# APPENDICES

## APPENDICES 1 Pervious Research

| Researcher & Years | Research Title | Research Result |
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| Lin Ruiwen (2010) | Re-Examining the Role of Transport Infrastructure in Trade, Regional Growth, and Governance: Comparing the Greater Mekong Subregion (GMS) and Central Eastern Europe (CEE)' | The study shows that better infrastructure for sea, land, and air transport is associated with higher trade. Port quality appears to have had the greatest influence on trade. Improved port efficiency has a significant positive impact on trade. Efficient ports explain bilateral trade patterns better than preferential margins. which requires that part of the cargo carried be sent only by national carriers |
| Anna Bottasso and others (2018) | Port Infrastructures and Trade: Empirical Evidence from Brazil', Transportation Research Part A: Policy and Practice | Bottasso et al. (2018) found that the positive impact of port infrastructure on trade was found to be higher for export flows. Estimates show that maritime infrastructure realized during the 2009-2012 period has resulted in an increase of about 14% in exports. This study considers exports and imports from 27 Brazilian states, of Brazil's 30 most important trading partners |
| Fauri and Damuri (2015) | Fasilitas Perdagangan: Analisis pengaruh Kinerja dan Pelayanan Pelabuhan terhadap Ekspor di Indonesia | Port performance is an important element in the world of international trade, considering that most of the trade is by sea. By increasing the effectiveness of loading and unloading at the pier by 10%, it can increase the export value at the port level by 1.17%. Performing efficiency by reducing the percentage of containers in the stacking yard can increase the export value at ports by 0.34%. |
| Portugal-Perez and John S Wilson. (2012) | Port Performance and Trade Facilitation Reform Hard and Soft Infrastructure | Portugal-Perez and Wilson (2012) assessed the impact of four indicators related to trade facilitation - physical infrastructure, ICTs, borders, and transport efficiency, as well as the business and regulatory environment - on the export performance of 101 developing countries. In addition, by using the gravity model approach |

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| Abe Kazutomo and Wilson John S (2011) | Investing in Port Infrastructure to Lower Trade Costs in East Asia', East Asian Economic Review | According to Kazutomo, and Abe John S., Wilson, 2011 that explore the linkages between trade costs, facilitation, and economic development. in the scope of transport costs to East Asia from both the United States and Japan. The analysis suggests that cutting port congestion by 10 percent could cut transport costs in East Asia by up to 3 percent. This translates into a 0.3 to 0.5 percent across-the-board tariff cut. In addition, the estimates suggest that the trade cost reduction of investment in port infrastructure in East Asia that translates into higher consumer welfare would far outweigh the cost for physical expansion of the ports in the region |
| Jose L. Tongzon and S. Ganesalingam (1994) | An Evaluation of ASEAN Port Performance and Efficiency' | In his research, it shows that terminal capacity is very dependent on the ability of port tools to carry out loading and unloading. In addition, the number of accommodated containers, cranes, and terminal areas, but also the quality of cranes, the quality and effectiveness of information systems, the ability to integrate intermodal transportation (roads and trains), and port system management affect port services. If the volume handled exceeds the cargo handling capacity of the port, it will result in congestion at the port and inefficiency and this can harm port users. Then the limited access to information on the arrival of ships will be related to poor information systems which will slow down the documentation process and slow down port functions. Without the availability of intermodal links, vessel users cannot easily move cargo from the port which can result in delays and high costs. |
| Biswa Nath Bhattacharyay (2009) | ADBI Working Paper Series Infrastructure Development for ASEAN Economic Integration Asian Development Bank Institute, | This study has identified the important role of infrastructure in regional development, namely as a basic factor capable of driving economic change in various sectors, both locally and internationally. There are several benefits of infrastructure to the economy, namely; reduce production costs, expanding employment and consumption opportunities due to the opening of isolated areas, and maintaining macroeconomic stability through investment in infrastructure |

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| | | that can absorb labor and increase consumer purchasing power. |
| Ari Soeti Yani And Apriady Apriady (2018) | Pengaruh Fasilitas Dan Sarana Penunjang Terhadap Efektivitas Kegiatan Bongkar Muat Serta Dampaknya Terhadap Peningkatan Kinerja Kapal Di Pt. Pelindo Ii (Persero) Cabang Sunda Kelapa | This study results showed that, partially, main facilities had no significant effect on the effectiveness of loading and discharging activities and the ship performance; supporting facilities had a significant effect on the effectiveness of loading and discharging activities, but had no significant effect on ship performance; the effectiveness of loading and discharging activities had a significant effect on ship performance. Simultaneously, the main and supporting facilities have significant effects on the effectiveness of loading and discharging activities and the increasing of ship performance. |
| Tanti Novianti (2013) | Kualitas Infrastruktur Transportasi Dan Kelembagaan Serta Pengaruhnya Terhadap Perdagangan Internasional Indonesia | The results of this study show that the Indonesian quality of transportation infrastructure and institution has influenced the costs of production and trade volume. The quality of the Indonesian ports and the law efficiency are determinant factors of trade. Improvement of the ports quality especially ports capacities, handling efficiencies, delay times and integrated ports management will reduce trade costs and improve trade volumes. Moreover, improvement of law efficiencies or government bureaucracy by simplifying customs rules and institution coordination will reduce trade costs and increase trade volumes. These in turn will improve Indonesian trade competitiveness. Improvement of infrastructure quality particularly ports can be achieved when the increased national budget allocation and the effectiveness of national infrastructure budget through National Budget (APBN), Regional Budget (APBD) and private budgets are well identified. Hence, there will be priority scales on the Indoesian national development. |

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| Faheem Ur Rehman, Abul Ala Noman, and Yibing Ding (2020) | Does Infrastructure Increase Exports and Reduce Trade Deficit? Evidence from Selected South Asian Countries Using a New Global Infrastructure Index', Journal of Economic Structures | By using Pooled Mean Group (PMG) estimator and cointegration techniques like Pedroni and Kao test. The empirical results of PMG approach confirmed the existence of significant long-run impact of aggregate and sub-indices of infrastructure (i.e., transport, telecommunication, energy and financial sector) on export and trade deficit. The findings suggested that infrastructure positively promotes exports while negatively affecting trade deficit. The relationship between infrastructure and export is worthy bulletin for South Asian economies to encourage the quantity of exports and catch-up on established economies. The control variables of exchange rate, human capital, per capita GDP and institutional quality enhance exports and retard trade deficit significantly in the long run. Furthermore, the Pedroni and Kao test indicates strong evidence of cointegration in selected variables. Fully modified ordinary least square (FMOLS) and dynamic ordinary least square (DOLS) support robust and consistent results to the main model of this study. Furthermore, the study recommended that in long run aggregate and sub-indices of infrastructure promote exports and decrease trade deficit in selected South Asian economies |

## APPENDICES 2 Data And Data Sesources

| **Company** | **Year** | **TVEI** | **Pier Length** | **Stacking services Area** | **Loading Unloading Tools** |
|---|---|---|---|---|---|
| Pelindo I | 2010 | 2934424 | 11045 | 385226 | 82 |
| | 2011 | 3809053 | 12015 | 423748 | 85 |
| | 2012 | 2091894 | 8304 | 418636 | 80 |
| | 2013 | 3691805 | 8704.1 | 749336 | 239 |
| | 2014 | 1957768 | 7302 | 292542.4 | 120 |
| | 2015 | 2930608 | 8806.2 | 299696.4 | 144 |
| | 2016 | 1501662 | 8853.2 | 290528.4 | 130 |
| | 2017 | 3258137 | 8863.2 | 307640.4 | 175 |
| | 2018 | 3687239 | 10618.91 | 676048.5 | 265 |
| | 2019 | 1874957 | 9923.5 | 624744 | 247 |

| | | | | | |
|---|---|---|---|---|---|
| Pelindo II | 2010 | 2934424 | 25434 | 1834789 | 191 |
| | 2011 | 3809053 | 27534 | 2018268 | 116 |
| | 2012 | 2091894 | 23821 | 1726559 | 111 |
| | 2013 | 3691805 | 27847 | 1959073 | 513 |
| | 2014 | 1957768 | 26350 | 1878143 | 501 |
| | 2015 | 2930608 | 27931 | 1938023 | 516 |
| | 2016 | 1501662 | 25931 | 1917957 | 508 |
| | 2017 | 3258137 | 26835 | 2112565 | 554 |
| | 2018 | 3687239 | 26942 | 2875884 | 576 |
| | 2019 | 1874957 | 26541 | 2765295 | 552 |
| Pelindo III | 2010 | 2934424 | 31178 | 1443808 | 421 |
| | 2011 | 3809053 | 31674 | 1562160 | 458 |
| | 2012 | 2091894 | 30728 | 1495966 | 416 |
| | 2013 | 3691805 | 31905 | 1506656 | 599 |
| | 2014 | 1957768 | 30341.5 | 1438748 | 596 |
| | 2015 | 2930608 | 35950 | 1488384 | 1102 |
| | 2016 | 1501662 | 35167.7 | 1300334 | 1148 |
| | 2017 | 3258137 | 36722.2 | 1750091 | 1169 |
| | 2018 | 3687239 | 35794.25 | 1795186 | 1469 |
| | 2019 | 1874957 | 35259 | 1732069 | 1426 |
| Pelindo IV | 2010 | 2934424 | 12305 | 529159 | 243 |
| | 2011 | 3809053 | 12405 | 565811 | 370 |
| | 2012 | 2091894 | 12346 | 591517 | 325 |
| | 2013 | 3691805 | 12696 | 598510 | 371 |
| | 2014 | 1957768 | 12595 | 697130 | 400 |
| | 2015 | 2930608 | 11281 | 745269 | 417 |
| | 2016 | 1501662 | 13423.85 | 717911 | 413 |
| | 2017 | 3258137 | 13567.35 | 739108 | 76 |
| | 2018 | 3687239 | 13813.35 | 760359 | 87 |
| | 2019 | 1874957 | 13115.45 | 104231 | 421 |

Source: Indonesian transportation statistics for 2014[24], 2015[25], 2016[26], 2017[27], 2018[28], 2019[29]

[24] Kementrian Perhubungan, 'STATISTIK PERHUBUNGAN 2014', *Badan Pusat Statistik*, 1 (2014).

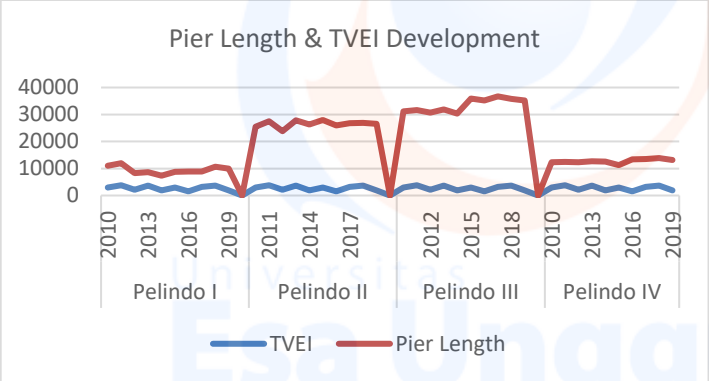
[25] Kementerian Perhubungan, 'STATISTIK PERHUBUNGAN 2015', *Badan Pusat Statistik*, 1 (2015), 167.

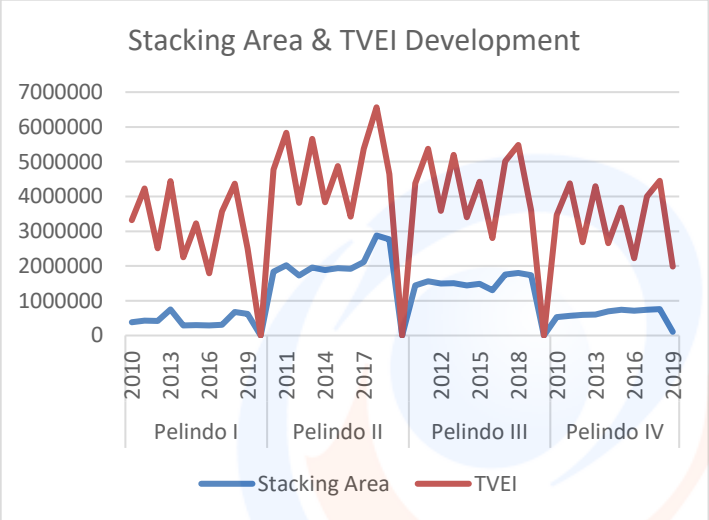
[26] Kementerian Perhubungan RI, 'STATISTIK PERHUBUNGAN 2016', *Badan Pusat Statistik*, 2016, 1–418.

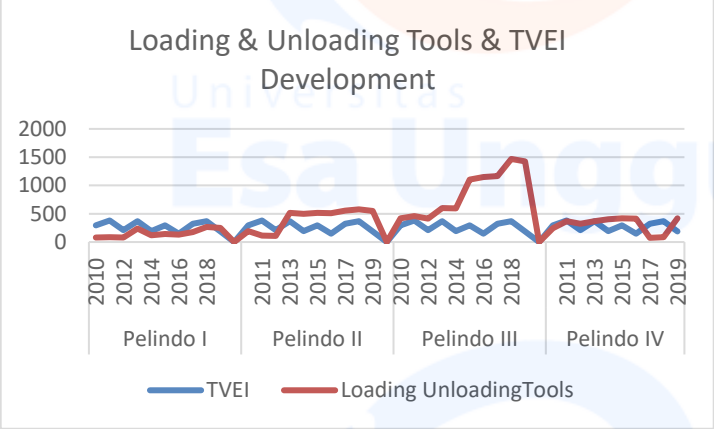
[27] Kementrian Perhubungan, 'STATISTIK PERHUBUNGAN 2017', *Badan Pusat Statistik*, 2017, 20–23.

[28] Kementrian Perhubungan, *STATISTIK PERHUBUNGAN 2018*, *Badan Pusat Statistik*, 2018, I.

[29] Kementrian Perhubungan, *STATISTIK PERHUBUNGAN 2019*, *Badan Pusat Satistik*, 2019, I.




# APPENDICES 3 Regresion Analysis Result

## Panel Data Regression Analysis (Common Effect Model)

Dependent Variable: LOG(VA)
Method: Panel Least Square
Date: 05/17/21 Time: 19:22
Sample: 2010 2019

Periods included: 10
Cross-sections included: 4
Total panel (balanced) observations: 40

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 13.76786 | 0.286487 | 48.05746 | 0.0000 |
| PIER | 0.129744 | 0.040237 | 3.224532 | 0.0028 |
| STACKING | 0.067388 | 0.031299 | 2.153056 | 0.0385 |
| TOOLS | 0.103261 | 0.022411 | 4.607539 | 0.0001 |

| | | | |
|---|---|---|---|
| R-squared | 0.564423 | Mean dependent var | 198.2377 |
| Adjusted R-squared | 0.500367 | S.D. dependent var | 91.09005 |
| S.E. of regression | 0.884263 | Sum squared resid | 26.58530 |
| F-statistic | 8.811471 | Durbin-Watson stat | 2.422381 |
| Prob(F-statistic) | 0.000019 | | |

## Heteroskedasticity test

Dependent Variable: RESABS
Method: Panel Least Squares
Date: 05/17/21 Time: 16:06
Sample: 2010 2014
Periods included: 10
Cross-sections included: 4
Total panel (balanced) observations: 40

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.089590 | 0.626229 | 1.739921 | 0.0909 |
| LOG(PI) | -0.173340 | 0.104264 | -1.662511 | 0.1056 |
| LOG(ST) | 0.067913 | 0.051624 | 1.315523 | 0.1971 |
| LOG(LO) | -0.081161 | 0.051568 | -1.573881 | 0.1248 |

| | | | |
|---|---|---|---|
| R-squared | 0.216043 | Mean dependent var | 0.265646 |
| Adjusted R-squared | 0.100755 | S.D. dependent var | 0.129260 |
| S.E. of regression | 0.122575 | Akaike info criterion | -1.222707 |
| Sum squared resid | 0.510837 | Schwarz criterion | -0.965 |

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|---|---|---|---|
| | | | 9375 |
| | 30.45 | Hannan-Quinn | -1.13 |
| Log likelihood | 415 | criter. | 1111 |
| | 1.873 | | 2.66 |
| F-statistic | 946 | Durbin-Watson stat | 3541 |
| | 0.124 | | |
| Prob(F-statistic) | 884 | | |

**Multicollinearity Test**

| | PI | ST | TO |
|---|---|---|---|
| PI | 1.000000 | 0.811516 | 0.748899 |
| ST | 0.811516 | 1.000000 | 0.476193 |
| TO | 0.748899 | 0.476193 | 1.000000 |

APPENDICES 4 Turnitin Result