

A Study on the Profitability of Private Finance Initiative Ports Companies and the Use of Old Ports Rehabilitate-Project

† HuckJun Yang

† Researcher, Busan Development Instituted, Korea

Abstract : This paper analyzes the profitability of the Private Finance Initiative(PFI) ports and proposes the application plans of the R-project(Rehabilitate project) for old ports to attract and activate private investment in the port industry. The R-project of old ports can reduce the government's financial budget and provide improved facilities for users more quickly than the public sector comparator. Before suggesting the R-project for old ports, the profitability of the currently operating 11 companies of the PFI ports are analyzed using the four ratios of profitability, and the results show that all the companies indicate low profitability, except for the top three companies. To apply the R-project, the three types of R-project ports are categorized as maintaining the function of the port, changing the function of the port, and mixing the function of the port. Additionally, three obstacles and improvement measures are suggested; attracting private business, legal issues, and administrative procedures. This study is conducive to the policy making for the port renewal and the activating PFI for the port industry.

Key words : old ports, R-project (Rehabilitation project), PFI (Private Finance Initiatives), profitability, financial ratios

1. Introduction

Korea's dependency on foreign trade was 66.25% in 2018 highlighting the importance of the port industry in Korea. The port industry has long played a crucial role in the Korean economy. Under the 'Five-year economic development plan' from the government that began in 1962, port development has begun in earnest, and today Korea has the world's sixth-largest container port(based on container throughput in 2018, UNCTAD, 2019) in Busan.

Despite the remarkable progress for half a century, the ports have reached a point where reinvestment of ports is considered due to the aging facilities. According to the Ministry of Oceans and Fisheries(2020), 52.5% of ports' facilities are for over 20 years old. Consequently, reinvestment is needed to improve and recover the port function considering the productivity, efficiency, sustainability, and safety issues for outdated ports.

However, the government has made a huge investment and the fiscal deficit is expected to hit a record high recently due to COVID-19. Given that the Korean government needs a lot of funds for supporting victims who have been affected by COVID-19, and for economic revitalization, there is a limit to ports reinvestment from the public sector to the status quo.

The Korean government recently announced a plan,

namely the Korean New Deal PFI(Private Finance Initiative), for activation of PFI by developing new projects worth 30 trillion won in July 2020. The improvement of old facilities is also included in the plan such as a sewage treatment plant, and the aim of the plan is to activate the economy by attracting the private sector and offering more social infrastructure. The R-project(Rehabilitate project), however, can be an appropriate alternative for the activating PFI, the R-project is one of the private investment type, which aims to renovate, repair, and expand existing old facilities owned by the government or local government.

Accordingly, the purpose of this study is to analyze the operating status of PFI ports' companies in terms of profitability and to suggest the application plans of ports' R-project as an alternative to the public sector by activating the PFI, which could reduce the financial burden for the government and responded preemptively for an increasing number of old ports.

2. Literature review

2.1 Private Finance Initiative of the ports

In the early 2000s, when the Korean PFI port began in earnest, studies related to the PFI port development were

† Corresponding author, hjenjoy35@gmail.com 051)860-8722

conducted. Jun(2003) proposes a new approach such as BTL (Build-Transfer-Lease), and partial private investment by comparing the each type through measuring the effect of reducing public finance, and conducting AHP(Analytic Hierarchy Process) to the private investment port project. Following the previous study, Jun and Lee(2004) propose the improvement of evaluation criteria to choose the preferred bidder for BTL and partial private investment. Seong, Youn, and Keum(2003) study the development of port by private investment through the analyzing port charge to return the investment funds using the first case of PFI port in Korea. Kim(2005) suggests the policy of port private investment by considering advantages and disadvantages.

However, there is a study considering the choice of appropriate private investment type for the port. Lee and Kang(2013) propose the model to choose the appropriate type of the port private investment between whole PPP type and Mixed PPP type, and BTO(Build-Transfer - Operate) and BTL (Build - Transfer - Lease) using the MCMDM(Multi-Criteria Mixed Decision Model) and AHP.

Furthermore, there are some papers with respect to modeling for the estimating maintenance cost of port private participation projects(Lee, Kang, and Rho, 2010), suggesting the activation of port PFI, for safe harbor facilities through the project finance in terms of legal standpoint (Song, 2012), and analyzing the perceptions of stakeholders to implement the PPP(Public-Private Partner - ships) in terms of concessionaire by critical success factors(Aerts, Grage, Dooms, Haezendonck, 2014).

2.2 Rehabilitate project for PFI

There are not many studies on R-project. Kang, Yun, Kwon, and Kim(2007) suggest the RLT (Rehabilitate Lease Transfer) for the small size project as the building renovation and maintenance for small and medium-sized enterprises by proposing the simplification of the procedure. While there are no criteria for implementation of the R-project, KDI(PIMAC), who is nominated specialized institution for the PFI by the Private Investment for Social Infrastructure Act in Korea, published the standard for the R-project(Korea Development Institute, 2013). The study presents the overall issues about the process of specific details for the R-project and indicates the cases including the improvement project of water quality, railway, and sewage treatment facility, road expansion project, and construction extension project.

There are case studies for R-project(Ahn et al., 2017;

Kim and Joo, 2017). Ahn et al.(2017) suggest a policy plan for stimulating the PFI with regard to aging infrastructure through recognition of a problem to the PFI, studying foreign cases. They propose the foundation of the specialized institution for managing the whole infrastructure. Kim and Joo(2017) study the plan for stimulating PFI through the modernization and renovation of the aging infrastructure using Japanese cases such as a closed school building, a closed hospital building, a university building, a science museum, and an art museum.

The research dealing with companies' profitability of PFI ports and the activation plan of PFI ports through the R-project has not been conducted so far.

3. Analysis of the Profitability of PFI Ports companies

3.1 Overview of the PFI ports in Korea

According to the Ministry of Oceans and Fisheries(2018), there are 17 PFI ports in Korea in table 1. The total project cost of 17 PFI ports is about 4.656 trillion won.

Table 1 Overview of the PFI ports in Korea

| Project name | Contents | |
|---------------------------------|----------------------|---------------------|
| | Concession period | Total project cost |
| Mokpo new outport (1-1) | '04~'54 (50 years) | 84.3 billion won |
| Mokpo new outport (1-2) | '04~'54 (50 years) | 22.6 billion won |
| Incheon north port (1-1) | '07~'48 (41.8 years) | 85.1 billion won |
| Incheon north port (1-1) | '07~'54 (47.8 years) | 41.7 billion won |
| Gunsan Bieung port | '08~'31 (23.4 years) | 98.3 billion won |
| Incheon north port (2-1) | '08~'58 (50 years) | 189.6 billion won |
| Busan new port (1) | '07~'56 (50 years) | 1,998.4 billion won |
| Busan new port (2-3) | '12~'41 (29.3 years) | 510.8 billion won |
| Incheon north port general pier | '09~'59 (50 years) | 113.9 billion won |

| | | |
|--|-----------------------|-------------------|
| Ulsan new port (1-1) | '09~'59 (50 years) | 189.3 billion won |
| Pohang Yeongilman new port (1-1) | '09~'59 (50 years) | 246.5 billion won |
| Pyeongtaek ·Dangjin Naehangdo ng pier | '10~'40 (30years) | 136.7 billion won |
| Pyeongtaek ·Dangjin grain pier | '11~'28 (17 years) | 119 billion won |
| Gunsan Gunjang port miscellaneous peir | '11~'41 (30 years) | 99.3 billion won |
| Masan port (1-1) | 16~'46 (30 years) | 224.6 billion won |
| Gwangyang (Yeocheon) general pier | '13~'47 (34 years) | 57.2 billion won |
| Busan new port (2-4) | '21~'49 (28.11 years) | 440.9 billion won |

Source : Ministry of Oceans and Fisheries, 2018.

3.2 Analysis of the companies' profitability of the Korean PFI ports

To evaluate the firm's profitability, financial ratios are an important indicator, and this section analyzes the profitability ratios using ROA(Return on Assets), ROE(Return on Equity), net income to sales, and operating profit to sales.

Bank of Korea(2019) explains the four profitability ratios as follows.

- ROA : It is a ratio of net income to total assets, widely used for evaluating management activities or establishing management strategies through analysis of differences between a company's plans and performance.
- ROE : It is a ratio of net income to stockholders' equity.
- Net income to sales : It is an indicator that shows the ratio of net income to sales.
- Operating income to sales : It is an indicator to determine the performance of a company's main business activities, only pure operating profit directly related to manufacturing and sales activities is compared to sales. This is useful for measuring business efficiency.

Table 2 indicates the average profitability ratios of 11 companies of Korean PFI ports over the last 4 years from 2016 to 2019.

The data of financial statements are selected continuous data among recently published data from the Financial Supervisory Service(DART) including 11 firms of PFI ports in table 1.

All profitability ratios, except for operating income to sales, are negative as table 2, indicating that the companies are having difficulty in operation in terms of profitability. Additionally, 8 companies fall into a state of capital impairment in 2019.

Table 2 The average profitability ratios over the last four years from 2016 to 2019

| Ratios | four-years average (%) |
|---------------------------|------------------------|
| ROA | -2.30 |
| ROE | -36.09 |
| Net income to sales | -34.30 |
| Operating income to sales | 5.20 |

Figure 1 depicts the four profitability ratios from 2016 to 2019. The ROA is ranging from -4.62 percent to -2.80 percent. The ROE is ranging from -95.86 percent to -6.62 percent. The ratios of net income to sales is ranging from -44.03 percent to -21.75 percent and that of operating income to sales is ranging from 0.41 percent to 9.00 percent.

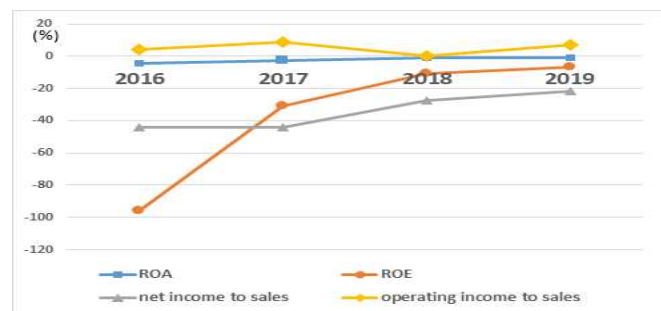


Fig. 1 The average profitability ratios of 11 companies of Korean PFI ports over the last four years

Tables 3, 4, 5, and 6 show the four profitability ratios of the top three companies. DONGWONG LOEX INCHEON, PNC, and TAEYOUNG GRAIN TERMINAL ranked first, second, and third in all profitability ratios, respectively, except for the ratio of operating income to sales. The top three companies are relatively more profitable than the

other seven companies in terms of profitability ratios. The other seven companies show negative ratios in ROA, ROE, and net income to sales.

Table 3 Top 3 companies, average ROA over the last four years

| Ranking | Company | Location | ROA (%) |
|---------|-------------------------------|---------------------------------------|---------|
| 1 | DONGWONG LOEX INCHEON | Incheon north port (2-1) | 9.22 |
| 2 | PNC | Busan new port (1) | 8.97 |
| 3 | TAEYOUNG GRAIN TERMINAL | Pyeongtaek k·Dangjin grain pier | 2.61 |

Table 4 Top 3 companies, average ROE over the last four years

| Ranking | Company | Location | ROE (%) |
|---------|-------------------------------|--------------------------------------|---------|
| 1 | DONGWONG LOEX INCHEON | Incheon north port (2-1) | 12.39 |
| 2 | PNC | Busan new port (1) | 9.62 |
| 3 | TAEYOUNG GRAIN TERMINAL | Pyeongtaek· Dangjin grain pier | 5.89 |

Table 5 Top 3 companies, average net income to sales over the last four years

| Ranking | Company | Location | Net income to sales (%) |
|---------|-------------------------------|--------------------------------------|-------------------------------|
| 1 | DONGWONG LOEX INCHEON | Incheon north port (2-1) | 42.56 |
| 2 | PNC | Busan new port (1) | 26.48 |
| 3 | TAEYOUNG GRAIN TERMINAL | Pyeongtaek ·Dangjin grain pier | 11.47 |

Table 6 Top 3 companies, average operating income to sales over the last four years

| Ranking | Company | Location | Operating income to sales (%) |
|---------|--------------------------|--------------------------------|-------------------------------------|
| 1 | DONGWONG LOEX INCHEON | Incheon north port (2-1) | 58.79 |
| 2 | MOKPO NEWPORT | Mokpo new outport (1-1) | 35.77 |
| 3 | PNC | Busan new port (1) | 33.32 |

All companies, except for the top three companies, are not profitable from 2016 to 2019 in terms of profitability ratios. Thus, new approaches are needed to attract the private sector for the port industry.

4. The application plans of the old ports R-project

4.1 Overview of aging ports in Korea

Table 7 shows a number of ports' facilities in Korea, and there are a total of 1,086 port facilities in 2020.

Furthermore, the number of fishing ports is 2,299 ports including 1,023 statutory fishing ports and 1,276 non-statutory fishing ports (Ministry of Oceans and Fisheries, 2020).

Table 7 Number of ports' facilities in Korea (Unit: No., %)

| | Trade port | Coastal port | Total |
|-------------------------|----------------|----------------|-----------------|
| Mooring facilities | 530 (62.6%) | 124 (51.9%) | 654 (60.2%) |
| Outdoor facilities | 180 (21.3%) | 105 (43.9%) | 285 (26.2%) |
| Port traffic facilities | 26 (3.1%) | 2 (0.8%) | 28 (2.6%) |
| Building facilities | 103 (12.2%) | 8 (3.3%) | 111 (10.2%) |
| Lock facilities | 4 (0.5%) | - | 4 (0.4%) |
| Other facilities | 4 (0.5%) | - | 4 (0.4%) |
| Total | 847 (100%) | 239 (100%) | 1,086 (100%) |

Source : Ministry of Oceans and Fisheries, 2020

Table 8 indicates the overview of the old ports' facilities, the rate of facilities more than 20-years-old accounts for 52.5% of the total number of ports' facilities. Furthermore, the number of ports aged more than 50 years is 52 facilities. Considering the aging fishing ports, the number is expected to increase.

Table 8 overview of aging port's facilities in Korea

| Years | Number of aging facilities | Percentage |
|--------------|----------------------------|------------|
| more than 50 | 52 | 5.1% |
| more than 40 | 143 | 14.0% |
| more than 30 | 284 | 27.7% |
| more than 20 | 538 | 52.5% |
| more than 10 | 823 | 80.3% |

Source : Ministry of Oceans and Fisheries, 2020.

4.2 Types of PFI

There are several types of PFI for the concession contract, which are largely distinguished by the profitable model(BTO, BOT, BOO), the lease model(BTL, BLT), and the mixed model. Korea Development Institute(2011) and Ministry of Economy Finance(2020) define the types of PFI as follows:

- BTO(Build-Transfer-Operate) : At the same time as the infrastructure is completed (new, expansion, improvement), the ownership of the facility belongs to the central or local government, and the concessionaire is granted the right to manage and operate the facility for a concession period.
- BOT(Build-Operate-Transfer) : The ownership of the facility belongs to the concessionaire during a specified period after completion of the infrastructure (new, expansion, improvement), and when the period expires, the ownership transfers to the central or local government.
- BOO(Build-Own-Operate) : The ownership of the facility belongs to the concessionaire upon the completion of the infrastructure(new, expansion, improvement)
- BTL(Build-Transfer-Lease) : At the same time as the infrastructure is completed (new, expansion, improvement), the ownership of the facility belongs to the central or local government, and the concessionaire is granted the right to manage and operate the facility, but the facility is leased to the central or local government for the period of contract.
- BLT(Build-Lease-Transfer) : Infrastructure is completed

(new, expansion, improvement) by the concessionaire and they lease the facility to others for a certain period, and transfer the facility to the central or local government after the ends of the lease period.

- Mixed model : A model of building and operating one infrastructure by mixing BTO and BTL.
- Combined model : A model of using two or more of the BTO or other models(previous types of models) in multiple ways by physically dividing the infrastructure.

Additionally, the Ministry of Economy and Finance(2014) defines the types of R-project as follows:

- RTO(Rehabilitate-Transfer-Operate) : After renovating, repairing, and expanding the existing facility owned by the central or local government, the ownership of the facility rehabilitated belongs to the central or local government, and the concessionaire is granted to the right to manage and operate the facility for a certain period time.
- ROT(Rehabilitate-Operate-Transfer) : The ownership of the facility is recognized for a certain period of time to the concessionaire who has renovated, repaired and expanded the existing facility owned by the central or local government, and when the period expires, the ownership of the facility rehabilitated belongs to the central or local government.
- ROO(Rehabilitate-Own-Operate) : The ownership of the facility is recognized to the concessionaire who has renovated, repaired, and expanded the existing facility.

4.3 Application of R-project for the old ports

According to whether the original functions of the port are kept, R-project can be classified into three types; maintaining the function of the port, changing the function of the port, mixing the function of the port.

1) Maintaining the function of the port

This type can be applied to the port with high demand for the original function of the port. The facilities of ports can be renovated for increasing productivity, efficiency, and safety through the RTO.

Ministry of Land, Transport and Maritime Affairs(2010) has published a 'Port facility maintenance system improvement and port renewal basic plan', and the plan selected 11 ports that need port renewal and prioritized them. The estimated total cost of port renewal is 550 billion won, and the government budget is needed more considering the

maintenance cost for the ports before renovating. After the basic plan was published, a preliminary feasibility study was conducted for the Nakpo Pier of Gwangyang Port, whose priority was first. The port was passed in the preliminary feasibility study(Korea Development Institute, 2019), and the facility will be improved by 2025. According to the Korea Development Institute(2019), the total project cost was estimated as around 159.6 billion won, and they proposed a review of the adequacy of the finances between public finance and private finance before proceeding with the project. This is because Nakpo Pier is a public port, but some companies use it exclusively.

In the case of the Nakpo Pier, it takes quite a long time to implement the Port Renewal project, and a lot of public finance is required. Therefore, the PFI through the R project can quickly renovate aging ports and reduce the initial financial burden for the government.

2) Changing the function of the port

This type can be applied to the port that does not require the original function of the port. Lee(2010) presents the cases of developing a port that has lost its original function as a waterfront space. According to Lee(2010), Yokohama Port and Portsmouth Military port are contained the cases, the former remodeled its warehouse and converted it into shopping centers and restaurants, and the latter converted it into a duty-free shop, multiplex, marina, and hotel.

Although there are large-scale development projects such as the North port of Busan Port, this type will be applicable to small ports in tourist areas.

3) Mixing the function of the port

This type can be applied to the port with low demand to the original function of the port, especially for small fishing port and utilized both the original function of port and waterfront space. The port of this type can generate profits by installing tourism facilities while maintaining minimum the original function of the port through the PFI. A combined model of the PFI type can be used. For instance, the aging port facilities for the original function can be renovated by RTO, and other facilities for tourism such as leisure, and museum can be installed by RTL.

With the development of the fishing village nearby downtown, the role of a fishing port is decreasing. Recently, the government carries forward the project to revitalize the port under the name of the 'Fishing Village New Deal 300'. The project contains repairing the port's

facilities, supporting specialized businesses such as tourism, and culture for reinvigorating the regional economy. Therefore, RTO or RTL can be contained in the 'Fishing Village New Deal 300' as PFI.

4.4 Obstacles and improvement measures

This section deals with obstacles and improvement measures to launch the R-project port in advance. There are three obstacles; attracting private businesses, legal issues, and administrative procedures.

1) Attracting private business

Most of the PFI ports are struggling with their business in terms of profitability due to the lack of trade volume that is less than the demand forecasted(Lee and Kang, 2013). Therefore, various types of PFI such as BTO-rs, BTO-a should be considered for risk-sharing between concerned authorities and concessionaire in the project planning stage. However, since the preference for the R-project port with waterfront in the tourism region is expected to be high, it is necessary to properly distribute profitable facilities and public facilities in considering the privilege to the specific company for social agreements.

2) Legal issues

The waterfront facilities of the port defined in Article 2 of the Port Act are four categories: marine leisure facilities, marine culture, marine culture and education facilities, marine park facilities, artificial beaches, and artificial wetlands. Therefore, to implement the PFI port of waterfront facilities that are not included in the Port Act, the amendment of the law is required. However, according to Article 3 of the Port Act, since the port areas are trade port and coastal port, it is expected that the type of changing the function of port or fishing port under the Fishing Village-Fishing Port Act can carry out the other waterfront facilities through the PFI.

3) Administrative procedures

There is a need to consider 'Transfer' in the types of R-project. The existing facility is already owned by the central government or local government, but RTO or RTL contains the 'Transfer' to the ownership of the facility from concessionaire to the central or local government. The matter is the scope of ownership(e.g. expanded and renovated building). Therefore, clear standards need to be established for the scope of the subject of 'Transfer'.

5. Conclusion

This study scrutinizes the application plan of old ports R-project for attracting and activating the PFI in the port industry. Before proposing the R-project, the profitability of PFI ports companies is analyzed to examine the operating status of the companies using the profitability ratios. As a result, all companies, except for the top three companies, are unprofitable over the last four years. Therefore, the government needs to consider the various concession contract models such as Mixed or Combined models for private investment by sharing the risk and R-project ports with profitable facilities.

Applying the R-project for old ports, three types of R-project ports are newly suggested to reduce the government's financial budget and to provide the an improved facility for users more quickly than public investment. In general, it takes a lot of time to make a decision to construct the infrastructure in case of public investment than private investment. As ports developed since the 1960s are aging, enormous funds are invested in the cost of maintaining facilities, and the government is having difficulty in financing for port redevelopment due to several issues in recent years. Accordingly, R-project ports with profitable facilities such as waterfront in the tourism region can be attracted private sector investment. Therefore, the government needs to consider the port renewal through the R-project by using the fund of the private sector.

Studies dealing with the R-project for the port industry have not been conducted so far. This study, therefore, is conducive to the policymaking for the port renewal and the activating PFI by proposing the new approach of the R-project ports including an application plan in terms of three types of R-project ports, and improvement measures.

In spite of that, this research has its limitations. First, the analysis of financial ratios needs to expand including the ratio firm's activity, stability. Second, although the application plan of the R-project is suggested for policy suggestions, further research needs to find out the factors that have an decisive effect on the decision to implement the project through AHP analysis.

References

- [1] Aerts, G., Grage, T., Dooms, M. and Haezendonck, E. (2014), "Public-Private Partnerships for the Provision of Port Infrastructure: An Explorative Multi-Actor Perspective on Critical Success Factors", *The Asian Journal of Shipping and Logistics*, Vol. 30, No. 3, pp. 273-298.
- [2] Ahn, J. W., Cho, J. H., Lee S. H., Kim, N. Y. and Myung G. M.(2017), "Strengthening public-private partnership for infrastructure asset management", Korea Research Institute for Human Settlements.
- [3] Bank of Korea(2019), *Financial Statement Analysis for 2018*.
- [4] Jun, C. Y.(2003), "A Study on the Alternatives to the Present Method of Conducting Private Investment Port Project", *Ocean Policy Research*, Vol. 19. No. 1, pp. 71-96.
- [5] Jun, C. Y. and Lee, J. P.(2004), "A Study on the improvement of evaluation criteria to Port Private Investment Project", *Jorurnal of Shipping and Logistics*, Vol. 19. No.1, pp. 71-96.
- [6] Kang, L. S., Yun, S. M., Kwon, J. H. and Kim, S. G.(2007), "Improvement of SOC Project Management for Small Size Project by Using RTL", academic conference, *KSCE Journal of Civil Engineering*, Vol. 2007, No. 10, pp. 3192-3195.
- [7] Kim, D. H. and Joo, J. H.(2017), "A Study on the Private Investment Projects in Korea and Japan: Policy Implications and Case Study", The Seoul Institute.
- [8] Kim, W. H.(2005), "Policy Proposals for Upgrading the Private Participation in Port Infrastructure(PPPI) in Korea", *Ocean Policy Research*, Vol. 20, No. 2, pp. 127-167.
- [9] Korea Development Institute(2011), *Basic plan for public-private partnership projects*, Ministry of Strategy and Finance.
- [10] Korea Development Institute(2013), *A Study on Detailed Tips for Feasibility Analysis of Rehabilitate Private Finance Initiatives* [In Korean].
- [11] Korea Development Institute(2019), "2019 Preliminary Feasibility Study Report, Gwangyang Port Nakpo Pier Renewal Project" [In Korean].
- [12] Lee, J. H.(2010), "Waterfront and Port-friendly Space" [In Korean], *Ocean Land 21* [In Korean], Vol. 7, pp. 161-174.

- [13] Lee, J. P. and Kang, D. J.(2013), “A Study on the Model of Choosing the Appropriate Private Participation Type in Port”, *Journal of Shipping and Logistics*, Vol. 29, pp. 879–910.
- [14] Lee, J. P., Kang, D. J. and Rho, J.(2010), “Formulation of the Estimation Model of Maintenance Repair Costs in Korean Port Private Participation Projects”, *The Korea Spatial Planning Review*, Vol. 65, pp. 19–39.
- [15] Ministry of Economy and Finance(2014), “The Basic Plan of Private Finance Initiative [In Korean]”.
- [16] Ministry of Economy and Finance(2020), “The Basic Plan of Private Finance Initiative [In Korean]”.
- [17] Ministry of Land, Transport and Maritime Affairs(2010), *The Improvement of Port Facility Maintenance System and the Establishment of Port Renewal Basic Plan (Summary Report) [In Korean]*.
- [18] Ministry of Oceans and Fisheries(2018), *The Overview of Port PFI [In Korean]*, www.mof.go.kr.
- [19] Ministry of Oceans and Fisheries(2020), *Port Facilities that are more than 30 years old, safer! [In Korean]*, press release, 2020.4.27.
- [20] Seong, Y. C., Youn, M. and Keum, J. S.(2003), “A Study on Port Development in Korea through Private Investment-Analyzing Port Charge in M port”, *Journal of Korean Navigation and Port Research*, Vol. 3., pp. 147–153.
- [21] Song, H. S.(2012), “The Activation of SOC Private Sector Investment to the Facilities for Safe Harbor through Project Financing”, *GNU LAW REVIEW*, Vol. 3, pp. 95–140.
- [22] UNCTAD(2019), *Review of Maritime Transport 2019*.

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