

Uncertain Supply Chain Management

homepage: www.GrowingScience.com/uscm

Impact of loading and unloading productivity on service user satisfaction

Prasadja Ricardianto^a, Esterlinus Edwin Lermatan^a, Muhammad Thamrin^a, Edi Abdurachman^a, Heri Subagyo^a, Antoni Arif Priadi^a, David Sirait^a, Tri Iriani Eka Wahyuni^b, Rosliawati Achyani Kosman^b, Endri Endri^{c*}

^aInstitute of Transportation and Logistics Trisakti, Jakarta, Indonesia

^bMerchant Marine Polytechnic of Makassar, Indonesia

^cUniversitas Mercu Buana, Jakarta, Indonesia

ABSTRACT

Article history:

Received December 5, 2021

Received in revised format

December 26, 2021

Accepted March 24 2022

Available online

March 24 2022

Keywords:

Occupational Safety and Health

Loading and Unloading

Productivity

Port Service Performance

Service User Satisfaction

Work Safety

This study is aimed at analyzing the effect of port service performance, occupational safety, and health, and work safety on loading and unloading productivity and its impact on service user satisfaction at Yos Sudarso Tual Port, Maluku province, in Eastern Indonesia in 2020. What was found was the limited-service performance delivered to service users, resulting in dissatisfaction. This could have implications for the less-than-optimal loading and unloading performance at Yos Sudarso Tual Port. This study uses a quantitative method, with a path analysis model, with a total of 40 samples. Research respondents are users of loading and unloading services. The findings, in general, indicate that there is an effect of port service performance, occupational safety, and health and work security on loading and unloading productivity which in turn has an impact on increasing user satisfaction of Yos Sudarso Tual Port services. The key finding is that new investments are needed which will require the ongoing capacity building and development of several port authorities who are civil servants who will oversee port planning and operations and regulate access to key port services and facilities.

© 2022 Growing Science Ltd. All rights reserved.

1. Introduction

Eastern Indonesia region is an area that has great potential, but until now it is still not developed, this is due, among other things, to the lack of infrastructure and facilities. Sea transportation is a system used to connect various scattered regions of the country, with several ports that can be used as stopovers. Maluku Province is the largest maritime archipelago in the territory of the Republic of Indonesia with great fishery potential, a rich sea, and is still free from environmental pollution and thereupon it has been designated as a National Fish Barn. Yos Sudarso Tual Port is one of the ports in eastern Indonesia which has a very important role in the flow of goods transportation activities, both imports and exports. The Central Government has seriously considered Maluku Province to be a National Fish Barn with operational targets that have been set until 2023, to encourage connectivity between Indonesia and Australia, especially port connectivity in Maluku Province to Australia which in the future is expected to become one of the Gateway Ports in Indonesia, especially Eastern Indonesia Region.

Based on field observations, there were several problem findings, namely; (1) the size of the pier and the utilization of loading and unloading facilities at the port are not maximized, resulting in truck density in the dock area which in turn has an impact on decreasing loading and unloading productivity, (2) lack of preparation and coordination among related stakeholders in the loading and unloading process, especially for domestic cargo, (3) The satisfaction of port service users is still not maximized due to difficulties in using port services, and (4) The services provided to service users are still limited, resulting in dissatisfaction of Port users. The objective of this research was to analyze service user satisfaction, port service performance, OSH, job security, and loading and unloading productivity at Yos Sudarso Tual Port, Maluku province in eastern Indonesia.

* Corresponding author

E-mail address endri@mercubuana.ac.id (E. Endri)

© 2022 Growing Science Ltd. All rights reserved.

doi: 10.5267/j.uscm.2022.3.010

Several studies related to port service quality and customer satisfaction have been carried out, such as research conducted by Chang and Thai (2016) which shows that port service quality has a direct and positive impact on customer satisfaction. Previous research by Miremadi et al. (2011) related to passenger satisfaction at Iranian ports concluded that increasing competition forces businesses to pay more attention to customer satisfaction. Chaliluddin et al. (2021) and Ratnawari et al. (2021) argue that in Indonesia in general, it shows that there are still limited human resources who carry out activities in the performance field so that performance is not optimal. Port service performance according to Talley (2006), can be evaluated from the point of view of technical efficiency, cost efficiency, and effectiveness by comparing the actual port throughput with the optimum throughput. Staufenbiel and Koning (2010) argue that job security is an important matter that greatly influences the level of employee absenteeism, employee perceptions of fairness, behavior at work, and employee turnover rates. Furthermore, research Eliasson et al. (2017) explain that the productivity of loading and unloading equipment must be further increased. Another finding by Malisan (2014), is that the idle time at the port is very large compared to the effective hours, and this has an impact on ship productivity. Another study by Agustin et al. (2020) stated that the equipment factor and the pond depth factor at the wharf were related to the loading and unloading process at the Jakarta International Container Terminal. In addition to other findings, research Sugandi et al. (2018) at the Port of Marunda, Jakarta found that the use of loading and unloading equipment was not suitable to produce good productivity. From the OSH side Kurniawan and Kurniawan (2020), and Walters and Wadsworth (2021) emphasizes the need to improve supervisory and management competencies and last but not least the need for attention to safety and health factors. Saluy et al. (2021) revealed that the criteria for effectiveness, efficiency, supervision, timeliness, quantity, interpersonal impact, and quality increase productivity

To analyze and determine the direct influence of loading and unloading productivity on service user satisfaction at Yos Sudarso Tual Port. Meanwhile, the port service performance has an indirect effect on service user satisfaction which is mediated by loading and unloading productivity. Indirectly how much influence does occupational health safety have on service user satisfaction mediated by loading and unloading productivity and also to analyze how much indirect work safety influence on service user satisfaction mediated by loading and unloading productivity.

2. Literature Review

2.1. Port User Satisfaction

In the marketing literature, passenger satisfaction has been recognized as a critical factor of corporate strategy (Fornell et al., 2006) and a key driver of long-term profitability and customer value (Oh et al., 2013). Satisfaction is an emotional situation, and according to Kotler and Armstrong (2014), it is a pleasure resulting from the evaluation of one's work or work experience. Satisfaction, according to Colquit et al. (2015), and Oliver (2010) is pleasurable fulfillment, which is satisfying the expectations of passengers. Customer satisfaction is one element of selling power and passenger satisfaction is a very important factor in marketing because it has an impact on improving the quality of the company (Park, 2007; Park & De, 2015; Pahala et al., 2021; Indrasari et al., 2022)

Based on previous research, Ugboma and Ugboma (2004) suggested the need for top management to remain focused in efforts to increase customer satisfaction. The fulfillment of higher needs and desires will motivate a person to carry out activities that can provide satisfaction (Allen et al., 2019). According to Kotler and Keller (2016), satisfaction is a feeling of pleasure or disappointment after comparing product results with expected performance. Customer satisfaction is influenced by service quality, so to increase customer satisfaction it is necessary to increase quality services (Riyanto et al., 2021a; Bezerra & Gomes, 2019). Passenger satisfaction is a determining factor for getting new passengers and retaining existing passengers (Ricardianto et al., 2021; Javid et al., 2013). Port service user satisfaction is a customer response regarding the fulfillment of needs received by customers for service products. The results of the research by Chrinawati et al. (2020), showed that respondents were satisfied with the facilities provided by the terminal manager at Tanjung Priok Port, Jakarta. Widiyanto et al. (2021) also found that service quality and time zone had a positive effect on customer satisfaction on ships passing through Tanjung Priok Port. Finally, Nir (2009) states that the main port service will achieve customer trust when service users feel maximum satisfaction. Port service user satisfaction in this context is defined as a customer response regarding the fulfillment of needs received by customers for service products at Yos Sudarso Tual Port. The dimensions of service user satisfaction according to Tjiptono (2016) consist of; (1) Conformance of expectations, (2) Interest in revisiting, and (3) Willingness to recommend.

2.2. Port Service Performance

Performance according to Schermerhorn (2012) is a measure of the quantity and quality of work achieved by individuals or groups. Performance as the value of a series of employee behaviors that contribute, either positively or negatively to the achievement of organizational goals (Colquit et al., 2015). Meanwhile, Cronin and Taylor (2014) and El-Ghalayini (2017) argue that service performance is the performance of the service received by the customers themselves and assesses the quality of the service they feel. Port service performance according to several studies such as Talley (2006), can be evaluated from the point of view of technical efficiency, cost efficiency, and effectiveness by comparing the actual port throughput with the optimum throughput that is technically economical, cost-efficient, and effective. Port service performance according to Bucak et al. (2020) is not always the same but can change over the years as the perception of the performance of each port manager is different from one another. UNCTAD revealed that port performance has a customer-based market, human

resources, and operational dimensions (UNCTAD, 2016). Woo et al. (2011) stated that port performance is versatile, cannot be limited to internal processes, and is related to external service aspects such as service quality and logistics aspects. Based on the theoretical description of service performance, service performance in the context of a port is a comprehensive assessment by port service customers of the perceived service results when receiving services from service providers, so that services are more precise. Five dimensions of service performance used are: 1) Time, 2) Accessibility, 3) Completeness, 4) Courtesy and 5) Responsiveness (Cronin & Taylor, 2014).

2.3. Occupational Safety and Health

Occupational Safety and Health (OSH) is an effort to create protection and security from the risk of accidents and hazards, both physical, mental, and emotional to workers, companies, communities, and the environment. Mathis and Jackson (2010) define occupational health as a condition that refers to general physical, mental, and emotional stability. Work safety is very important, so to ensure its safety, work safety management is needed, namely the protection of employees from accidents in the workplace. The information provided by Antão et al. (2016) in his research can be considered as an initial effort to promote the port because it has implemented OSH well. In general, findings Österman et al. (2020) reported that service crews on passenger ships had very high levels of exertion where most of the diagnoses were related to musculoskeletal and psychological disorders. Added by Beheary et al. (2020), regular monitoring, inspection, and evaluation of health and safety measures is very important for risk improvement and control to achieve occupational health for port workers. Based on the theoretical description, OSH in this case is defined as an attempt to build protection and security from any risk of accidents to workers, companies, communities, and the environment encompassing physical, mental, and emotional. The five dimensions of this OSH variable are; (1) The condition of the work environment; (2) the Use of work equipment, (3) Air conditioning, (4) Employees' physical condition, and (5) Lighting and lighting arrangements.

2.4. Work Safety

Mondy (2012) explains specifically that work safety can be interpreted as the protection of employees from injury due to work accidents. A healthy individual is an individual who is free from illness, injury, and mental-emotional problems that can interfere with activities. According to Bangun (2012) in the perspective of the world of work, work safety is the protection of work security experienced by workers both physically and mentally at work. Security enhancements need to be implemented both on land and in water because they can pose significant challenges to security operations and personnel (Antão et al., 2016; Kang & Kim, 2019; Peckham, 2012). Added, Fabiano et al. (2010) an increase in accidents caused by transport vehicles and a reduction in accidents caused by materials, allows workplace organization interventions for the prevention of possible injuries and to improve safety performance in port activities. Based on the theoretical description, job security is an effort made by an organization or company to protect employees, as well as give them confidence in the continuity of their work and a safe working environment. Three dimensions of job security variables consist of; (1) Career, (2) High job security, and (3) Workplace Conditions (Riyanto et al. 2021b; Virgiawan et al., 2021; Ardana et al., 2012).

2.5. Loading and Unloading Productivity

Stevedoring at the port requires surveillance of safety, safety motivation, and safety performance which is also strengthened by safety management supervision (Shang et al., 2011). The main issues are including the impact of stevedoring on employees and users of the services, work arrangements, and assessing the implications of its performance (Productivity Commission, 2002). Research results Nyema (2014) reveal that infrastructure improvements at Mombasa Port, Kenya, have increased the productivity of port operations (Ramadhani et al., 2020) conclude that the efficiency of the loading and unloading process at the port has the potential to minimize the ship's cost budget. Meanwhile, the findings of Permata et al. (2019) and Suprata et al. (2020) show that partially container weight has a significant negative effect on loading and unloading products, and a significant positive effect on loading and unloading productivity. A study conducted by Aldaghlis et al. (2021) in Australia confirmed that the initiation of stevedoring activities was motivated by organizational dynamics, including lack of trust in the workplace, high individualism, and lack of resources. Based on the theoretical description, loading and unloading productivity can be synthesized as the results achieved (output) with the overall resources used (input) from a process of moving goods from and onto the ship by using the loading and unloading equipment available at the port where the loading and unloading activity is carried out. implemented. This research is equipped with variable dimensions of loading and unloading productivity regarding effectiveness and efficiency.

Furthermore, the proposed hypothesis is:

- H1:** *Port services performance influences loading and unloading productivity.*
- H2:** *Occupational Safety and Health influences loading and unloading productivity.*
- H3:** *Work safety influences loading and unloading productivity.*
- H4:** *Port service performance influences service user satisfaction.*
- H5:** *Occupational Safety and Health influences service user satisfaction.*
- H6:** *Work safety influences service user satisfaction.*
- H7:** *Loading and unloading productivity influences service user satisfaction.*
- H8:** *Port service performance influences service user satisfaction indirectly through loading and unloading productivity.*

- H₉:** Occupational Safety and Health influences service user satisfaction indirectly through loading and unloading productivity.
- H₁₀:** Work safety influences service user satisfaction indirectly through loading and unloading productivity.

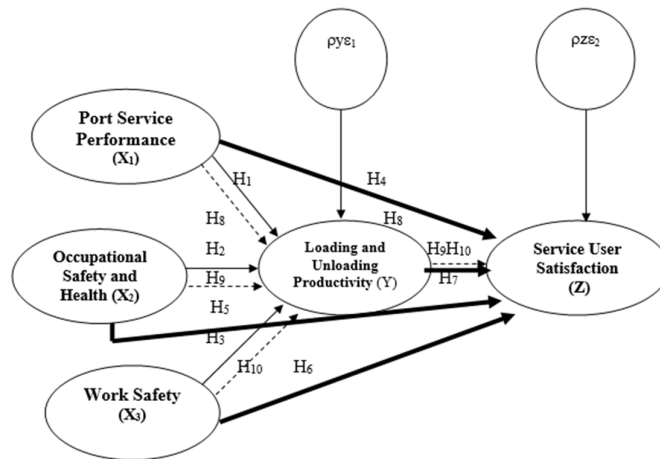


Fig. 1. Research Model

3. Research Methods

This study uses quantitative methods, and Path Analysis models, with a total sample of 40 users of port services consisting of shipping companies, freight forwarding, and shipping freight forwarders. The sampling technique used is Nonprobability Sampling, namely Saturated Sampling. Researchers used this sampling technique because the total population was 40 users of loading and unloading services. In path analysis, the influence of the independent variable on the dependent variable can be in the form of a direct influence, or in other words, multiple regression analysis regards the direct influence. In this research, port service performance, Occupational Safety, Health, and job security are determined as independent variables, service user satisfaction is set as the dependent variable, while loading and unloading productivity is assumed to be an intervening variable.

4. Results

4.1. The effect of port service performance, Occupational Safety and Health and work security on loading and unloading productivity (Substructure 1).

The effect of port service performance on loading and unloading productivity is 0.219 or 21.9%. This shows that 21.9% of loading and unloading productivity is determined by the performance of port services. The effect of OSH on loading and unloading productivity is 0.421 or 42.1%. This shows that 42.1% of loading and unloading productivity is determined by OSH. Meanwhile, the effect of job security on loading and unloading productivity is 0.342 or 34.2%. This shows that 34.2% of loading and unloading productivity is determined by job security. The magnitude of the Rsquare number (R²) is 0.749, this number indicates that the effect of port service performance, OSH, and job security simultaneously on loading and unloading productivity is 74.9%. Thus, a path diagram of substructure 1 can be drawn up (Fig. 2).

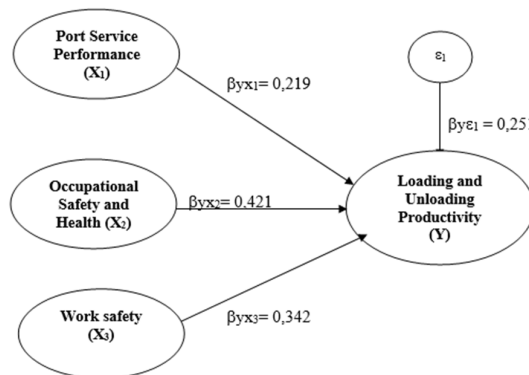


Fig. 2. Port Performance, Occupational Safety, and Health, Work Safety on Loading and Unloading Productivity (Sub Structure 1)

4.2. The effect of port service performance, Occupational Safety, and Health, work security, and loading and unloading productivity on service user satisfaction (Substructure 2).

The effect of port service performance on service user satisfaction is 0.228 or 22.8%. This shows that 22.8% satisfaction of service users is determined by the performance of port services. The effect of OSH on service user satisfaction is 0.293 or 29.3%. This shows that 29.3% of service user satisfaction is determined by OSH. The effect of port service performance on service user satisfaction is 0.162 or 16.2%. This shows that 16.2% of service user satisfaction is determined by the performance of port services. Meanwhile, the effect of loading and unloading productivity on service user satisfaction is 0.411 or 41.1%. This shows that 41.1% of service user satisfaction is determined by loading and unloading productivity. The magnitude of the number R square (R^2) is 0.936. This figure shows that the effect of using port service performance, OSH, job security, and loading and unloading productivity simultaneously on service user satisfaction is 93.6%. Path diagram of the influence of port service performance, OSH, job security, and loading and unloading productivity on service user satisfaction (Fig. 3).

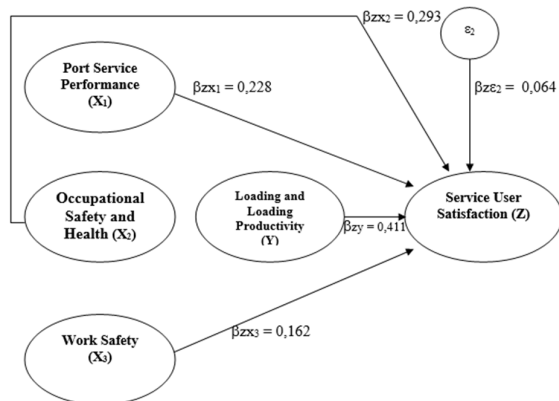


Fig. 3. Effect of Port Performance, Occupational Safety and Health, Work Safety and Loading and Loading Productivity on Service User Satisfaction (Sub Structure 2)

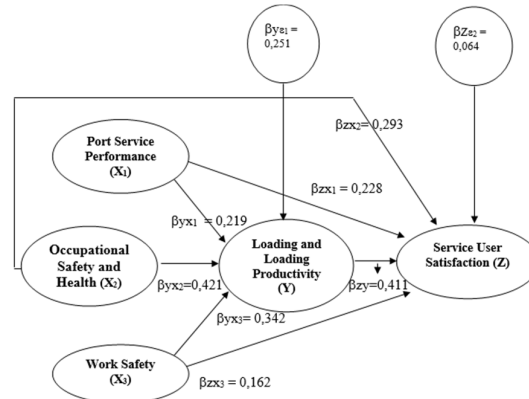


Fig. 4. Effect of Port Performance, Occupational Safety, and Health, Work Safety on Service User Satisfaction (Sub Structure 2)

Based on the results of the calculation of the path coefficients in sub-structure 1 and sub-structure 2, it can be described as a whole path analysis diagram of the effect of port service performance, OSH, and job security on loading and unloading productivity and its impact on user satisfaction (Fig. 4).

4.3. Total Effect

The direct effect of port service performance on loading and unloading productivity is y_{x1} 0.219. There is an indirect influence on port service performance toward service user satisfaction through loading and unloading productivity is 0.090, so the total effect is 0.309 or 30.9%. The direct effect of OSH on loading and unloading productivity is y_{x2} 0.421. The indirect effect of OSH on service user satisfaction through loading and unloading productivity is 0.064, so the total effect is 0.594 or 59.4%. Meanwhile, the direct effect of job security on loading and unloading productivity is y_{x3} 0.342. the indirect effect of job security on service user satisfaction through loading and unloading productivity is 0.141, so the total effect is 0.483 or 48.3%.

4.4. Hypothesis Test Results

Table 1 Results of the Summary of Research Hypotheses

Independent - Dependent Variable.	Direct Effect	Sig.
Port service performance - Productivity of loading and unloading	Direct Effect	0.037
Occupational Safety and Health - Productivity of loading and unloading	Direct Effect	0.005
Job security - Loading and unloading productivity	Direct Effect	0.018
Port service performance - Service user satisfaction	Direct Effect	0.000
Occupational Safety and Health - Service user satisfaction	Direct Effect	0.001
Job security - Service user satisfaction	Direct Effect	0.042
Productivity of loading and unloading - Service user satisfaction	Direct Effect	0.000
Independent - Intervening - Dependent	Indirect effect (Mediating)	Sig.
Port service performance - Loading and unloading productivity - Service user satisfaction	Indirect Effect	0.048
Occupational Safety and Health - Productivity of loading and unloading - Satisfaction of service users	Indirect Effect	0.010
Job security - Productivity of loading and unloading - Satisfaction of service users	Indirect Effect	0.028

5. Discussion

5.1. Port Service Performance on Loading and Unloading Productivity

Based on hypothesis testing, port services have a significant effect on loading and unloading productivity at Yos Sudarso Tual Port. Port service performance is one of the dominant factors in supporting cargo handling activities. In addition, the readiness and availability of loading and unloading equipment can affect the level of utilization of the equipment used in loading and unloading activities. The results of this study are by the results of previous studies by Widodo and Suprayitno (2020) at the Port of Gresik, East Java Province, that the loading and unloading performance, the availability of port facilities and equipment, and the readiness of the ocean-going expedition ship fleet will affect the productivity of loading and unloading at The Gresik Public Port. Another study by Shetty and Dwarakish (2018) states that port service performance planning such as the availability of cranes, tugboats, and storage facilities for port terminals greatly affects loading and unloading productivity. Several studies of loading and unloading productivity related to service performance at ports have been previously carried out by Han (2018), Munim and Schramm, 2018, and Stephens et al. (2012). Finally, the results of this study support the existing theory and the results of previous studies. This means that the performance of port services has a significant effect on loading and unloading productivity.

5.2. Occupational Safety and Health on Productivity Loading and Unloading

Based on the hypothesis testing, the direct effect of OSH on loading and unloading productivity at Yos Sudarso Tual Port is significant. OSH in the workplace is an important aspect that needs serious attention because if it is ignored, the worker's accidents will result in a decrease in the quality of work carried out by the workers themselves so that all forms of activities carried out will suffer. Distractions, such as the required manpower, are reduced. Safety and security are needed by the workforce when carrying out loading and unloading activities, where workers are advised to wear all personal protective equipment. The results of this study are by the results of previous studies by Fabiano et al. (2010) that, in particular, technological advances in industrial activities can increase productivity and occupational health and safety, but not necessarily at the same time. Research by Ramli (2010) concludes that workers guaranteed with OSH will work more productively and will support company development. Another result explains that OSH has a significant effect on work productivity (Kurniawan & Kurniawan, 2020). Finally, the results of this study support the existing theory and the results of previous studies. This means that OSH has a significant effect on loading and unloading productivity.

5.3. Work Safety on Loading and Unloading Productivity

Based on the hypothesis testing, the direct effect of job security on loading and unloading productivity at Yos Sudarso Tual Port is significant. Work safety has been proven to affect loading and unloading productivity, therefore Yos Sudarso Tual Port must pay more attention to performance by increasing supervision and cooperation between employees and loading and unloading workers. The results of this study are supported by Ardi and Ayu, (2016) who explain processes to improve safety performance in the context of container loading and unloading operations. Finally, the results of this study support the existing theory and the results of previous studies. This means that workplace safety has a significant effect on loading and unloading productivity.

5.4. Port Service Performance on Service User Satisfaction

Based on the hypothesis testing, the direct effect of port service performance and user satisfaction at Yos Sudarso Tual Port, the results show a significant effect. Container handling is said to be performing well if the customer is satisfied either at the time of service contact in certain situations or after using the service. To improve customer satisfaction with post-purchase services, efforts can be made, namely asking for advice and criticism from customers to improve each container handling that will be provided in the future. These results explain that in general customers will take service performance into account that can be obtained from the money they will spend. The results of this study are supported by the previous research Ingvardson and Nielsen (2019), that satisfaction is based on user perceptions of service satisfaction at public facilities that eventually improve service performance. Several other studies by Supriyatno and Widayanti (2019, and Zaini (2019) in Indonesia, state that there is a significant effect of service performance on service user satisfaction. Other research on maritime policy implementation in Taiwan also explains the positive influence between service performance and user satisfaction (Nir et al., 2012). Finally, many previous studies have stated that there is a positive relationship between satisfaction and performance in shipping companies (Kim et al., 2012; Widiyanto et al., 2021; Zeithaml & Bitner, 2011). Finally, the results of this study support the existing theory and the results of previous studies. This means that the performance of port services has a significant effect on service user satisfaction.

5.5. Occupational Safety and Health on Service User Satisfaction

Based on the hypothesis testing the direct effect of OSH on service user satisfaction at Yos Sudarso Tual Port, which has a significant effect on OSH is part of the protection of workers from the increasing risk of accidents. The use of technology

has a positive impact, namely providing convenience to the company's production, but it can have a negative impact if you are not skilled in operating supporting equipment, so that it can cause work accidents. The results of this research are by the results of previous research by Shetty and Dwarakish (2018) which states that OSH has a significant effect on user satisfaction and port services such as the availability of cranes, tugboats, and storage facilities for very good port terminals. affect service user satisfaction. Finally, the results of this study support the existing theory and the results of previous studies. This means that OSH has a significant effect on service user satisfaction.

5.6. Job Security on Service User Satisfaction

Based on the hypothesis testing, the direct effect of job security on service user satisfaction at Yos Sudarso Tual Port is significant. For security procedures and systems, fast and safe security operation is the main thing for customers. In this study, we selected the most relevant items and modified them to be more customer-oriented, such as fast container moving, fast procedures to control security documents, fast response to problems in security procedures, strict container scanning, and strict procedures to control security document. The results of this research support the findings by Zaini (2019) that security has a positive and partially significant effect on customer satisfaction. Finally, the results of this study support the existing theory and the results of previous studies. This means that job security has a significant effect on service user satisfaction.

5.7. Productivity of Loading and Unloading on Service User Satisfaction

Based on the hypothesis testing of the direct influence of loading and unloading productivity on service user satisfaction at Yos Sudarso Tual Port, the results of the calculation show a significant effect. The increase in ship visits and loading and unloading productivity show an increase in port performance, but it needs to be backed by an increase in port services so that the trust of service users continues to increase and they will feel greater satisfaction. This research is in line with the research by Kana (2018), and Zaini (2019) that there is a positive and partially significant influence between loading and unloading speed factors on customer satisfaction. Finally, the results of this study support the existing theory and the results of previous studies. This means that loading and unloading productivity has a significant effect on service user satisfaction.

5.8. Port Service Performance on Service User Satisfaction through Loading and Unloading Productivity

Based on the hypothesis testing the indirect effect of port service performance on service user satisfaction through loading and unloading productivity, namely, there is a mediating effect between port service performance on service user satisfaction through loading and unloading productivity. The influence of port service performance on service user satisfaction through loading and unloading productivity is 9% while the total effect is 30.9%. The results of this study are proven to support the results of previous studies in Incheon Port, South Korea by (Kim et al., 2012) that there is a significant direct effect between service performance and passenger satisfaction. Another study by Malisan (2014) at the Port of Suda Kelapa, Jakarta, stated that the small share of cargo is closely related to the productivity of loading and unloading of goods and is not significant due to a decrease in the productivity of loading and unloading ships. Thus, the results of this study are in line with the previous studies and related theories. This means that the performance of port services has an indirect effect on service user satisfaction through loading and unloading productivity.

5.9. Occupational Safety and Health on Service User Satisfaction through Loading and Unloading Productivity

Based on the hypothesis testing of the indirect effect of OSH on service user satisfaction through loading and unloading productivity, there is a mediating effect between OSH on service user satisfaction through loading and unloading productivity. The large influence of OSH on service user satisfaction through loading and unloading productivity is 6.4% while the total effect is 59.4%. Research by Ismawati (2021) suggests the company involve workers in OSH training and maximize supervision so that workers do their work by Standard Operating Procedures. Finally, the results of this study support the existing theory and the results of previous studies. This means that OSH has an indirect effect on service user satisfaction which is mediated by loading and unloading productivity.

5.10. Job Security on Service User Satisfaction through Loading and Unloading Productivity

Based on the hypothesis testing the indirect effect of job security on service user satisfaction through loading and unloading productivity, there is a mediating effect between job security on service user satisfaction through loading and unloading productivity. The large influence of job security on service user satisfaction through loading and unloading productivity is 14.1% while the total effect is 48.3%. The findings of Chang and Thai (2016), also show that the quality of port security has a direct and positive impact on customer satisfaction. However, the impact of port service quality is more important than the quality of port security. Finally, the results of this study support the existing theory and the results of previous studies. This means that job security has an indirect effect on service user satisfaction through loading and unloading productivity.

6. Conclusion

To get a more accurate performance level research result, it is better if the ship service time data such as approach time, waiting time, berthing time, goods service performance, utility and facility performance are not taken at the agency but carried out a direct survey of field conditions. New investments are needed which will require the ongoing capacity building and development of several port authorities who are civil servants who will oversee port planning and operations and regulate access to key port services and facilities. OSH maintenance is very necessary for loading and unloading workers in the form of social security for workers, where every worker gets protection for their safety. Job security plays an important role in social factors and the employee's work environment because the beliefs held by employees about their work affect individual perceptions of not worrying about their future, and will increase organizational productivity.

References

- Agustin, K., Retnaningtyas, A., Chairrudin, I., & Baskoro, D. A. (2020). The Factor Analysis of The Difference in Productivity of Unloading Process Between West Berth and North Berth at JICT on 2019. *Advances in Transportation and Logistics Research*, 3, 555–561.
- Aldaghlal, H., Hui, F. K. P., & Duffield, C. F. (2021). Initiation of capital projects in industries having an operational focus: an Australian stevedoring case example. *International Journal of Managing Projects in Business*, 14(4), 898–916. <https://doi.org/10.1108/IJMPB-09-2020-0277>
- Antão, P., Calderón, M., Puig, M., Michail, A., Wooldridge, C., & Darbra, R. M. (2016). Identification of occupational health, safety, security (OHSS), and environmental performance indicators in port areas. *Safety Science*, 85, 266-275.
- Allen, J., Muñoz, J. C., & de Dios Ortúzar, J. (2019). Understanding public transport satisfaction: Using Maslow's hierarchy of (transit) needs. *Transport Policy*, 81, 75-94.
- Ardana, I. K., Mujiati, N. W., & Utama, I. W. M. (2012). *Human Resource Management*. Yogyakarta: Graha Ilmu.
- Ardi, P. G., & Ayu, A. G. (2016). Safety management on loading process with rubber-tired gantry crane: a case study at a port of Tanjung Priok. *Russian Journal of Agricultural and Socio-Economic Sciences*, 66(6).
- Bangun, W. (2012). *Human Resource Management*. Jakarta: Erlangga.
- Beheary, M. S., Abdelaal, A., & Matar, S. M. (2020). Occupational Health and Safety Practices Assessment in Damietta Port, North Egypt. *Asian Journal of Advanced Research and Reports*, 17-27.
- Bezerra, G. C., & Gomes, C. F. (2019). Determinants of passenger loyalty in multi-airport regions: Implications for tourism destination. *Tourism Management Perspectives*, 31, 145-158.
- Bucak, U., Başaran, İ. M., & Esmer, S. (2020). Dimensions of the Port Performance: A Review of Literature. *Journal of ETA Maritime Science*, 8(4), 214-240.
- Chaliluddin, M. A., Pratiwi, A., Rizwan, T., & Kandi, O. (2021). Analysis of management performance index and user satisfaction index in Kutaraja Fishing Port, Banda Aceh, Indonesia. *IOP Conference Series: Earth and Environmental Science*, (Vol. 674, No. 1, 012043). <https://doi.org/IOP Publishing>.
- Chang, C. H., & Thai, V. V. (2016). Do port security quality and service quality influence customer satisfaction and loyalty? *Maritime Policy & Management*, 43(6), 720-736. <https://doi.org/10.1080/03088839.2016.1151086>
- Colquit, J. A., LePine, J. A., & Wesson, M. J. (2015). *Organizational Behavior, Improving Performance and Commitment in the Workplace* (14th Eds). New York: McGraw-Hill Education.
- Chrisnawati, Y., Hadi, W., & Putro, T. A. (2020). User Satisfaction of Intermodal Transportation Services at Nusantara Passenger Terminal, Tanjung Priok Port, Jakarta. *Jurnal Transportasi Multimoda*, 18(1), 51-62.
- Cronin, J., & Taylor, S. (2014). Measuring Service Quality: A Reexamination and Extension. *Journal of Marketing*, 56, 55-68.
- Eliasson, L., Eriksson, A., & Mohtashami, S. (2017). Analysis of factors affecting productivity and costs for a high-performance chip supply system. *Applied Energy*, 185(1), 497–505. doi:10.1016/j.apenergy.2016.10.136.
- El-Ghalayini, Y. (2017). Human resource management practices and organizational performance in public sector organization. *Journal of Business Studies Quarterly*, 8(3), 65.
- Fabiano, B., Currò, F., Reverberi, A. P., & Pastorino, R. (2010). Port safety and the container revolution: A statistical study on the human factor and occupational accidents over the long period. *Safety Science*, 48(8), 980-990.
- Fornell, C., Mithas, S., Morgeson III, F. V., & Krishnan, M. S. (2006). Customer satisfaction and stock prices: High returns Low Risk. *Journal of Marketing*, 70(1), 3-14.
- Han, C. H. (2018). Assessing the impacts of port supply chain integration on port performance. *The Asian Journal of Shipping and Logistics*, 34(2), 129-135.
- Indrasari, A., Nadjmie, N & Endri, E. (2022). Determinants of satisfaction and loyalty of e-banking users during the COVID-19 pandemic. *International Journal of Data and Network Science*, 6(2), 497-508. DOI: 10.5267/j.ijdns.2021.12.004
- Ingvardson, J. B., & Nielsen, O. A. (2019). The relationship between norms, satisfaction and public transport use: A comparison across six European cities using structural equation modeling. *Transportation Research Part A: Policy and Practice*, 126, 37-57.
- Ismawati, I. (2021). *Factors Associated with Unsafe Actions for Loading and Unloading Workers at PT Pelabuhan Indonesia IV (Persero) Makassar Branch*. [Dissertation] Universitas Hasanuddin.

- Javid, M. A., Okamura, T., Nakamura, F., & Wang, R. (2013). Comparison of commuters' satisfaction and preferences with public transport: A case of wagon service in Lahore. *Jordan Journal of Civil Engineering*, 7(4), 461–472.
- Kana, T. (2018). The Effect of Location and Facilities Services User Satisfaction Container Loading and Unloading in Port of Indonesia IV (Persero) Branch Merauke. *International Journal of Social Science and Business*, 2(1), 21-27.
- Kang, M. G., & Kim, H. Y. (2019). A Study on the Relative Importance of Evaluation Factors for Improvement of Port Security. *Journal of Navigation and Port Research*, 43(1), 49-56.
- Kim, S., Choi, H., Kim, Y. S., Yoo, H. S., Yoo, S. C., & Kim, S. Y. (2012). A Study on the Effects of the Port Service Quality on Customer Satisfaction and Performance in Incheon Port. *Journal of the Korean Society for Quality Management*, 40(4), 543-558.
- Kotler, P., & Keller, K. L. (2016). *Marketing Management* (15 th Eds.). Upper Saddle River, N.J: Prentice-Hall International.
- Kotler, P., & Armstrong, M. (2014). *Principle of Marketing* (15th eds.). Pearson Prentice Hall.
- Kurniawan, A. Y., & Kurniawan, F. (2020). Risk Management Related to Identifying Work Accidents in Loading and Unloading Container Activities at the Berlian Terminal Tanjung Perak Surabaya With the Hazard Identification Risk Assessment and Determining Control (HIRADC) Method. *Neutron*, 19(2), 26-32.
- Malisan, J. (2014). The Effect of Ships and Goods Services on Productivity Performance of Loading and Unloading Sunda Kelapa Port. *Jurnal Penelitian Transportasi Laut*, 16(2), 81-86.
- Mathis, R. L., & Jackson, J. H. (2010). *Human Resource Management* (13th Eds.). Cengage Learning.
- Miremadi, A., Ghalamkari, S., & Sadeh, F. (2011). Customer Satisfaction In Port Industry (A Case Study Of Iranian Shipping). *2011 International Conference on Sociality and Economics Development IPEDR Vol.10 (2011)*.
- Mondy, R. W. (2012). *Human resource management* (12th eds.). New Jersey, USA: Prentice-Hall.
- Nyema, S. M. (2014). Factors influencing container terminals efficiency: a case study of Mombasa entry port. *European Journal of Logistics Purchasing and Supply Chain Management*, 2(3), 39-78.
- Oh, H. J., Hong, K. W., & Kim., H. C. (2013). The influence of multidimensional aspects of service quality, communication on customer satisfaction, and customer behavior - focused on the Airline Service. *Korean Business Education Review*, 28(3), 273–295.
- Oliver, R. L. (2010). *Satisfaction: A Behavioral Perspective on The Customer*. McGraw-Hill.
- Österman, C., Hult, C., & Praetorius, G. (2020). Occupational safety and health for service crew on passenger ships. *Safety Science*, 121, 403-413.
- Munim, Z. H., & Schramm, H. J. (2018). The impacts of port infrastructure and logistics performance on economic growth: the mediating role of seaborne trade. *Journal of Shipping and Trade*, 3(1), 1-19.
- Nir, A. S. (2009). Customer perceived value, satisfaction, trust, and loyalty: examining the linkages in the port logistics chain. *Maritime Quarterly*, 18(4), 45-74.
- Nir, A. S., Hung, W. L., Ding, J. F., & Chou, C. C. (2012). Assessing service quality, satisfaction, and performance on implementing maritime policy in Taiwan. *African Journal of Business Management*, 6(1), 140-151.
- Pahala, Y., Widodo, S., Kadarwati., Azhari, M., Mulyati., Lestari, N.I., Madjid, S.A., Sidjabat, S., Limakrisna, N., & Endri, E. (2021). The effects of service operation engineering and green marketing on consumer buying interest. *Uncertain Supply Chain Management*, 9(3), 603–608. [https://doi: 10.5267/j.uscm.2021.5.011](https://doi.org/10.5267/j.uscm.2021.5.011)
- Park, J. W. (2007). Passenger perceptions of service quality: Korean and Australian case studies. *Journal of Air Transport Management*, 13(4), 238-242.
- Park, R. K., & De, P. (2015). An alternative approach to efficiency measurement of seaports. *Port Management*, 6, 273-292.
- Peckham, C. (2012). An overview of maritime and port security. In 2012 IEEE Conference on Technologies for Homeland Security (HST). *2012 IEEE Conference on Technologies for Homeland Security (HST)*, (pp. 260-265).
- Permata, A. A., Rini, N., & Khakim, L. (2019). The Influence of Container Weight and Number of Gangs on Stevedoring Productivity. *JOBS (Jurnal Of Business Studies)*, 4(1), 1-6. <https://doi.org/10.32497/jobs.v4i1.1483>
- Productivity Commission. (2002). *Work arrangements in container stevedoring (No. 0207013)*.
- Ramadhani, D. K., Novian, F., Puspitorini, O., Siswandari, N. A., Mahmudah, H., & Wijayanti, A. (2020). Stevedoring Time Estimation on Smart Port Services Using K-NN Algorithm. *2020 6th International Conference on Science in Information Technology (ICSITech) (Pp. 115-120)*. *IEEE*. <https://doi.org/10.1109/ICSITech49800.2020.9392055>
- Ramli, S. (2010). *Occupational Health & Safety Management System OHSAS 18001*. Jakarta: Dian Rakyat.
- Ratnawati, E., Towadi, M., Sihombing, J. S., & Pandamdari, E. (2021). Highlighting the Opportunities and Challenges of Port Performance in Indonesia by The Regulatory Aspects. *Journal of Legal, Ethical and Regulatory Issues*, 24(3), 1-11.
- Ricardianto, P., Kholdun, A., Fachrey, K., Nofrisel, N., Agusinta, L., Setiawan, E., Abidin, Z., Purba, O., Perwitasari, E & Endri, E. (2022). Building green supply chain management in pharmaceutical companies in Indonesia. *Uncertain Supply Chain Management*, 10(2), 453-462. DOI: 10.5267/j.uscm.2021.12.006
- Riyanto, S., Endri E., & Herlisha, N. (2021a). Effect of work motivation and job satisfaction on employee performance: Mediating role of employee engagement. *Problems and Perspectives in Management*, 19(3), 162-174. doi:10.21511/ppm.19(3).2021.14
- Riyanto, S., Endri, E., & Hamid, A. (2021b). The influence of transformational leadership and the work environment on employee performance: the mediating role of discipline. *Academy of Entrepreneurship Journal*, 27(6), 1-11.
- Saluy, A.B., Abidin, Z., Djamil, M., Kemalasar, N., Hutabarat, L., Pramudena, S.M., & Endri, E. (2021). Employee productivity evaluation with human capital management strategy: The case of covid-19 in Indonesia. *Academy of Entrepreneurship Journal*, 27(5), 1-9.

- Schermerhorn, J. R. (2012). *Management* (11 th eds.). New Jersey: John Willey & Sons, Inc.
- Shetty, K. D., & Dwarakish, G. S. (2018). Measuring port performance and productivity. *ISH Journal of Hydraulic Engineering*, 1(7), 221–227. <https://doi.org/10.1080/09715010>
- Shang, K. C., Yang, C. S., & Lu, C. S. (2011). The effect of safety management on perceived safety performance in container stevedoring operations. *International Journal of Shipping and Transport Logistics*, 3(3), 323-341.
- Sugandi, S., Sahil, A., & Lasse, D. A. (2018). Efforts to Improve The Performance Loading and Unloading Workforce at The Port of Marunda North Jakarta. *Advances in Transportation and Logistics Research*, 1, 1339-1367.
- Suprata, F., Natalia, C., & Sugioko, A. (2020). *Analyzing the cause of idle time in loading and unloading operation at Indonesian international port container terminal: Port of Tanjung Priok case study* (p. (Vol. 847, No. 1, 012090)). IOP Publishing.
- Supriyatno, D., & Widayanti, F. R. (2019). Model of Passenger Satisfaction on the Service Performance of the Gapura Surya Nusantara Passenger Port PT. Pelabuhan Indonesia III Branch Tanjung Perak Surabaya. *Journal of Physics: Conference Series*, (Vol. 1569, No. 4, 042022).
- Staufenbiel, T., & König, C. J. (2010). A model for the effects of job insecurity on performance, turnover intention, and absenteeism. *Journal of Occupational and Organizational Psychology*, 83(1), 101-117.
- Stephens, M. S., Stephens, O., Nze, O., Ibe, C. C., & Ukpere, W. I. (2012). An assessment of the productivity of the Nigerian shipping industry using the Saari productivity model. *African Journal of Business Management*, 6(15), 5414-5432.
- Talley, W. K. (2006). Port performance: an economics perspective. *Research in Transportation Economics*. *Research in Transportation Economics*, 17, 499-516. [https://doi.org/10.1016/S0739-8859\(06\)17022-5](https://doi.org/10.1016/S0739-8859(06)17022-5)
- Tjiptono, F. (2016). *Service, Quality & Satisfaction*. Yogyakarta: Andi.
- Ugboma, C. C., & Ugboma, O. (2004). Port users' perception and expectation of service quality attributes and dimensions in ports of a developing economy—a case study. *Journal of Research in National Development*, 2(2), 23-34.
- UNCTAD. (2016). *Port Management Series: Volume 4 Port Performance*. Geneva: UNCTAD.
- Virgiawan, A. R., Riyanto, S., & Endri, E. (2021). Organizational Culture as a Mediator Motivation and Transformational Leadership on Employee Performance. *Academy of Strategic Management Journal*, 20(2), 1-11.
- Walters, D., & Wadsworth, E. (2021). Determinants of effective action on workplace safety and health in global companies. *Marine Policy*, 124, 104374.
- Widiyanto, P., Jaya Sakti, R.F., Setiawan, E.B., Manfaluthy, M., Suryaningsih, L., Ricardianto, P., Kamar, K., & Endri, E. (2021). The Relationship between Service Quality, Timeliness of Arrival, Departure Flip Ship Logistics and People and Customer Satisfaction: A Case in Indonesia. *Academy of Entrepreneurship Journal*, 27(6), 1-10.
- Widodo, E., & Suprayitno, H. (2020). Productivity Analysis Stevedore a Descriptive Analysis Method with Integration, Importance Performance Analysis, Quality Function Deployment (Case Study: PT. Port Indonesia III (Persero) Branch Gresik). *IOP Conference Series: Materials Science and Engineering*, (Vol. 847, No. 1, 012024).
- Woo, S. H., Pettit, S., & Beresford, A. K. (2011). Port evolution and performance in changing logistics environments. *Maritime Economics & Logistics*, 13(3), 250-277.
- Zaini, M. (2019). *Factor Analysis of loading and unloading speed, equipment facilities, job security, and employee performance on customer satisfaction at Semarang Container Terminal*. [Thesis] Stimart-AMNI Semarang.
- Zeithaml, V. A., & Bitner, M. J. (2011). *Service Marketing Strategy*. New York: John Willey & Sons, Inc



© 2022 by the authors; licensee Growing Science, Canada. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).