Review for Roles of Smart Data from digitalization in modern Shipbuilding Industries to developing an autonomous ship, and affect to ESG Management

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Extended Abstract

Recently, the Fourth Industrial Revolution has been profoundly impacting society as a whole. This wave of change has sparked significant innovations across various sectors, with a particular focus on revolutionizing the value chain within the shipping and shipbuilding industry[1]. At Inha University, we are actively engaged in research centered around the theme of 'Adapting to the Changing Era.' Our goal is to prepare for Smart Integrity through digitalization and foster a seamless value chain enabled by hyper-connectivity[2]. These innovations are poised to reshape the industry in two significant ways. First, they will drive the development of future autonomous ships that harness digitization to monitor, control, and provide remote support for in-service operations. This will be accomplished through cyber-physical systems featuring digital twins[3]. The second impact will be seen in management practices. In today's landscape, all industries must prioritize corporate social responsibility and environmental management, as well as the pursuit of transparency in corporate governance for market reporting. To address these imperatives, companies are increasingly turning to statistical methods for planning and validating results. However, the true key to achieving ESG (Environmental, Social, Governance) management lies in the digitization of the entire enterprise management process, automating the "Plan", "Do", "Monitor", "Control", "Complete", "Report" cycle. We have full confidence in our ability to identify and leverage this key element. "While management academia has traditionally relied on statistical approaches to implement eco-friendly management through management innovation[4], there is a pressing need to further refine this approach. This refinement should encompass considerations of the carbon footprint starting from the design stage and its management through the creation of smart data during design. As a result, this study will initially outline the pivotal role of smart data as a linchpin in the industry and demonstrate how it can be instrumental in managing the carbon footprint by innovating the entire shipbuilding process.

References

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