

PART 2

Professional Review Report (directly) – The Publications

1. In 2009, The International Symposium on Ocean Science, Technology, and Policy, Minister of Marine Affairs and Fisheries, Republic of Indonesia, Manado – Indonesia.

A Strategic of Labour Productivity to Support Shipyard Competitiveness in Partial Least Square (PLS) Path Analysis: PLS Algorithm and Bootstrapping

As a developing country, Indonesia has been able to deliver vessels to foreign ship owners which are completed by one of the Indonesian shipyard. This condition that way needs strength of international competitiveness, where each a shipyard will reduce cost of material and labour. Therefore, the acceleration shipyard will conduct a measurement for the rationalization increase of labour productivity. The study proposes the path modelling with a partial least square (PLS) approach. PLS is a second-generation multivariate statistical method [14] for the analysis of indirectly measured cause and effect in complex behavioural systems. The mentioned model includes inner model with 6 latent variables (2 endogenous construct and 4 exogenous construct) and outer model with 25 indicator variables (10 indicators in endogenous construct and 15 indicators in exogenous construct). The SmartPLS Path Modelling Software with PLS Algorithm and Bootstrapping show that the inner model (formative indicators) included 2 endogenous construct and 3 exogenous construct. Furthermore, the outer model (reflective indicators) included 9 endogenous construct and 10 indicators in exogenous construct. As its consequence, the shipbuilding system would be oriented to the equilibrium of interaction between shipyard competitiveness, labour productivity, and strategic policy.

Keywords: PLS path analysis, shipyard competitiveness, labour productivity, reflective indicators, formative indicators.

2. In 2010, International Research Journal of Business Studies, Vol. 3, No.2, pp. 203 – 222,

Strategies of Labour Productivity and Indonesia Shipyard Competitiveness with PLS Path Modelling Approach (Case Study: Shipyard of Region Batam and Java Island)

The strength of international competitiveness encouraged a shipyard to reduce cost of materials and labor. Therefore, a shipyard did a measurement to improve the rationalization toward labor productivity. This study aimed to compare the path model from strategies of labor productivity and competitiveness of medium size shipyard in region of Batam and Java Island. The normality test of questionnaire data at 200 respondents who are competent in the field of shipbuilding through the ratio of skewness and kurtosis did not show normal distribution from the data. Test of model feasibility through PLS algorithm and bootstrapping showed moderate criterion and no significant difference in the variable path for both regions. The first latent variable: shipyard competitiveness is influenced by the strategic policy and labor productivity, while the second latent variable: labor productivity is influenced by work activity, strategic policy, and corporate culture. Test of model segmentation through FIMIX-PLS showed good criterion and no significant difference in the interaction of variable heterogeneity for both regions. The final result of shipyards PLS path modeling showed a consistent relationship between strategic policy and labor productivity in order to increase the Indonesian shipyard competitiveness.

Keywords: shipyard competitiveness, labour productivity, PLS path modelling.

3. In 2010, *INDUSTRI: Jurnal Ilmiah Saindan Teknologi*, Vol. 9, No. 3, pp. 45 – 55, Sepuluh Nopember Institute of Technology (ITS), Surabaya – Indonesia.

Strategies for Labour Productivity to Support Shipyard Competitiveness Using PLS Path Modelling

As the developing country, Indonesia has been able to deliver vessels to foreign ship owners that are completed by one of Indonesia shipyards. This situation strength of international competitiveness, then each a shipyard will reduce cost of material and labour. Therefore, the acceleration of shipyard will conduct a measurement for the rationalization increase of the labour productivity. The study proposes the structural equation modelling with a partial least square (PLS) path modelling approach. The mentioned model includes inner model with 6 latent variables and outer model with 25 indicator variables. The statistical software application – Smart PLS used the calculation of PLS Algorithm and FIMIX-PLS. PLS Algorithm to show that the inner model include 5 latent variables and the outer model include 19 indicator variables. Whereas FIMIX-PLS show that number of latent classes $K = 5$ and entropy statistic $EN = 0.843937$. The latent exogenous ‘Work Activity’ and ‘Policy’ variables, indicates a strong relationship to the latent endogenous ‘Productivity’. As well as ‘Policy’ and ‘Productivity’ variables point out a strong relationship to the latent endogenous ‘Competitiveness’. Consequently, the shipbuilding system would be oriented to the equilibrium of interaction between shipyard competitiveness, labour productivity, and strategic policy.

Keywords: shipyard competitiveness, labour productivity, PLS algorithm, FIMIX-PLS.

4. In 2010, *Makara Teknologi*, Vol. 14, No. 2, pp. 121 – 127, Universitas Indonesia (UI), Jakarta – Indonesia.

Development of Technology Parameter Towards Shipbuilding Productivity Predictor using Cubic Spline Approach.

Ability of production processes associated with state-of-the-art technology, which allows the shipbuilding, is customized with modern equipment. It will give impact to level of productivity and competitiveness. This study proposes a nonparametric regression cubic spline approach with 1 knot, 2 knots, and 3 knots. The application programs Tibco Spotfire S+ showed that a cubic spline with 2 knots (4.25 and 4.50) gave the best result with the value of $GCV = 56.21556$, and $R^2 = 94.03\%$. Estimation result of cubic spline with 2 knots for the PT. Batamec shipyard = 35.61 MH/CGT, PT. Dok&Perkapalan Surabaya = 27.49 MH/CGT, PT. Karimun Sembawang Shipyard = 27.49 MH/CGT, and PT. PAL Indonesia = 19.89 MH/CGT.

Keywords: technology parameter, shipbuilding productivity, cubic spline.

5. In 2011, *Majalah Ilmiah: Pengkajian Teknologi*, Vol. 5, No. 1, pp. 75 – 86, BPPT, Jakarta – Indonesia.

Variable Identification of Labour Productivity and Shipyard Competitiveness with PLS Algorithm (Case Study: Shipyard of Region Batam and Java)

The study proposed the structural equation modeling (SEM) with the partial least square (PLS) algorithm. Initial path model included inner model 6 latent variables and outer model

25 indicator variables. The result of PLS algorithm showed that inner model with 5 latent variable and outer model with 19 indicator variables. Goodness of Fit (GoF) from endogenous latent variables “Productivity” and “Competitiveness” have the moderate value. Whereas path coefficients and outer loadings from exogenous and endogenous latent variables “Shipyards in Batam” and “Shipyards in Java” have the different values.

Keywords: path coefficients, loadings, productivity, competitiveness.

6. In 2014, The 9th International Conference and Marine Technology (MARTEC), SepuluhNopember Institute of Technology (ITS), Surabaya – Indonesia.

Quick Installation Process of Design Stern Tube System Ships

The process of implementation of *stern arrangement* in the form of a stern tube or shaft tube on new vessel construction requires precision with a high degree of accuracy because it will be a matter of vessel performance and endurance. The problem is the impact of the implementation process of new vessel construction requires large funds and considerable time. Necessary to find the effort to be able to solve this problem. It has been found that the new method is that the form of construction engineering a new model of shaft tube or stern tube that allows the implementing process of the installation construction very fast. Further testing needs to be done by the laboratory using torsion testing machine and mathematical calculations to ensure proper use of the new construction at the new vessel building widely in the community; the results of a study that tested the feasibility engineering to be applied in the community. The results of the research can be disseminated through electronic and non-electronic media then patented, also the information to the Bureau Classification of Indonesia as a supervisor agency construction of a new vessel in Indonesian and foreign regulatory agencies.

Keywords: stern arrangement, stern tube.

7. In 2014, RINA – The 3rd International Conference on Ship and Offshore Technology (ICSOT), Hasanuddin University (UNHAS), Makassar – Indonesia.

Performance of the Zinc Anode Shape Design Installation on the Seabus Alu-01 Fast ship

The Seabus Alu-01 ship is an aluminium fast ship type, that has a service speed of 35-45 knots. Installation of the zinc anode on the Seabus Alu-01 is different from any general ship, as the zinc anode is mounted by protruding it into the ship's hull. This research performed a simulation the ship seabus alu-01 which has been modified to use the ellipse zinc anode. The final results of the research showed that ellipse zinc anode better than square zinc anode, because the ship using ellipse zinc anode has a flow velocities hull faster than ship using square zinc anode, drag force value lower, and the value of force lift ship using ellipse zinc anode higher than ship using square zinc anode

Keywords: Ellipse zinc anode, Square zinc anode, Fluent, Force Drag, ANSYS simulation.

Hydroplane Development as Diving Plan Equipment on a Submarine

Nowadays, submarines are already being a lethal weapon for the navy around the world and also being a vessel for under water researches, in their developments, hydroplanes are being created as one of their manoeuvre equipment to reduce the utilization of ballast tanks on the submarines. This research intend to use the hydroplanes as the diving plan of the submarine itself, by knowing the hydrodynamic theoretical impacts. The research process is a simulation of diving plan installation as a manoeuvre equipment, what are the advantages and

disadvantages of the hydroplanes, what is the effect by adding hydroplanes to the submarine's stability while operating under water and also how many forces that works on the hydroplanes and how does the forces that works on the hydroplanes affecting the submarine while manoeuvring under water. The modelling process and simulation are be done by using ANSYS 14.5 program to observe the effect of adding the hydroplanes on a submarine.

Keywords: hydroplane, submarine, ANSYS simulation.

The Fluid Flowing Analysis of RC Hydroplanewith Ansys 14.0

This research is evaluation from the unmanned fast boat contest at Camplong Beach Madura 2013, there are many lack in our boat performance. And this is the problem that writer wants to study. Because the boat can't drove at maximum velocity and the boat flipped down when impacted with wave and wind. We expect with dimension plan took from hydrofoil ship concept can maintain the stability of the hull when the ship drove at high velocity. The modelling and analysing process used in dimension plan is modelled and simulated with ANSYS 14.0. The goal of this research is to obtain the *Design of RC Hydroplane* dimension so as to maintain a stable condition when the ship drove at high velocity and the specification of *RC Hydroplane*: Length 700 mm, Breadth 280 mm, Height 199 mm, and draft 50 mm with velocity of 33,47 knots.

Keywords:RC hydroplane, design, ANSYS simulation.

8. In 2015, Kapal, Vol. 12, No. 2. UniversitasDiponegoro (Undip), Semarang – Indonesia.

Development of Foil NACA Series-2412 as a Submarine Dive Model System

The shape of the foil produces lift force when the foil is passed by fluid flow because the interaction effect between fluid flow and foil surface which causes the upper surface pressure to be smaller than the bottom surface.How to apply the foil theory to the submarine hydroplane as a dive system, by reversing the foil the lift force becomes downward force, thus enabling the submarine to dive, drift and manoeuvre under water, as well as the motion of the airplane flying and drift with the wings .Research and observation of dive capabilities of the foil NACA Series2412 on submarine models, by finding Cl value (coefficient lift) in the Laboratory, and designing the shape of submarine body and force analyses that work on the submarine model, the number of forces which works upwards lower than the downward forces then the submarine was capable of diving.The application of hydroplane as a diving plane can be applied, the diving ability was influenced by the hydroplane flip angle and speed of the model, the greater the speed and the flip angle the greater the depth of the dive can be made.

Keywords:hydroplane, diving plan, submarine model, coefficientlift.

9. In 2016, The 10th International Conference on Marine Technology (MARTEC), Bangladesh University of Engineering and Technology (BUET), Dhaka – Bangladesh.

Procedia Engineering, Vol. 194, 2017, pp. 112 – 119, Elsevier

Optimizing Trimaran Yacht Hull Configuration Based on Resistance and Seakeeping Criteria

An investigation into the optimization of a trimaran yacht, which is equipped with axebow, was carried out numerically. The study was focused on the analysis of resistance and seakeeping which can provide the best performance to the yacht, based on those two criteria. The numerical study used Ansys Fluent code for resistance analysis and seakeeper from

Maxsurf for seakeeping analysis. The overall results were compared with published data for validation purposes. The results are believed to be useful for the development of the marine-tourism, which is now growing quite rapidly in Indonesia.

Keywords:Trimaran, CFD, Axebow, Resistance, Seakeeping.

Procedia Engineering, Vol. 194, 2017, pp. 197 – 202, Elsevier

Outrigger RC Boat Model Hull Development As A High Speed Craft Based On Resistance and Lift Force

A hull development of outrigger RC boat model, which was made as planning hull was carried out numerically. The observation focus on the analysis of resistance and lift force which were produced by the boat while cruising that can enhance the performance and also help the boat to reach her best speed. The numerical study was using Ansys fluent code for resistance and lift force analysis. The overall results were further compared with the published data for verification purpose. The results are also believed can be useful in the development of the high speed boat model, especially in outrigger class.

Keywords:Outrigger, RC boat, planning hull, high speedboat.

10. RC Boat Community in Indonesia

- a. In 2006, Inauguration of RC Boat at Hang Tuah University by the Chief of Navy



Link: <https://goo.gl/2QMGWf>; <https://goo.gl/cNj9Np>; <https://goo.gl/VBwXng>

- b. In 2016, RC Boat Race for Undergraduate Student around Indonesia



Link: <https://goo.gl/nTLjtU>

- c. In 2017, RC Boat race for community around Asean



Link: <https://goo.gl/hgYgeK>

Proposer

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