Employee Green Behavior in Shipping Industry: The Mediating Role of Employee Engagement with Environmental Initiatives and Green Awareness

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ABSTRACT

Keywords:
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green behavior,
sustainable development.

The shipping industry's role in global climate change and pollution raises concerns about environmental risks associated with ship crew behavior. Negligent The shipping industry's role in global climate change and pollution raises concerns about environmental risks associated with ship crew behavior. Negligent actions by crew members in environmental preservation not only led to significant financial losses for companies but also caused irreversible damage to marine ecosystems. Fostering a green mindset among employees is essential, requiring a shift from individual awareness to an organizational value upheld by all, including ship crews. This study examines how green awareness and employee engagement in environmental initiatives impact green behavior among shipping industry crews. A quantitative survey method was employed, gathering responses from 333 crew members and analyzing the data with structural equation modeling (SEM) using SmartPLS software. Findings indicate that green behavior can be enhanced through increased green awareness when coupled with active employee engagement in environmental initiatives. This engagement positively influences the company reputation and contributes to a sustainable competitive advantage in the industry. The study's outcomes offer valuable insights into shipping industry management to develop effective green human resource management practices, emphasizing the importance of environmental initiatives in shaping employee behavior for sustainable industry practices.

INTRODUCTION

The main challenge of shipping companies in dealing with the negative effects of shipping activities, in the midst of the rapid growth of the shipping industry, prompted studies from several researchers to find efforts to make the business sector profit-oriented and environmentally friendly (Koilo, 2019). Air pollution caused by the shipping industry is estimated to be a global contributor to emissions of around 2-3% (Jalkanen et al., 2012; Lai & Wong, 2012; Lun et al., 2015; Zaman et al., 2017). Meanwhile, water pollution caused by shipping activities such as the transfer of invasive aquatic species through ship ballast water, oil disposal (Anyanova, 2012), waste disposal and garbage disposal result in environmental damage (Shi et al., 2018). In this regard, it is necessary to study the human factor and its interaction with the environment. Since it was found that there was human behavior that was negligent in controlling oil, causing oil spills in the sea (Saharuddin et al., 2012), It was found that ship emissions are the cause of heart disease and lung cancer, making the social element the main focus in developing policies related to sustainable shipping. A sustainable business must pay attention to the interests of employees, stakeholders, and the community around the company, so it is necessary to minimize the negative impact of the business on the sustainability of human life. Thus, companies need to pay attention to the individual factors that cause ship accidents (Lee et al., 2019) and individual characteristic factors as the cause of accidents (Cordon et al., 2017). With the issue of human behavior (in this case ship operators) who are negligent in carrying out their work functions so that they cause pollution of the marine environment, it is necessary to study Employee green behavior (EGB) in the shipping industry. EGB is claimed to be able to support the company's goals in the environmental sector, because the active role of operators in maintaining environmental sustainability during their work, can promote the development of environmental sustainability, which can ultimately overcome the problem of environmental pollution (Kim et al., 2019; Norton et al., 2012; Ones & Dilchert, 2012).

Each individual in an organization has different behaviors in interacting with the environment, related to preserving the environment. This is because the individual factor (human factor) consisting of attitudes, perceptions, personal opinions, and social values is the main thing that encourages a person to behave to preserve the environment (Hofmann & Stetzer, 1996; Lawton & Parker, 1998). In the context of psychology, human behavior can be explained through Planned Behavior Theory (PBT). According to this theory, the formation of behavior occurs due to behavioral dispositions such as social attitudes and personality (Ajzen, 1991). According to the theory, it emphasizes that individuals use information appropriately to make decisions about rational behavior. Thus, the PBT's theory supports the fact that green awareness has a significant impact on a person's behavior in preserving the environment (EGB) (Rustam et al., 2020). Green

awareness as part of an individual's internal factors, directs a person to behave according to their values in their daily work (Rustam et al., 2020). In addition to internal factors, there are external factors that can increase EGB, namely employee engagement with environmental initiatives (EEEI) (Ababneh, 2020, 2021). Underlying this is that many organizations recently included environmental performance goals in their triple-bottom-line strategies in addition to economic and social performance goals (Elkington, 2007). In this context, the organization is not only responsible to stakeholders (concerning economic performance), but also responsible for the safety and well-being of others, such as employees and customers. In addition, according to the triple bottom line, the organization is responsible for protecting the natural environment, which is an indispensable foundation for human life and, thus, future economic activities are environmental performance (Elkington, 2007; Renwick et al., 2013). External factors can also be defined as situational factors of employees. This situational factor is related to individual interaction with the environment, which consists of organizational support, leadership style (Norton et al., 2012, 2014) human resource management practices (Paillé & Boiral, 2013) dan corporate social responsibility (Osbaldiston & Sheldon, 2003). EEEI is the interaction between internal and external factors of individuals. When a person has trust in the company, the behavior displayed supports all policies determined by the organization. The individual always strives to use the positive energy he has to work by paying attention to the maintenance of the environment (EEEI) (Ababneh, 2021; Ababneh et al., 2019; Macey & Schneider, 2008).

The purpose of this study is to examine the role of employee engagement with environmental initiatives as a mediating variable between green awareness and employee green behavior. The concept of variables is below in Figure 1.

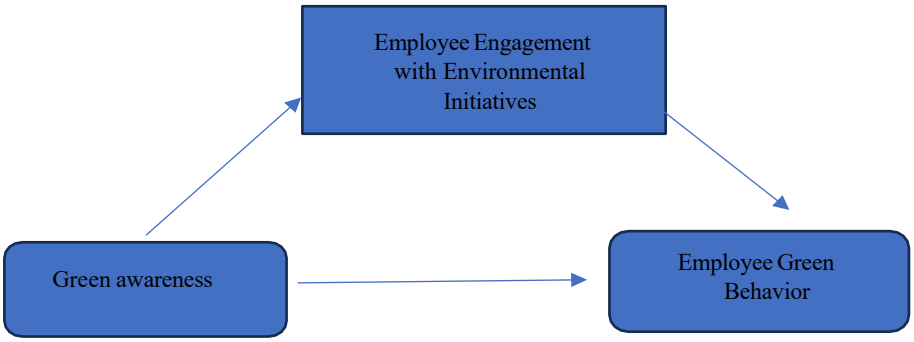

Figure 1. Conceptual model

LITERATURE REVIEW

Green Awareness

This green awareness can be defined as the crew has concern in carrying out safety and environmental maintenance actions, which can negatively impact themselves and others that

occur due to risky behaviors that have been carried out (Cabral & Dhar, 2019). The literature has viewed green awareness in various contexts such as awareness about the consequences of air pollution (He & Liu, 2018), awareness of customers about the production process and the carbon footprint (Garcia et al., 2019), awareness about energy consumption in the production process (Shrouf et al., 2017), and awareness of environmental risk and cost-benefit (Peng & Liu, 2016). Green awareness in the organization enables the employees to be concerned about their adverse effects on the environment and initiate action to reduce such negative impacts (Gadenne et al., 2009). Green awareness was considered to be a vital factor in implementing environmental management systems in the organization. Such effective steps are required to initiate sustainable as well as responsible decisions for the business organization (Perron et al., 2006). Environmental awareness is the comprehension of the impact of an individual's behavior on the environment. Environmental knowledge, values, attitudes, and tendencies to actual behaviors, which are influenced by intentional and positional factors, are the most important aspects of individual environmental awareness (Kollmuss & Agyeman, 2002). Some external factors such as family, friends, neighbors, and education, make up 80% of individual environmental awareness (Zsóka et al., 2013).

Employee Engagement with Environmental Initiative

Employee engagement can be personified by the energy, dedication, and passion of employees who have to contribute their best to serve the customers to achieve the goals of their organization. It is all about the readiness, willingness, and capability of employees to give discretionary effort in achieving organizational success. Employees, who are engaged, exhibit attentiveness and mental absorption in their work (Saks, 2006) and display a deep, emotional connection towards their workforce (Kahn, 1990; Wagner & Harter, 2006). Many organizations believe that employee engagement is a dominant source of competitive advantage and thus, has been recognized by its reported ability to solve challenging organizational problems, such as increasing workplace performance and productivity during widespread economic decline (Ababneh, 2021; Gupta & Sharma, 2016; Macey & Schneider, 2008)

Employee Green Behavior

EGB is defined as a set of measurable behaviors that employees engage in and contribute to preserving the environment in their work (Ones & Dilchert, 2012). Studies on EGB have been conducted to explain the specific behavior of EGB that distinguishes it from pro-environmental behavior (PEB) (Norton et al., 2015). EGB can be defined as employee behavior (required and voluntary) in the world of work to preserve the environment, through positive behavior and reduce

negative impacts in their activities (Norton et al., 2015). This EGB is a development of a psychological study on pro-environmental behavior, which explains that pro-environmental behavior is voluntary behavior carried out by a person to preserve the environment. In a work setting, this pro-environmental behavior is carried out by someone voluntarily, for example by saving water, double-sided printing, can achieve organizational goals in the environmental field. The definition of PEB in a work setting is closer to the definition of Organizational Citizenship Behavior for Environmental (OCBE) (Paillé & Boiral, 2013). Ones and Dilchert (2012) explained that EGB can be explained through five levels of taxonomy, which in its implementation is attached to the duties and responsibilities of employees at work. EGB can be described through five work performance taxonomies as follows: (1) working continuously. (2) preserving the environment; shown by behavior: reducing use, reuse, and recycling (3) influencing others, (4) taking initiatives, shown by behavior: prioritizing environmental interests, initiating programs and policies about the environment, lobbying and positive activities related to environmental maintenance and (5) avoiding danger, shown by behaviors that prevent pollution/pollution, monitoring environmental impacts, and strengthening ecosystems. Another opinion related to EGB explains that EGB is divided into two components: (1) required behavior of the organization (required EGB) and voluntary behavior (voluntary EGB). By describing the behavior required by the organization and is voluntary, it can be seen that the contribution of individuals in the organization is related to their performance (Norton et al., 2015; Rotundo, 2002).

METHOD

This study uses a quantitative survey method to test the research variables. Data collection is carried out using the scale as a measuring tool. The scale of this research are green awareness, employee engagement with environmental initiatives, and employee green behavior scale. The form of the questionnaire is a self-report. In the implementation of the research, the ship crew was asked to fill in the three scales according to their perception and what was done in the work process. Before the research process was carried out, a test of measuring instruments was carried out to measure the validity and reliability of the measuring instruments.

The survey was conducted to test the influence of green awareness on employee green behavior mediated by employee engagement with environmental initiatives. The analysis in this study uses structural equation modeling (SEM) with smart partial least square (PLS) version 3.0. The results of the test were to determine the magnitude of the indirect influence of green awareness on employee green behavior through employee engagement with environmental initiatives as a mediating variable.

Data Collection

The subjects in this research were three hundred and thirty-three (333) crew members (seafarers) at the nine ships. The research process was carried out in a natural setting, on the ship

where the crew worked without disturbing their work process. Data collection was carried out on 333 crew members on nine ships consisting of five passenger ships, and four container ships, belonging to two shipping companies in Surabaya. The number of samples is determined based on the standard specified in the sample size for covariance-based SEM research, which is 100-200 (Hair et al., 2017).

The sample of this study was selected using random sampling techniques in three shipping companies that were participants in this study. This research sample represents the overall job duties in the organizational structure on the ship, which consists of deck officers and engines, ratings, and support personnel consisting of cleaning services, security, and service sections.

The measurement of the three variables uses the Likert scale. The green awareness scale consists of five question items that consist of indicators conducting periodic checks on work equipment to maintain the performance of work equipment to improve safety behavior, reminding colleagues to record conditions during guard to prevent safety risks and environmental pollution, performing maintenance with extra effort as a consequence of the use of low sulfur fuel, conducting thorough inspections of equipment and working conditions to prevent the occurrence of safety risks, learning new things to improve skills and expertise to preserve the environment, and reminding colleagues to record conditions while guarding to prevent safety risks. (Ababneh et al., 2021; Ones & Dilchert, 2012).

The inner model was evaluated by looking at the percentage of variance described, namely by looking at the value of R-square (R2) for the dependent latent construct using the stone-Geisser Q Squares test and the t-test as well as the significance of the structural path parameter coefficient. Then a Goodness of fit (GOF) measurement is carried out to assess the model as a whole (Geisser, 1974; Stone, 1974).

RESULTS AND DISCUSSION

Result

The results of the test of the validity of the try-out measuring tool on 40 respondents showed that the entire measuring tool used in this study consisting of the variables green awareness, employee engagement with environmental initiative, and employee green behavior was valid, with a $p <$ value of 0.05. The validity of the measuring instrument moved between 0.576 – 0.819 on the green awareness scale of 0.534 – 0.689. On the employee green behavior scale, it moves between 0.531 – 0.749. On the scale of employee engagement with environmental initiatives, it moves between 0.534 – 0.689. The results of the reliability test of the measuring instrument were found to be greater than 0.6. This shows that the measuring tools used in this study are reliable under the specified conditions.

The results of the outer model test (measurement) on the green awareness (GA) variable with five forming indicators, employee engagement with environmental initiative (EEEI) with five forming indicators, and employee green behavior (EGB) with five forming indicators showed that all indicators had an outer loading > 0.7 with p values < 0.05. It can be concluded that the indicators of the GA, EEEI, and EGB variables meet the convergence validity. This means that the indicator is good at measuring the GA, EEEI, and EGB variables (Chin, 1998; Hair et al., 2017; Sarstedt et al., 2021). The results of the discrimination validity test showed that the average variance extracted (AVE) value for each construct, the variables GA (0.594), EEEI (0.755), and EGB 0.771) were greater than 0.5 so that all constructs in the estimated model met the criteria for discriminant validity. The results of the reliability test using Composite Reliability (CR) showed that the variables GA (0.880), EEEI (0.939), and EGB (0.944) were greater than 0.7. Thus, it can be concluded that the measurement model (outer model) with reflective indicators has a high level of validation because the validity of an indicator with a loading value of 0.5 to 0.6 is considered sufficient (Chin, 1998).

The results of the structural model test (inner model) using R-square (R^2) showed that the EEEI variable was 0.447. This means that EEEI is influenced by the green awareness variable by 44.7%, while 55.3% is influenced by other factors. The EGB variable shows a value (R^2) of 0.772, so it can be explained that the influence of the green awareness variable on EGB is 77.2%, while the rest is influenced by other factors. The value of Q-square (Q2) in the overall model equation is 87.39, so the structural model has very high predictive relevance, so it is suitable for use in prediction.

The results of the direct influence test between the GA and EGB variables showed a p-value of 0.000, where the value was smaller than alpha 0.05, so it can be concluded that there is a significant and positive direct influence between GA and EEEI of 0.246. This means that the more GA increases, the higher the EGB, and vice versa. The results of the direct influence test between the GA and EEEI variables showed a value of 0.236 with a value of p = 0.000 (< 0.05), so it can be explained that there is a direct, significant and positive influence between the GA and EEEI variables of 0.236. Thus the GA increases, it can increase EEEI and vice versa.

The value of the path coefficient to test the indirect influence between GA variables on EGB through EEEI was 0.066 with p-value = 0.002 (< 0.05). Thus, it can be concluded that the indirect influence between GA on EGB through EEEI is significant. This means that the better the GA, the more it will affect the increase in EEEI. With an increase in EEEI, it can increase EGB and vice versa.

Based on the Goodness of fit (GOF) value of the PLS model, it can be seen that the GoF value is 0.6028. This means that the PLS model can be said to be good at predicting the model (table 1).

Table 1. GOF value

Variabel	Indikator	Loading factor	Communality	R square
Green awareness (GA	X1.1	0,785	0,826	-
	X1.2	0774	0,630	
	X1.3	0,727	0,616	
	X1.4	0,790	0,576	
	X1.5	0,778	0,592	
Employee Engangement with Environtmental Initiatives (EEEI)	X2.1	0,892	0.796	0.447
	X2.2	0,855	0.732	
	X2.3	0,931	0.866	
	X2.4	0,846	0.716	
	X2.5	0,816	0.666	
Employee Green Behavior (EGB)	Y1.1	0,951	0.904	0.772
	Y1.2	0,868	0.754	
	Y1.3	0,862	0.744	
	Y1.4	0,858	0.736	
	Y1.5	0,846	0.716	
Rata-rata			0,6718	0,541

$$\text{GOF} = \text{Communality x R2}$$
$$\text{GOF} = (0.6718)\text{x } 0{,}541 = 0.6028$$

Discussion

The results of this study support previous research which states that there are internal and external factors that can affect Employee Green Behavior (EGB). Environmental awareness as an internal factor of individuals formed based on knowledge of the importance of preserving the environment is supported by the motivation underlying a person's behavior in preserving the environment so that there is an attachment in protecting the workplace environment (EEEI) can increase employee green behavior (EGB) (Cabral & Dhar, 2019; Chams & García-Blandón, 2019; Jabbour & De Sousa Jabbour, 2016; Kollmuss & Agyeman, 2002). External factors that can improve employee green behavior are employee engagement with environmental initiatives (Ababneh, 2020, 2021). This study analyzed the impact of employee engagement with environmental initiatives as mediating the role of green awareness and employee green behavior.

The result of the H1 analysis indicates that green awareness affects employee engagement with environmental initiatives, which means that as green awareness increases in organizations, employee engagement with environmental initiatives also increases. This explains that if the crew has an awareness to preserve the environment, then the crew tends to think, act, and behave to preserve the environment in carrying out work activities. The awareness of the work environment in the crew increases motivation to preserve the environment. This is shown by the behavior of dedicating oneself to always preserving the environment. With this, the crew can maintain work

performance by paying attention to environmental maintenance aspects. In turn, more importantly, the crew will voluntarily engage with the company's green activities (Ababneh, 2021; Ababneh et al., 2019; Ababneh et al., 2021; Gupta & Sharma, 2016). This follows the opinion (Macey & Schneider, 2008) which states that employees who have a proactive personality, with a high level of awareness, and can have a positive influence, can be very involved in their work. In the context of environmental conservation, green awareness raises feelings of concern about the adverse effects of negligence in preserving the environment, so the behavior that can be seen is to reduce the negative impact of this, by always maintaining environmental sustainability.

The results of H2 analysis indicate that human behavior is the result of the interaction of various factors, including internal and external in the organization is the result of the interaction of various factors, internal and external, so that each person's behavior is different from each other (Dumont et al., 2017; Gao & Tian, 2019). The reason for this difference is that there are innate (internal) factors in a person that can be identified as attitudes, perceptions, personal opinions, and social values which are the main things of a person in maintaining environmentally sustainable behavior at work (EGB) (Ababneh et al., 2021; Jabbour & De Sousa Jabbour, 2016). Awareness is part of a person's characteristics. Personality factors as characteristics of thoughts, feelings, and behaviors displayed by a person are typically considered as factors that control individual behavior in their interaction with the environment, related to pro-environmental behavior (Bates et al., 2020). The values, character, morals, and motivations underlying a person's behavior play an important role in pro-environmental behavior (Bates et al., 2020). Thus, it can be explained that the behavior of the ship crew in maintaining environmental sustainability (EGB) occurs because of the green awareness owned by each person. The results of the study show that the higher the value of awareness in protecting the environment, the higher the behavior of maintaining environmental sustainability (EGB).

The results of the H3 analysis suggest that green awareness influences employee green behavior through the mediating role of employee engagement with environmental initiatives. This study explains that the behavior of the ship crew in maintaining environmental sustainability during work is influenced by internal and external factors. Internal factors are innate factors that are the result of an individual's interaction with their environment, such as awareness, knowledge, and skills. Meanwhile, external factors are situational, external factors that are raised by the Company to encourage employee behavior to be in accordance with organizational values that can support employee behavior to act following the Company's values. This can be organizational support, leadership style (Norton et al., 2014), green human resource management practices (Jabbour & Santos, 2008) (Paillé & Boiral, 2013), dan social responsibility (Osbaldiston & Sheldon, 2003). The integration between individual factors, in this case the awareness of the crew accompanied by the attachment of the crew to the organization, makes the crew maintain

environmental sustainability as part of their own and organizational values. This kind of behavior can support the performance of the organization in the environmental field (Jabbour & Santos, 2008; Norton et al., 2015). In this regard, to manage employee behavior in maintaining environmental sustainability (EGB) into organizational values oriented towards green human resource management, employee engagement must be considered. This is because employee engagement with the environment has been empirically proven to mediate green awareness which is an internal factor with employee green behavior as the output of behavior modification carried out by the Company to support the achievement of the organization's vision and mission (Ababneh et al., 2021). In the theory of fit person-organization (P-O), the interaction between individual factors of a person and external factors of the organization (which is manifested in the Company's consistency in implementing sustainable development policies), can have an impact on the perception and attitude of individuals to have an attachment to the Company in protecting the environment (EEEI) (Ababneh et al., 2021; Renwick et al., 2013).

Employee engagement with environmental initiatives can be described as cognitive aspects, attitudes, and forms of behavior that are oriented towards achieving goals for the sustainability of the organization that pays attention to environmental sustainability (Ababneh et al., 2021; Macey & Schneider, 2008). The compliance of ship crew in carrying out the principles of environmental maintenance outlined in the Company's regulations is not only seen as a form of responsibility or order from superiors, but rather a form of voluntary behavior that arises because there is ownership and attachment of ship crew to the organization (Macey & Schneider, 2008; Paillé & Boiral, 2013).

In this regard, companies that employ employees who have experience, knowledge, personal character, and environmental values as well as attitudes that are in line with the organization's policies, value systems, and environmental goals, have a greater possibility of having involvement and initiative towards the environment (EEEI) (Dumont et al., 2017).

CONCLUSION

The concept of employee engagement with the environmental initiative model as a mediating variable on green awareness and employee green behavior in the shipping industry in this study can contribute to the development of industry and organizational psychology to increase the employee green behavior of ship crews through employee engagement with environmental initiatives and green awareness. In this regard, for shipping companies that develop their performance in the environmental field, it is necessary to pay attention to the active participation of employees working on board to support the green values of the organization. The conclusion of this study is expected for policymakers of shipping companies that adopt sustainability values

to start taking into account employee engagement with environmental initiatives through an integrated system mechanism in order to motivate initiatives related to the environment in the employees, such as 1) increasing open communication through communication channels that can make the crew provide input for improving environmental performance, 2) increasing training on work mastery by paying attention to safety and environmental sustainability in order to support the company's environmental performance, 3) increasing the recognition and appreciation of achievements made by the crew formally and informally to increase the motivation of the crew in working to maintain environmental sustainability, 4) creating a positive work environment, where there is a harmonious relationship between superiors, subordinates, and colleagues in order to increase work comfort both physically and psychologically, which in turn can increase motivation to do the best for the company, 5) provide periodic feedback, in order to conduct constructive work evaluations on crew performance. The existence of this feedback can help the crew find out the skills that need to be improved to support their performance, 6) work-life balance. There needs to be a policy that encourages employees to encourage a balance between work and personal life so that this can improve the welfare of the crew in the long run. Employee welfare can increase employee contributions to the company to achieve organizational goals that can encourage employees to always apply green principles in their performance.

A further limitation may be related to types of jobs and work environments. In this study, data collection was carried out on the research subjects of passenger and container crew (seafarers). The implementation of EGB in this study is through EEEI and GA on types of tankers that have different ship characteristics, the number of personnel working on each ship, and the duties and responsibilities of each crew. Thus, it is necessary to carry out further research by adding subjects to tanker crews, so that it can facilitate all typical ship crew jobs in the shipping industry (Ones & Dilchert, 2012).

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