

Blue Economy: The Role of Attitudes and Behaviors in Occupational Health and Safety

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Abstract

This research examines the challenges of Mina MSMEs on the coast of Demak, Central Java, which rely on marine resources but are vulnerable to exploitation. The purpose of this study is to assess how attitudes and behavior affect productivity at work, so that a blue economy can be realised. This study was conducted using a survey method with a population of fish processors MSMEs in Demak Regency, Central Java, Indonesia, using a census by collecting 48 respondents. Partial least square was the technique utilized for data analysis. The result indicate that attitudes and behaviors related to OHS have a significant influence on productivity and the blue economy, where productivity does not mediate the influence of OHS attitudes but mediates the influence of OHS behavior on the blue economy. The implication is that the government should adopt a comprehensive approach towards MSMEs for the development of a culture of occupational safety and health through socialisation, training, monitoring, and enforcement of safety regulations as an effort to prevent and minimize workplace accidents, thereby fostering awareness of the importance of safety and health in the workplace.

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1. Introduction

Marine ecosystems provide a range of resources that are widely utilized for human welfare. This condition encourages the exploitation of marine resources, often without considering the negative impacts that affect the global marine ecosystem's ability to provide resources and their implications for public health (Depledge et al., 2019; Roberts et al., 2021). Marine areas are the center of various fisheries and aquaculture activities, as well as the exploitation of various marine products, which impact both natural systems and society. Therefore, comprehensive management and planning are needed in all fisheries sectors (Elliott et al., 2023). Utilising marine resources from various complex activities requires a shift in the goals and approaches to managing the sea and coastal areas. Economic growth and environmental sustainability are closely linked, as the exploitation of natural resources to boost Gross Domestic Product (GDP) and Gross Regional Domestic Product (GRDP) can drive economic expansion but also lead to environmental degradation and increased vulnerability to ecological issues (Rahmawati et al., 2024). Government policy is crucial in utilising the sea to promote economic development while protecting the marine environment and coastal communities (Kaur, 2021).

Protecting marine resources will maintain better ecological conditions in the ocean, thereby restoring ecological functions that utilize marine resources for human well-being (Saunders et al., 2015). The blue economy refers to the sustainable utilization of marine resources aimed at promoting economic growth, improving livelihoods, generating employment, and maintaining the health of marine ecosystems. The blue economy approach aims to facilitate sustainable development and manage competing interests in marine spaces without prioritising economic interests over ecological or social needs (Bappenas, 2023). Indonesia, as an archipelagic nation, possesses significant potential for the advancement of its maritime sector. Its vast archipelago comprises more than 17,000 islands and has significant potential for marine products. The marine industry in Indonesia contributes 22% to the country's gross domestic product (GDP), encompassing fisheries, transportation, and tourism (Sarjito, 2023). It needs to develop a blue economy to achieve the Sustainable Development Goals (SDGs). SDG 14 focuses on the conservation and sustainable utilization of oceans, seas, and marine resources, highlights the importance of global policy-making in the maritime sector. For island nations, the sea plays a crucial role in the sustainable development agenda, including efforts to eradicate poverty (SDG 1), achieve zero hunger (SDG 2), create well-being (SDG 3), promote decent work and sustainable economic growth (SDG 8), and foster industry, innovation, and economic development (SDG 9) (Bappenas, 2023).

The potential of marine resources in Indonesia is enormous; however, the socioeconomic conditions of the coastal population must match it. Fishing communities are among those that are economically, socially, and culturally disadvantaged. Their economic income depends on the management of fisheries resources (Negara, 2020). Many fishermen live below the poverty line in dire conditions (Susanti & Puspitasari, 2022). Fishermen must continue to survive within limitations and the inability to secure better jobs. Traditional fishermen require assistance in using tools, which limits the results they achieve (Pratiwi et al., 2023). Environmental aspects should be addressed due to competition, lack of knowledge, and



economic pressure to meet daily needs. Using fishing tools such as explosives, poison, and trawl nets can destroy biodiversity and harm marine life. For this, a blue economy approach is needed, focusing on creative and innovative investments that can ultimately enhance the welfare of the community while still paying attention to environmental sustainability (Susanti & Puspitasari, 2022)

The blue economy refers to the sustainable use of marine resources to drive economic growth, enhance welfare and employment, and preserve healthy marine ecosystems (Masni et al., 2024). Blue economic behavior among fishermen emphasises maintaining ecological balance while leveraging marine assets (Nasir et al., 2024). For fishermen, this behavior encompasses efficient catch management, converting waste into value-added products, and pursuing environmentally responsible business practices. Fishing activities meet current consumption demands while preserving resources for future generations (Marwiyah & Fitria, 2023). In this research, the blue economy refers to patterns of actions, attitudes, and practices among coastal communities—particularly fishermen—in utilising marine resources wisely, innovatively, and sustainably. This behavior operationalises the blue economy principles (Pauli, 2010): utilising marine potential efficiently, supporting ecological integrity, and delivering inclusive socioeconomic benefits.

To achieve a maritime sector oriented towards a blue economy, aspects of Occupational Health and Safety (OHS) are crucial for ensuring the welfare of coastal communities so that their rights to secure working conditions and health and well-being are upheld. The blue economy is a sustainable economic approach that utilizes marine resources to support economic growth, social well-being, and a healthy environment (Adnan et al., 2023). For coastal communities that heavily rely on aquatic resources, implementing OHS becomes increasingly important in maintaining the sustainability of resources and the well-being of coastal populations (Sandifer, 2023).

Demak is one of the areas in Central Java, Indonesia, located in the northern coastal region of the Java Sea, where a portion of the population works as fishermen and manages marine resources. Most traditional fishermen face various occupational health and safety issues while working in their work environment. Efforts to raise awareness about the importance of OHS hazards have garnered attention from experts, aiming to minimize workplace accidents among fishermen. The low awareness of the importance of safety and health at work is caused by a need for more knowledge about the significance of safety while working (Simbage et al., 2021), which will further impact the behavior of fishermen who ignore the risks they face.

Micro, Small, and Medium-Sized Businesses (MSMEs) in the northern coastal region confront a wide range of difficulties pertaining to attitudes toward OHS, however some typical challenges that could come up are as follows: a) Insufficient knowledge of OHS. It's possible that many MSMEs lack a sufficient awareness of the dangers related to their operations and the significance of OHS. This may result in disregard for OHS-related issues; b) resource limitations: To adopt appropriate OHS standards, many MSMEs—particularly those in rural locations like Demak—may require more resources. They could want help paying for safety gear, educating staff, or setting aside enough time to adhere to safety rules.



c) Uncertain requirements: Issues may occur if safety requirements are not made apparent, especially for fish processing companies in the Demak region, where several home-based business owners require assistance in obtaining resources from MSMEs. OHS and insufficient equipment are related because of the potential for a lack of attitude and noncompliance with behaviors that ignore OHS regulations. Noviyanti *et al.* (2020) found that accidents and occupational safety risks occur during glass manufacturing, specifically extreme risks associated with exposed electrical panels and scattered debris that endanger employees, as well as other high risks. Similarly, Dahlawy (2008) explained that OHS is greatly influenced by human error and organizational structure. This may cause ambiguity when it comes to following occupational health and safety laws; d) lack of training: MSMEs may need adequate access to occupational health and safety training. Training can help their ability to identify, manage, and minimize occupational health and safety risks; e) non-compliance: Some MSMEs may intentionally or unintentionally fail to comply with OHS regulations. This could occur due to a lack of effective law enforcement or a lack of understanding of the consequences of non-compliance. Ataro *et al.* (2024) state that although workers are aware of the importance of using personal protective equipment as a preventive measure against workplace accidents, the level of compliance in using health tools that support occupational health and safety still needs to be improved. f) Culture and Attitude: The work culture and attitude towards OHS can vary among MSMEs. According to Nalugya *et al.* (2022), a high level of knowledge is associated with a positive attitude. Conversely, a positive attitude is linked to good personal protective equipment (PPE) practices

Noviyanti *et al.* (2020) explain a study on workers' knowledge and attitudes towards Personal Protective Equipment (PPE), stating that workers' knowledge does not correlate with their attitudes towards protective equipment. The research of Nalugya *et al.* (2022) shows that most workers still have a negative attitude towards using tools that support occupational health, despite being aware of them. In addition, Maharani & Wahyuningksi (2017) found a relationship between knowledge, attitudes, and OHS policies and the occurrence of accidents. Some workers may have a culture prioritizing occupational health and safety, while others may pay less attention. Mina MSME is a group of fishermen and fish processing located on the coast of Java in Demak, Central Java. Currently, most fishermen have not used occupational safety and health procedures. Many fishermen in Mina MSMEs still use various dangerous tools to utilize marine resources.

The aim of research is to analyse how OHS attitudes and behavior affect the blue economy mediated by productivity in the fisheries sector. The discussion framework in this study is based on Theory of Planned Behavior (TPB), to identify individual factors influencing a person's intention to engage in OHS behavior. This theory of planned behavior suggests that behavior is driven by intentions, which are shaped by three key factors: behavioral attitudes, subjective norms, and perceived behavioral control (Adilah *et al.*, 2020). Attitudes towards the use of marine resources are shaped by culture and economic dependence on these resources, so changing individual behavior is essential to control excessive resource use and maintain sustainable blue ecosystems (Sapriani *et al.*, 2024). The benefits of the research obtained are that MSMEs in the fishery sector can implement OHS more effectively, as attitudes and behaviors towards OHS have been instilled with a more significant



commitment, thereby avoiding OHS issues and minimizing risks. In addition, Mina MSME can enhance productivity by generating catches for fishermen, thereby supporting the blue economy.

2. Literature Review

Health and Safety Attitudes at Work

Attitude refers to the way of looking at and evaluating someone, as well as the tendency or inclination to act positively or negatively towards specific ideas, objects, people, or situations, which is also known as perspective (Vargas-Sánchez et al., 2016). The perspective attitude of a person's thoughts and feelings towards an event, idea, and object influences how they see and handle problems by behaving appropriately towards other people. Attitude is a person's feelings and thoughts towards objects, ideas, and events, and it is a way of viewing and responding to issues with behavior consistent with others (Olufemi, 2012). Aydin et al. (2007) explain that attitude is a tendency that regulates a person's thoughts, feelings, and behaviors towards objects, ideas, institutions, events, and other people. Attitude is a way of viewing and responding to issues (Yalçinkaya, 2024). Attitude is a person's response or reaction to a stimulus or object that is still concealed, and it represents a readiness to act. Although attitude is not an activity or action, it remains a tendency to behave in a certain way.

The factors that influence attitudes, according to Gerungan (2014), include (1) Internal factors encompassing objects embedded within the individual, based on experiences related to the object, determining whether the resulting attitude is positive or negative. Agusdin *et al.* (2022) stated that perception can be used to identify the components of the individual concerned, such as selectivity towards external stimuli. The individual will determine which stimuli to approach and which to avoid. (2) External factors, include social interactions and individual behavioral traits, which are the two primary components that influence human attitudes. Information from communication can provide confidence, inspiration, and suggestions. Just as positive information influences a positive attitude, bad information will mold a negative attitude. Each individual has a different attitude towards various factors related to occupational health and safety. Companies need to recognize and control these elements to improve workplace consciousness and the implementation of occupational health and safety. The Safety Management System impacts employees and enhances motivation within the safety culture . Breiteneder (2016).

According to Ibuot (2020), the components of attitude include cognitive, affective, and behavioral components. (1) The cognitive component refers to the aspect that involves an individual's beliefs, thoughts, knowledge, and perceptions about a particular object or issue. It is characterised by how one evaluates information and experiences related to the attitude object, based on their prior knowledge and information acquired from external sources. This component forms the basis of an individual's understanding of what is right or wrong, good or bad, and desirable or undesirable regarding the evaluated object. (Bakanauskas et al., 2020). (2) The affective component refers to the emotional response and feelings that an individual has towards a particular object, person, or issue. This aspect is based on personal



evaluations and internal psychological needs, which evoke specific emotions that can influence how one responds to the object of attitude. Essentially, it reflects the emotional response an individual has, which may not necessarily be based on cognitive evaluations but rather on feelings, desires, and sentiments associated with the attitude object (Bakanauskas et al., 2020) (3) The behavior /conative component of attitude formation is the behavioral aspect that expresses an individual's inclination to act towards an object. This behavior is shaped by cognitive and affective evaluations and is demonstrated through both verbal and non-verbal actions (Bakanauskas et al., 2020). The behavioral or conative component refers to an individual's tendency to behave towards an object they encounter (Agusdin et al., 2022). Attitude serves as a predisposition towards work safety behavior; a positive attitude towards safety encourages compliance with protocols. Employees with favorable attitudes are more likely to engage in safe practices, thereby reducing risks and enhancing workplace safety overall (Syamsuriadi et al., 2019)

Work accidents can be caused by attitudes such as carelessness, irresponsibility, or a lack of cooperation with all safety and health regulations. Companies with high rates of work accidents tend to have workers with poor attitudes toward workplace safety (Agusdin et al., 2022). Attitudes towards safety and health at work are crucial because they significantly influence the achievement of safety behaviors. Safety behavior is a strategy aimed at creating security through the application of workplace safety values in the work environment (Veloso Neto et al., 2021) by stimulating thoughts and attitudes that guide workers in maintaining actions and feelings of safety through the knowledge provided to them regarding the risks arising from carelessness towards safety and health regulations in the workplace. A person's attitude towards health and safety behavior will influence the behavior of workers, and a positive attitude will result in positive behavior (Syamsuriadi et al., 2019)

H1. A positive attitude towards occupational health and safety will influence occupational health and safety behavior.

By implementing OHS operational procedures in the workplace, Benson et al. (2024) clarified that attitudes toward OHS play a crucial role in preventing workplace accidents and protecting employees from hazards. Delivery delays will be minimized, task completion times will be shortened, and productivity levels will rise as a result. According to Mutegei (2023), employee safety attitudes regarding adherence to safety protocols and laws significantly impact employee work safety; hence, these attitudes will reduce work interruptions and enhance job completion.

H2. A positive attitude towards health and safety will influence work productivity

Health and Safety Occupational Behavior

Behavior is a set of actions that respond to something, becoming a habit based on the values one believes in. Thus, human behavior is essentially the actions or activities of humans, both observed by humans about the environment, in the form of knowledge, attitudes, and actions (Breiteneder, 2016). OHS behavior refers to the changes made by employees to act safely in the workplace. Appropriate safety policies and procedures are necessary to reduce risks and



accidents, and personal protective equipment must be used appropriately to ensure these behaviors are followed. This, which is part of the business's tasks and procedures, along with individual behavioral elements, will help create accident prevention applications and guide individual behavior toward safety (Çiftci & Bilgin, 2019).

When workers comply with and implement occupational health regulations, it reduces workplace accidents, and employees feel safe and healthy. Workers are more likely to consistently work and avoid absenteeism, thereby positively impacting productivity (International Labour Organization, 2022). The study by Rifqi et al. (2023) demonstrates that effective occupational health and safety programs can reduce absenteeism and increase productivity, thereby reducing workplace accidents and occupational diseases. A safe and healthy workplace can lead to better work outcomes. Workers who do not operate in hazardous environments tend to be more focused and productive. As predicted by the research hypothesis, the study by Sopiyan et al. (2023) demonstrates that workplace safety and occupational health have a significant impact on employee productivity. Katz et al. (2019) explain that occupational health behavior, where workers comply with and adhere to safety regulations, will influence physical activity at work, making it more comfortable and impacting productivity. When workers are motivated and adhere to safety protocols, it ultimately leads to increased productivity (Iman et al., 2023). OHS practices are essential for creating a safe working environment for employees and enhancing productivity (Lari, 2024).

Aspects of OHS behavior include initiative, bureaucracy, responsiveness, and compliance in various actions. Theory related to factors that influence OHS behavior (Dahlawy, 2008; Rahayu & Dimas, 2016), including (a) predisposing factors, are positive factors that facilitate the realisation of practices that are often called facilitating factors, namely trust, confidence, education, motivation, perception, knowledge, (b) supporting factors, in the form of the physical environment such as the availability of health infrastructure, (c) driving factors, the realization of attitudes and behavior of health workers or other officers, who are reference groups for community behavior. Knowledge, specific skills or abilities, and gender are some of the variables that might affect behavior. The implementation of OHS, which is a form of protection while in the work environment, has an impact on minimizing work accidents (Abidah et al., 2023)

H3. Positive behavior towards occupational health and safety will positively impact productivity.

Productivity

Productivity is generally defined as the measure of output produced per unit of input (Linna et al., 2010). Productivity is defined as the efficiency in converting inputs into outputs. Measuring productivity is crucial for organizational success and sustainability, as it guides management decisions by assessing resource usage and performance improvements, thereby ensuring a lasting impact that leads to higher profits and overall growth (Sookdeo, 2020). Productivity is used to evaluate the performance of individuals, teams, or organizations in generating value from the resources they possess (Robbins et al., 2017). From the perspective of human resources, productivity is a mental attitude (attitude, discipline) of human resources



or workers that reflects their ability to carry out tasks in their jobs, and the results obtained depend on the available resources (Indrayani & Damsar, 2022).

Coastal fisherman productivity refers to the efficiency and effectiveness of coastal fishers in converting inputs into outputs, such as fish catches. Productivity encompasses various aspects of fishing activities, including the quantity and quality of fish caught, the sustainability of fishing practices, and the overall economic and social benefits derived from their work. Sustainability is defined as sustained productivity related to the utilisation of marine resources (Randall et al., 2013). To achieve Indonesia's blue economy goals, the productivity of coastal fishers is crucial. The utilisation of marine resources is an integral part of Indonesia's economy, given its status as a maritime nation, particularly for coastal communities. Fishermen's productivity must be increased by using environmentally friendly methods, taking into account the sustainability of marine resource regeneration to create a blue economy (Bappenas, 2023; Pane et al., 2021)

Increasing fishermen's productivity without considering the sustainability of marine resources can lead to overfishing, ultimately damaging marine ecosystems in the long term. If fisherman productivity remains balanced and does not exceed the regeneration capacity of fish, fisheries will become part of the blue economy (Latuconsina et al., 2023).

The development of a blue economy in Indonesia will be crucial for realising economic transformation. Effective management of marine resources is necessary to enhance environmental sustainability and foster a competitive, innovative, and sustainable maritime sector. This transformation is expected to increase employment opportunities and add value (Pane et al., 2021). Productivity in marine resource management and the economic empowerment of fishermen will help improve long-term welfare. High productivity will support sustainable economic growth, thereby creating a blue economy (Bappenas, 2023).

H4. Increased productivity will have an impact on achieving a blue economy.

Blue Economy

Alharthi and Hanif (2020) stated that coastal and marine areas are the most beneficial biological systems and are valuable resources that can drive economic and financial growth. The Blue Economy seeks to balance economic, social, and environmental aspects, promoting sustainable development that prioritises the equilibrium of economic growth, environmental sustainability, and the preservation of natural resources—for long-term stability. The Blue Economy aims to surpass conventional business practices. It considers economic development and ocean health in proportion, using them as a long-term strategy to drive more significant economic growth (Amina & Mezrig, 2021). A sustainable blue economy, which includes food, medicine, and renewable energy resources, will be crucial for the future of human security. The Sustainable Ocean Economy highlights the need for urgent action to ensure that the ocean continues to provide significant economic, environmental, and social value, as it holds solutions to many of the world's problems (Bappenas, 2023). Proper management of the blue economy is expected to benefit a country's economic growth (Alharthi & Hanif, 2020; Eikelenboom & De Jong, 2018). The convergence of the blue



economy and marine ecosystems suggests that economic growth is closely linked to ecosystem accounting (Lillebø et al., 2017).

The economic utilization of marine resources in Indonesia is limited to conventional sectors, including capture fisheries, aquaculture, and fish processing, which contribute 83 per cent of total value added. The growth of the blue economy from 2012 to 2020, with a 10.5% annual growth rate and increasing demand, demonstrates significant potential for planned investment. In line with Indonesia's 2045 vision of shifting from a natural resource-based economy to a modern, competitive, and high-value-added manufacturing and services-based economy to ensure prosperity and social justice for all Indonesians, the development of a blue economy is necessary to increase job creation, productivity, and added value (Bappenas, 2023).

The blue economy in this study represents how fishermen utilize marine resources sustainably, responsibly, and for the common good, without harming the ecosystem. Actions leading to the development of a blue economy are reflected in three key components: sustainable marine resource management, a sustainable economy, and social welfare (Pauli, 2010). These fishermen are involved in realising the blue economy, earning a living, generating income, and contributing to preserving Indonesia's marine resources (Febryaningrum et al., 2024)

These fishermen are involved in the blue economy, earning a living, generating income, and contributing to the preservation of Indonesia's marine wealth. Fishermen must face all the risks when working in the open sea. The attitude of fishermen towards favourable workplace safety regulations encourages fishermen and maritime workers to adopt sustainable practices that protect marine ecosystems, such as responsible fishing techniques that reduce habitat damage and adhere to the principles of the blue economy, which emphasise sustainability and the conservation of marine resources (Sapriani et al., 2024). OHS attitudes not only support ecological sustainability but also encourage the creation of blue economic behavior that aligns with improving the social welfare of coastal communities sustainably (Alharthi & Hanif, 2020).

OHS behavior enhances the resilience of coastal communities that rely on marine resources for their livelihoods. This resilience is crucial for adapting to the changes caused by industrialization and climate change in the marine environment. This is a significant issue in the blue economy that constantly maintains the sustainability of marine ecosystems (Andrews et al., 2021). The attitude and behavior towards occupational health and safety (OHS) influence their productivity, ultimately supporting the blue economy.

H5. Increasing occupational safety and health attitudes will affect the growth of the blue economy

H6. Increasing occupational safety and health behavior will affect the growth of the blue economy



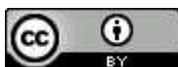
Workers who have a positive attitude towards occupational safety and health are more likely to behave in accordance with safety procedures and encourage their colleagues to comply with OHS regulations (Mutegi et al., 2023). Positive attitudes and behaviors towards OHS regulations increase work productivity (Corso, 2008). Conversely, workers who do not comply with OHS regulations often ignore work safety procedures, which can lead to work accident and productivity problems (M. Li et al., 2020). Work accidents are caused by workers' attitudes towards safety regulations (Kundu et al., 2016). If the organization has a positive attitude, there will be fewer work accidents, and productivity will increase. The health and safety environment encompasses various measures that demonstrate a positive impact on workforce productivity. Careful management of marine resources through the implementation of safe tools for occupational safety and health, without using hazardous substances, will lead to high productivity and prevent excessive exploitation of marine resources (Marwa et al., 2024).

Coastal fishermen who behave well toward OHS are essential to establishing a secure, healthy, and effective workplace. Fishermen who prioritize OHS will maintain better health, avoid workplace accidents, and increase their effectiveness (Simbage et al., 2021). Knowledge-based behaviors about occupational safety will result in fishermen being more alert, careful, and prepared to face risky situations. This supports the creation of a safety culture, reduces the potential for accidents, and increases the productivity and sustainability of fishing activities in the maritime workplace. This directly increases fisher productivity, both in terms of catch volume, time efficiency, and fishery product quality. High productivity is a mediator in realizing blue economy behaviors, namely sustainable marine resource management, efficient and innovative economic implementation, and enhancing the welfare of coastal communities. Increased productivity (both in catch volume, product quality, and time efficiency) will be a crucial mediating factor in realizing blue economy practices (Nasir et al., 2024). Through sustainable productivity, fishers can manage marine resources efficiently and innovatively, safeguard ecosystems, and enhance coastal communities' well-being. Thus, positive OHS behavior and productivity support the creation of wise marine resource management, ensuring the sustainable health of marine ecosystems and ultimately achieving a blue economy (Bennett et al., 2019).

H7. A positive attitude towards occupational health and safety has a significant impact on the realization of a blue economy, mediated by increased productivity.

H8. A positive attitude towards occupational health and safety has an impact on the realization of a blue economy, mediated by increased productivity.

The hypothesis that is built based on the theory is shown in Figure 1



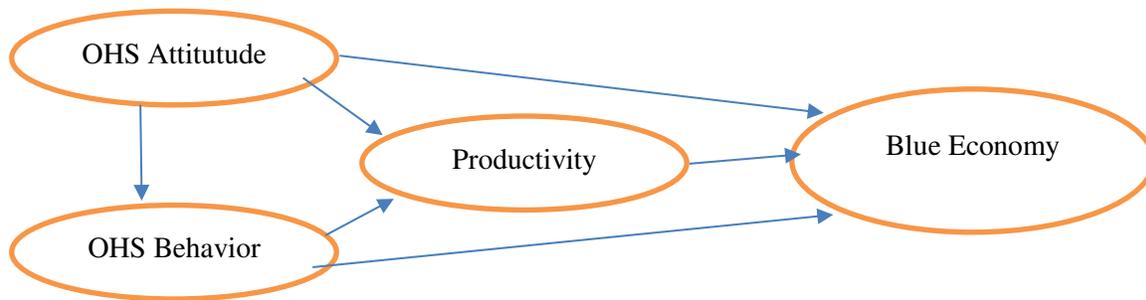


Figure 1. Research Model

3. Research Methods

This research was conducted using a quantitative method with the MSME partner, Mina, in the coastal area of Demak Regency, which consisted of several fishermen and fish processors, totaling 43 respondents, using a census method. The primary data in this research were obtained through a questionnaire, with assessments using a Likert scale scoring from 1 to 4. In this study, attitude toward Occupational Health and Safety refers to an individual's reaction to a particular object, based on their experiences, psychological conditions, information, and individual needs (Anwar, 2010). The components of attitude include (1) the cognitive component, which describes a person's beliefs and comprehension of an object based on information and knowledge about that thing obtained through the senses of sight, sound, and touch; (2) the affective component, which relates to the individual's subjective emotional issues towards something; and (3) the behavioral component, which is a person's propensity to act in a certain way toward the thing they are confronting. The components of attitude in this study are measured with six items (Azwar, 2010).

Behavior is a set of actions that respond to something and become a habit based on the values one believes in (Breiteneder, 2016). The aspects of OHS behavior are initiative, bureaucracy, responsiveness, and compliance in various actions. This study uses six indicators to measure Occupational Health and Safety Behavior (Dahlawy, 2008). Productivity (Frismaulana & Putra, 2022; Robbins et al., 2017) is a comparison between the results achieved and the total resources used (input), which relates to a productive mental attitude, including aspects such as productive mental attitude, discipline, product and service result, which in this research is developed into an 8-item measurement.

The blue economy (Pauli, 2010) is a concept that relates to the sustainable management of marine and coastal resources for economic, environmental, and social development. This concept emphasizes the importance of responsible and sustainable exploitation of marine resources to maintain the balance of aquatic ecosystems while providing economic benefits to communities. The blue economy in this study encompasses various behaviors that are organized into three key components. First, sustainable marine resource management, specifically the preservation of coastal ecosystems and the adoption of ecologically friendly fishing gear. Second, a sustainable economy, characterized by innovative marine resource utilization based on the principles of efficiency and zero waste, creates added value. Third, social welfare, specifically increased income, equitable distribution, and inclusive

empowerment of coastal communities (Pauli, 2010), which this research has developed using an 8-item measurement scale.

This research uses the PLS structural equation model. The PLS-SEM analysis technique is a causal-predictive approach that emphasizes prediction in estimating statistical models and has a structure designed to provide causal explanations (Hair, Risher, et al., 2019). This technique addresses the dichotomy between explanation, which is usually emphasized in academic research, and prediction, which is the basis for developing managerial implications. (Hair, Risher, et al., 2019).

4. Results

Table 1. Descriptive statistic

Indicator	Standard Deviation	Mean	Indicator	Standard Deviation	Mean
X1.1	0.784	3.263	X2.1	0.969	2.816
X1.2	0.752	3.474	X2.2	0.951	3.132
X1.3	0.839	2.921	X2.3	0.996	2.816
X1.4	0.643	3.184	X2.4	0.739	2.921
X1.5	1.049	3.289	X2.5	0.857	2.947
X1.6	0.882	3.105	X2.6	0.694	2.789
Total mean		3.206	Total mean		2.903
Z1	0,720	3.184	Y1	0,963	2.579
Z2	0,921	2.684	Y2	0,954	2.658
Z3	1,043	2.737	Y3	0,882	2.895
Z4	0,978	2.789	Y4	0,858	3.000
Z5	0,718	2.895	Y5	0,793	2.947
Z6	0,966	2.474	Y6	0,958	2.632
Z7	1,116	3.263	Y7	1,030	3.132
Z8	0,873	2.974	Y8	0,981	2.658
Total mean		2.875	Total mean		2.813

Source : Primary Data, 2024

The mean and standard deviation are presented in Table 1. Indicator X1 has an average value that ranges from 2.921 to 3.474, with an overall average of 3.206. The standard deviation of X1 varies between 0.643 and 1.049, indicating moderate variation in the respondents' responses. Indicator X2 shows an average value ranging from 2.789 to 3.132, with an overall average of 2.903. The standard deviation for indicator X2 is between 0.694 and 0.996, indicating that the data tends to be more homogeneous than that of indicator X1. The average value of Z ranges from 2.474 to 3.263, with an overall average of 2.875. The standard deviation for indicator Z varies between 0.718 and 1.116, indicating a higher level of variation in respondents' responses. Indicator Y shows an average value ranging from 2.579 to 3.132, with an overall average of 2.813. The standard deviation for indicator Y falls within



the range of 0.793 to 1.030, indicating a moderate variation in responses. Overall, the average values for each indicator indicate that respondents provide consistent responses, with uniform minimum and maximum values of 1 and 4. The variability of the data, measured by the standard deviation, shows that although there is variation in the responses, it is not too extreme, indicating uniformity in respondents' perceptions of each measured indicator.

Validity analysis is conducted using the loading factor. The loading factor value is used to determine convergent validity by examining item dependability. The loading factor is a statistic that describes the relationship between the item question scores and the construct indicator scores in measuring the construct. A valid loading factor is greater than 0.70 (Hair et al., 2018). Table 2 shows the findings of the loading factor after processing the data with Smart PLS 4.0.

Table 2. Loading Factor

Variable	Indicator	<i>Outer Loading</i>	Variable	Indicator	<i>Outer Loading</i>
OHS Attitude	X1.1	0.807	OHS Behavior	X2.1	0.703
	X1.2	0.755		X2.2	0.812
	X1.3	0.768		X2.3	0.741
	X1.4	0.754		X2.4	0.688
	X1.5	0.663		X2.5	0.749
	X1.6	0.758		X2.6	0.753
Work Productivity	Z1	0.729	<i>Blue Economy</i>	Y1	0.548
	Z2	0.760		Y2	0.701
	Z3	0.705		Y3	0.728
	Z4	0.716		Y4	0.717
	Z5	0.704		Y5	0.759
	Z6	0.716		Y6	0.744
	Z7	0.675		Y7	0.723
	Z8	0.764		Y8	0.718

Source : Primer Data, 2024

Table 2 shows that there are indicators of the variables in this study that are not valid; therefore, these indicators must be eliminated. This is because the validity test reveals that the loading factor value is greater than 0.70 (Hair, Risher, et al., 2019). After removing the invalid variable indicators from the model, the model is recalculated to produce a new outer loading value, which is displayed in the following final path diagram (Figure 2).



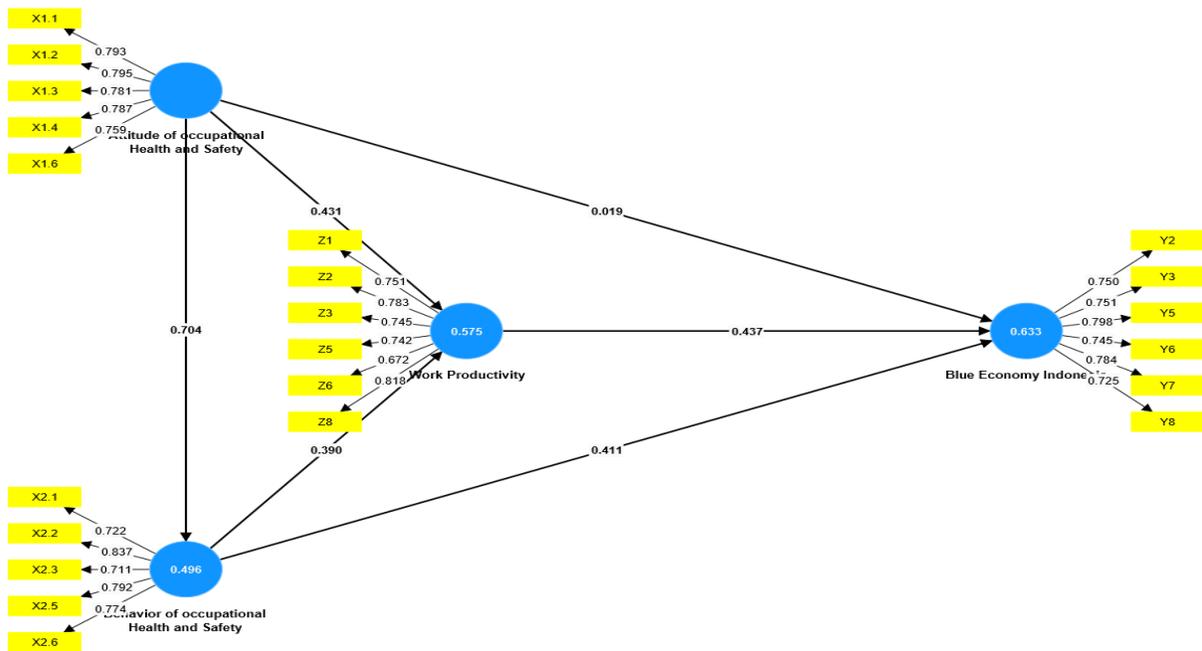


Figure 2 Outer loading

The validity and reliability of the instrument are measured using the criteria of an AVE value above 0.5, composite reliability, and Cronbach's alpha above 0.70, (Hair et al., 2014). The value of validity and reliability testing in the study is evident in Table 3 and Table 4.

Table 3. Instrument Testing

Variable	Validity Testing		Reliability Testing		
	AVE	Result	CR	CA	Results
Blue Economy	0.576	Valid	0.854	0.853	Reliable
OHS Behavior	0.591	Valid	0.830	0.825	Reliable
Productivity	0.567	Valid	0.847	0.846	Reliable
OHS Attitude	0.613	Valid	0.845	0.843	Reliable

Source: Primary data, 2024

Table 4. Discriminant Validity

	Blue economy	OHS Behavior	Productivity	OHS Attitude
Blue Economy	-	-	-	-
OHS Behavior	0.865	-	-	-
Productivity	0.856	0.828	-	-
OHS Attitude	0.725	0.834	0.824	-

Source: Primary data, 2024



Table 5. R-Square

	R-square	R-square adjusted
OHS Attitude	0.633	0.601
OHS Behavior	0.496	0.482
Productivity	0.575	0.551

Source: Primer data, 2024

Table 5 shows that for the OHS Attitude variable, the R-Square value is 0.633, which means that the independent variables in the model can explain 63.3% of the variation in that variable. The adjusted R-square value of 0.601 indicates an adjusted value for the number of variables in the model, suggesting that the model remains relatively strong in explaining variability despite the adjustment. The OHS Behavior variable then displays an R-Square value of 0.496, indicating that 49.6% of the variation in the OHS Behavior variable can be explained by the independent variables in the model. With an updated R-squared of 0.482, the model is still able to account for roughly 48.2% of the variation in OHS behavior. In contrast, the work productivity variable has an R-Square value of 0.575, which indicates that 57.5% of the variation in work productivity can be explained by the independent variables in the model. With a value of 55.1%, the corrected R-squared of 0.551 shows that the model is still very successful at explaining variability after correction.

The F-Square function is used to assess the magnitude of the influence between variables, measured by the effect size or F-Square, where an F-Square value of 0.02 (weak), 0.15 (medium), or 0.35 (strong) is considered (Hair et al., 2018). The F-Square values are presented in Table 6.

Table 6. F-Square

	Blue Economy	OHS Behavior	Productivity	OHS Attitude
Blue Economy	-	-	-	-
OHS Behavior	0.197	-	0.181	-
Productivity	0.221	-	-	-
OHS Attitude	0.000	0.983	0.220	-

Source: Primer data, 2024

Table 6 shows that the Blue Economy affects the OHS Behavior variable with an F-statistic value of 0.197. This indicates that Indonesia's Blue Economy has a significant impact on OHS Behavior. In addition, productivity also has a significant effect on OHS Behavior, with an F-squared value of 0.181. Furthermore, the productivity with an f-square value of 0.221 affects the blue economy. This shows that productivity has a significant effect on the blue economy.

Meanwhile, the OHS Attitude is influenced by OHS Behavior, with an f-square value of 0.983, indicating a highly significant influence of OHS Behavior on OHS Attitude. Moreover, Work Productivity also significantly influences OHS Attitude with an f-square value of 0.220 (Hair, Sarstedt, et al., 2019). Whether or not a proposed hypothesis is accepted, hypothesis testing needs to be conducted using the Bootstrapping function in Smart



PLS. The hypothesis is accepted if the significance level, indicated by the p-value, is less than 0.05 or if the t-value exceeds its critical value (Hair et al., 2017). Based on the path analysis model image, each variable can be seen partially in Figure 3.

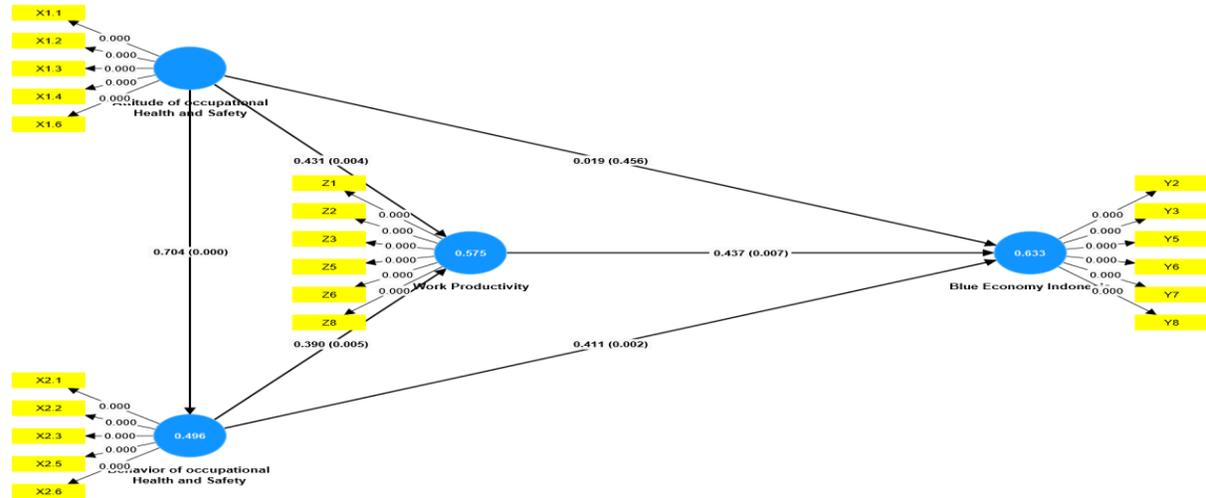


Figure 3. Path Coefficients

Based on Figure 3, the original sample value can be seen, along with the p-value used as a reference for deciding whether to accept or reject the hypothesis. The hypothesis can be accepted if the p-value < 0.05. The results of the data analysis can be seen in Table 7

Table 7. Hypothesis Testing

Hypotesis	Original Sample	p-value	Result
H1 OHS Attitude -> Productivity	0,706	0,000	Supported
H2 OHS Behavior -> Productivity	0,390	0,005	Supported
H3 OHS Attitude -> Blue Economy	0,617	0,000	Supported
H4 OHS Behavior -> Blue Economy	0,582	0,000	Supported
H5 Productivity -> Blue Economy	0,437	0,007	Supported
H6 OHS Attitude -> OHS Behavior	0,704	0,000	Supported
H7 OHS Attitude -> Productivity -> Blue Economy	0,188	0,061	Not Supported
H8 OHS Behavior -> Productivity -> Blue Economy	0,170	0,031	Supported

Source: Primary data, 2024

Discussion

The results show that each measuring instrument can measure and reveal the research variables, including the blue economy variable, MSME productivity, OHS attitudes, and OHS behavior. The research has tested the direct effects among the variables, proving that all hypotheses are accepted. OHS attitudes and OHS behavior both influence work



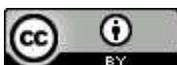
productivity, and OHS behavior, in turn, influences the blue economy. Additionally, OHS attitudes also influence OHS behavior. With a coefficient of 0.188 and a p-value of 0.061, the findings demonstrated that productivity did not mediate the impact of attitude on the blue economy. However, with a p-value of 0.031 and a coefficient of 0.170, productivity mediates OHS behavior toward the blue economy.

The findings indicate that attitudes toward OHS influence productivity. Workers who adhere to guidelines and protocols, and maintain a positive attitude towards OHS, will lead to a decrease in workplace accidents and injuries, thereby reducing disruptions in workflow and maintaining productivity. To foster a positive attitude towards occupational safety and health, it is necessary to develop a safety culture among workers through a comprehensive approach that involves technological, organizational, and relevant external aspects (van Nunen et al., 2018) so that workers take responsibility and implement safety practices (Bautista-Bernal et al., 2024). Someone who has perceptions, values, and behaviors and embraces safety values will behave in a way that promotes workplace safety (Prinsloo & Hofmeyr, 2022; Stemm et al., 2019)

The results show that behavior regarding OHS affects productivity. Safety and health behaviors in the workplace are essential for creating a safe environment for employees in industrial processes, focusing on changing workers' habits. This method requires introducing all workers to the hazards of the job and implementing measures to enhance safe practices. Therefore, a safety culture is critical (H. Li et al., 2015). Furthermore, effective monitoring and feedback mechanisms are necessary, along with training for workers to consistently implement occupational health and safety practices. The work environment must foster a positive safety culture that encompasses values, attitudes, and beliefs emphasizing the importance of safety through a proactive approach that prioritizes personal protection, which can help reduce incidents and injuries (Benson et al., 2024; Cooper, 2000).

The results suggest that productivity has a significant impact on the blue economy. Increasing economic productivity is crucial in achieving a high and sustainable economy (Bappenas, 2023). Sustainable productivity is critical in maintaining ecosystem balance and preventing habitat destruction, and it can help preserve marine ecosystem balance to realize a blue economy. The blue economy development strategy must maintain the sustainability of marine resources in terms of economy, infrastructure, trade, energy production, and waste management. Enhancing economic productivity is crucial to achieving a high and sustainable economy (Yu et al., 2024). The creation of a creative economy can be improved through enhancements in labor productivity, the modernization of tool usage, and the strengthening of business management. Productivity will enhance the efficiency of utilizing marine resources, thereby improving the economy, creating job opportunities, and increasing the income of coastal communities (Fudge et al., 2023). The blue economy plays a key role in ensuring that the utilization of marine resources supports economic growth while maintaining environmental sustainability (Duarte, 2023).

The results indicate an influence of attitudes towards OHS on realizing the blue economy. A good concept of OHS can encourage more environmentally responsible operational practices.

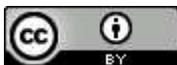


Workers who apply high OHS standards tend to consider the environmental impact of their operations. Workers harvesting marine resources are more cautious; for example, they use selective fishing techniques and clean fuel to reduce marine pollution and damage to aquatic ecosystems, thus realizing the blue economy. The attitude of workers who pay little attention to occupational health and safety will lead to the exploration of the marine environment. Studies by Lotze et al. (2018) and Roberts et al. (2021) explain that marine exploration poses threats to ocean pollution, habitat destruction, climate change, and biodiversity loss, thereby undermining the achievement of a blue economy.

The findings show that OHS behavior have an impact on the blue economy. The blue economy focuses on the sustainable management of marine resources through various approaches, including ecotourism, environmentally friendly aquaculture, public awareness campaigns, and innovative technologies, to lower environmental dangers and ecological scarcity while improving social justice and human well-being. The blue economy is a development paradigm that prioritizes the sustainable use of marine resources to drive economic growth, enhance the welfare of coastal communities, and protect aquatic ecosystems that provide livelihoods for surrounding populations (Martínez-Vázquez et al., 2021). Safety and health behavior in the workplace is critical to ensure that work practices in related fields (such as fisheries, maritime transportation, and the marine industry) are safe for workers and environmentally friendly (Karomah et al., 2021). This supports the goal of the blue economy, which is to maintain the health of marine ecosystems.

The results indicate that productivity does not mediate the relationship between OHS attitudes and the blue economy. Workers with high physical, mental, and social health and a safe and healthy work environment will enhance productivity (Mora et al., 2020) because it reduces the risk of injury, illness, and stress. Healthy workers are more productive and able to work more efficiently, which ultimately can enhance the output of the maritime sector, including sea routes. Higher productivity in the blue economy helps ensure sustainable economic growth without sacrificing the well-being of workers or the environment (Bennett et al., 2022).

A positive OHS attitude encourages companies to adopt technologies that enhance Occupational Health and Safety (Shin et al., 2021) and reduce negative impacts on the marine environment. For example, safer and more fuel-efficient shipping technologies can decrease carbon emissions and marine pollution, aligning with the goals of the blue economy. The findings indicated that productivity mediates the effect of OHS behavior on the blue economy. Operational disruptions can be minimized by effectively implementing OHS, which can also reduce occupational illnesses and accidents. Sustainability is one of the key principles of the blue economy, and these more efficient activities contribute to its promotion (Agustina, 2024). Effective OHS conduct contributes to a reduction in workplace accidents and injuries, which minimizes disruptions and enhances productivity. Employee performance improves when they feel safe and secure, leading to increased productivity (Kaynak et al., 2016). Employees who adopt good OHS practices foster a safe and healthy work environment, positively influencing their productivity and overall quality of life. The social and financial prosperity of communities engaged in the marine economy is another facet of



the blue economy (Taebenu, 2020). Long-term sustainability in blue economy activities is ensured by high productivity, as the maritime sectors rely on a healthy, knowledgeable, and productive workforce to thrive and endure (Bappenas, 2023).

The research results indicate that workers' attitudes significantly influence the achievement of a blue economy through enhanced productivity. A positive attitude towards OHS among workers will lead to the achievement of workplace safety and health, further enhancing productivity and reducing accidents, hazards, and various risks in the workplace. Workers who comply with OHS regulations will work more efficiently and avoid delays caused by safety issues (Saleem & Malik, 2022). Workers with a positive attitude towards workplace safety are more likely to proactively reduce risks, develop healthier habits, and foster a positive work environment. By taking preventive measures, accidents and disruptions can be minimized, leading to increased productivity. Furthermore, the increase in productivity will lead to the realization of a blue economy (International Labour Organization, 2022).

5. Conclusion and Suggestion

The findings indicate that while OHS attitudes shape both OHS behavior and productivity, only productivity mediates the relationship between OHS behavior and the blue economy, but not between OHS attitudes and the blue economy. Thus, fish processors and fishermen, if they adhere to all safety equipment requirements, will positively influence both work productivity and the blue economy. However, its influence will be minimal when examined through the lens of work productivity. The implications of this research highlight the necessity of cooperation between the government, non-governmental organizations, and business groups in order to educate, train, and make resources and information about occupational health and safety more accessible to MSMEs. Additionally, to promote compliance among MSMEs, the efficient monitoring and enforcement of occupational safety standards needs to be enhanced.

This study has several limitations. First, the analysis of the relationship between occupational safety and health (OHS) behavior, productivity, and the blue economy is limited to a direct relationship without considering other potentially influential factors. Second, the study's scope was limited to specific coastal communities, thereby restricting the generalizability of the results. Furthermore, the perspectives of gender and youth were not addressed, and the effectiveness of government policies related to blue economy implementation at the local level has not been empirically evaluated. Based on these limitations, future research is recommended to examine mediating or moderating variables, such as financial literacy, institutional support, and technology, to gain a deeper understanding of the relationship between these factors. The integration of gender and youth perspectives is essential, and evaluative studies of government policies are crucial for generating evidence-based recommendations.

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