማለሁ (በ.እ)

የመረጃ ትስስር						
ኮድ	ጥያቄዎች	በ.አ	አ	መ.አ	እ	በ.እ
II1	አብረውን ከሚሰሩ የሎጂስቲክስ አጋሮቻችን ጋር ጠቃሚ መረጃዎችን እንለዋወጣለን።	1	2	3	4	5
II2	የኮንቴይነር እንቅስቃሴዎችን ለመቆጣጠር ረቂቅ የኢንፎርሜሽን ቴክኖሎጂን እንጠቀማለን።	1	2	3	4	5
II3	ኮንቴይነሮችን ቀድመን ቦታ ለማስያዝ ረቂቅ የኢንፎርሜሽን ቴክኖሎጂን እንጠቀማለን።	1	2	3	4	5
II4	ከሎጂስቲክስ አጋሮቻችን ጋር ያለውን እንቅስቃሴ ለማሳለጥ እንዲያገለግለን የኤሌክትሮኒክ ዳታ ልውውጥ ቴክኖሎጂን	1	2	3	4	5

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ኮድ	ጥያቄዎች	በ.አ	አ	መ.አ	እ	በ.እ
	እንጠቀማለን።					
	ድርጅታዊ ትስስር					
ኮድ	ጥያቄዎች	በ.አ	አ	መ.አ	እ	በ.እ
OI1	ከአጋሮቻችን ጋር ክህሎት፣ ስጋት፣ ወጪ እንዲሁም ሽልማቶችን እንጋራለን።	1	2	3	4	5
OI2	ከአጋሮቻችን ጋር የዘለቀ ወዳጅነት ለመፍጠርና ፈጣን የችግር አፈታት ዘዴዎችን ለመቀየስ አብረን የምንሰራበት ዕቅድ አለን።	1	2	3	4	5
OI3	ወደባችን ከደንበኞቹ ጋር አብሮ ይሠራል።	1	2	3	4	5
OI4	ወደባችን በጭነት ስርጭት ውስጥ አብሮ የመስራትን ባህል ያበረታታል።	1	2	3	4	5
	የኢንስቲትዩት ድጋፍ					
ኮድ	ጥያቄዎች	በ.አ.	አ.	መ.አ	እ	በ.እ.
IS1	የጭነት ማጓጓዝን በተሻለ መልኩ ለመስራት የሚያግዙ አሰራሮችን ለመለየትና ለመተግበር የሚረዱ የጥናት ውጤቶችን እናገኛለን።	1	2	3	4	5
IS2	ወደባችን አዳዲስ መሠረተ-ልማቶችን ለመገንባት ከሎጂስቲክስ አጋሮቻችን የገንዘብ ድጋፍ ያገኛል።	1	2	3	4	5
IS3	ወደባችን የጭነት ስርጭትን ሎጂስቲክስ ለማሻሻል ሲባል እንደ ተሽከርካሪና መጋዘን ያሉ ኪራዮችን ያመቻቻል።	1	2	3	4	5

ክፍል ሦስት፡- የወደብ አፈጻጸም መለኪያ መጠይቆች

የወደብ አፈጻጸም በተመለከተ እባክዎን ከሚከተሉት መግለጫዎች ጋር የሚስማሙበትን ወይም የማይስማሙበትን ደረጃ የሚወክለውን ቁጥር ያክብቡ።

የምርጫ ስኬሎቹ ባለ አምስት-ነጥብ የላይከርት ስኬል ናቸው። 1 = በጣም አልስማማም (በ.አ)፣ 2 = አልስማማም (አ.)፣ 3 = መወሰን አልችልም (መአ)፣ 4 = እስማማለሁ (አ)፣ 5 = በጣም እስማማለሁ (በ.እ)

ዩኒቨርሳል ትርጉም ቤት
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የስራ አፈጻጸም						
ኮድ	ጥያቄዎች	በ.አ	አ	መ.አ	እ	በ.እ
OP1	ቀጣይነት ባለው መልኩ አስተማማኝ አገልግሎት ስንሰጥ እንሰጣለን፡፡	1	2	3	4	5
OP2	ከደንበኞቻችን የሚነሱ ቅሬታዎች ጥቂት ናቸው፡፡	1	2	3	4	5
OP3	ወደባችን የተለያዩ መጠንና ይዘት ያላቸውን ጭነቶች ማስተናገድ ይችላል፡፡	1	2	3	4	5
OP4	ጭነቶችን ከተጠበቀው ሰዓት ሳናሳልፍ እናስተናግዳለን፡፡	1	2	3	4	5
OP5	የወደብ እንቅስቃሴ ወጪያችን ዝቅተኛ ነው፡፡	1	2	3	4	5
የወደብ ብቃት						
ኮድ	ጥያቄዎች	በ.አ	አ	መ.አ	እ	በ.እ
PE1	የወደባችን ክሬን ምርታማነት ከፍተኛ ነው፡፡	1	2	3	4	5
PE2	በወደባችን የባቡር እና መኪና የቆይታ ጊዜ አጭር ነው፡፡	1	2	3	4	5
PE3	የጭነት መጠናችንን ለመጨመር ጥረት እናደርጋለን፡፡	1	2	3	4	5

ዩኒቨርሳል ትርጉም ቤት
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