

## The Extant of Familiarity in the Maritime Industry about the Sustainable Development Goals

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### ABSTRACT

**Purpose:** This research study aims to identify the degree of awareness, knowledge, and familiarity with Sustainable Development Goals (SDGs) among marine officers as it is a global issue of utmost importance. The study reveals a lack of knowledge, awareness and familiarity with these goals among some.

**Approach/Design/Methodology:** This study uses one technique to analyze the study data statistically which is Chi-Square independence. A questionnaire was used as the main method of data collecting in this investigation. The available sample was 93 seafarers.

**Findings:** The results of the study indicate that the participants in this survey, who have less experience in the field of the maritime industry, do not have sufficient knowledge of the procedures that are implemented through the International Maritime Organization (IMO) related to these goals. The results confirm the importance of integrating curricula related to sustainable development goals into educational curricula in maritime institutions and universities, with a focus on goals that are related to the field of the maritime industry. Furthermore, enhancing knowledge and understanding of IMO policies and conventions related to these objectives may facilitate the ability of individuals to make meaningful contributions to promoting environmental sustainability. The current study represents a significant advance in understanding these goals among seafarers, and it is expected that this will stimulate further inquiries in this area.

### Key-words:

Sustainable Development Goals, Maritime industry, Seafarers, International Maritime Organization  
Maritime institutions, Climate change

## INTRODUCTION

The definition of sustainability is the effective and fair transfer of resources between generations to support socioeconomic activities within a limited ecosystem. (Stoddart et al., 2011) The idea behind sustainable development is to advance humankind while simultaneously maintaining the natural systems that supply the resources civilization needs (Turcea and Ion, 2020).

The definition of sustainable development might vary greatly based on the factors taken into account. Scholars and policy makers have given sustainable development a lot of attention for four primary reasons (Ozili, 2022). Firstly, numerous nations have committed themselves to achieving the aim of sustainable development, which is seen as the ultimate objective of the United Nations' global plan (Linnér and Selin, 2013; Bexell and Jönsson, 2017). Secondly, promoting a sustainable earth for future generations is aided by sustainable development (Weiss, 1992; Emina, 2021). Thirdly, since achieving a sustainable level of development is the goal of all other development goals, sustainable development is regarded as an all-encompassing development goal. Finally, it is anticipated that sustainable development will help everyone's socioeconomic status as well as the environment (Szymańska, 2021).

The international marine sector contributes significantly to global sustainability. Maritime industry may make a primary contribution to Sustainable Development Goal 14 (SDG 14), a dedicated goal to conservation and sustainable use of oceans, seas and marine resource, SDG 13 a dedicated goal to climate change, SDG 9 a dedicated goal to industry, innovation and infrastructure and SDG 7 an affordable and clean energy (Benamara et al., 2019; Yuen et al., 2018a) seafarers continue to lack awareness regarding SDGs.

The aim of this study is, therefore, to address one pivotal research question pertaining to the extent of familiarity with sustainable development goals, particularly in relation to the maritime industry.

Approximately 1.9 million seafarers work around the world to improve mankind's quality of life. The BIMCO/ICS Seafarer Workforce Report 2021 estimated the global supply of seafarers at 1,892,720, up from 1,647,494 in 2015 (Maritime, 2021).

The United Nations (UN) published 169 goals and 17 Sustainable Development Goals (SDGs) in their 2015 publication "Transforming our world: the 2030 agenda for sustainable development" (Wang et al., 2020) environmental and social sustainability. Being one of the key stakeholders, the international maritime industry plays an important role in contributing to global sustainability. By applying the concept of social entrepreneurship (SE). An action plan for people, the environment, and prosperity is included in this agenda. To put this strategy into action, all nations and interested parties should cooperate with one another. The scope and aspirations of this new global agenda are encapsulated in the SDGs and targets. Over the next few years, the goals and targets will spur action in areas that are vital to both the earth and humankind (UN, 2015).

The UN's International Maritime Organization (IMO) has created a number of significant SDG-related laws. For example Annex VI was adopted to Prevention of Air Pollution from Ships of the International Convention for the Prevention of Pollution from Ships (MARPOL) (Lee et al., 2019).

With the use of its regulatory framework, which is influencing global maritime industry trends, the IMO assists Member States in implementing the SDGs. The IMO has begun coordinating its programmers and projects with the SDGs in accordance with its strategic goals and deliverables, emphasizing the connections between the 2030 Agenda for Sustainable Development and the IMO's technical cooperation efforts (IMO, 2019).

This part aims to analyze and review the goals of sustainable development and their relationship to the maritime industry and the response of the IMO to

implement these goals. This is done through previous studies.

Within the 17 SDGs of the UN, energy has been acknowledged as a critical element of sustainable development, defining a sustainability agenda for 2030 and beyond (UN, 2015). Within the SDG framework, it is associated with a dedicated SDG 7, which aims to “ensure access to affordable, reliable, sustainable and modern energy for all”. In its current form, SDG 7 is specified through five targets defined as (7.1) ensuring universal access to affordable, reliable, and modern energy services, (7.2) increasing renewable energy share, (7.3) doubling global rate of energy efficiency improvement, (7.a) enhancing international cooperation on clean energy research and technology, and (7.b) expanding infrastructure and developing technologies (Gebara and Laurent, 2023).

Around the world, there is increasing evidence of the negative effects of climate change, such as rising sea levels, melting glaciers, an increase in wildfires, and altered biodiversity (Hwang et al., 2021). SDG 13 of the 17 Sustainable Development Goals speaks to action on climate change (Doni, 2020). SDG 13 (climate action) aims to “take urgent action to combat climate change and its impacts”. The detailed targets of SDG 13 are: (13.1) strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries; (13.2) integrate climate change measures into national policies, strategies, and planning; and (13.3) improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning (Coscieme et al., 2020; Fraisl et al., 2020).

About 60 thousand merchant ships of various types and sizes roam the world to transport all kinds of goods (Heike, 2021). Regarding this massive industry, its effect on the world economy, and its benefits without affecting the climate, the IMO works to combat climate change in several domains, such as energy efficiency, air pollution, and greenhouse gas (GHG) emissions. The maritime sector and the IMO have a major role to play in achieving SDG 7, regarding energy efficiency in

particular, and SDG 13 on climate change.

Supporting Goal No. 7 and No. 13 was done by adopting Annex 6 of the International Convention for the Prevention of Marine Pollution that covers mandatory technical and operational energy efficiency measures aimed at reducing greenhouse gas emissions from ships.

On March 1, 2020, a further modification to MARPOL 73/78 came into force. The amendment forbids the use and carrying of non-compliant fuel oil for propulsion or operation on board a ship unless the ship is equipped with an exhaust-gas cleaning equipment called a scrubber (IMO, 2020). In addition to the Initial GHG Strategy whose targets include reducing the carbon intensity of international shipping to reduce CO<sub>2</sub> emissions per transport business, as average across international shipping, by at least 40% by 2030, and to continue efforts towards 70% by 2050, compared to 2008, and that total annual greenhouse gas emissions from international shipping must be reduced by at least 50% by 2050 compared to 2008 (Rutherford and Comer, 2018).

Goal No. 9 is one of the SDGs. It is built around the three interconnected pillars of industry, innovation, and infrastructure (Mead, 2017). The main objective of SDG 9 is to provide a methodical and practical means of attaining environmentally sound and socially inclusive sustainable economic development (Mantlana and Maoela, 2020). The maritime industry and the port sector play an important role in its sustainability. SDG 9 most closely corresponds with the marine industry's core business, which is sustainability (Wang et al. 2020). Because they act as entry points for global trade, enable cargo handling operations, and provide value-added services including storage, packing, and land transportation coordination, ports are essential pieces of infrastructure for economic growth. Ports are an important part of the marine sector and contribute significantly to international trade and commerce (Hossain et al., 2021).

Port operations are crucial to the development of developing nations' economies and employment markets (Azarkamand et al., 2020). Because the activities in this sector are varied and complicated, these operations also have a negative impact on the environment. The aforementioned effects encompass noise pollution, soil contamination, trash generation, and gas emissions that lead to atmospheric pollution, which may have detrimental effects on marine ecosystems and the welfare of nearby residents (Diniz et al., 2023).

The IMO is a UN agency that oversees maritime activities. One aspect of maritime activities is port operations, and ports that use less energy and generate fewer emissions are referred to as green ports, or sustainable ports, which gives environmental sustainability a priority in their development and operations (KSIĄŻKIEWICZ, 2020).

The following are the green ports' primary policies: Green ports employ hybrid or electric machinery to cut pollutants. This covers the use of hybrid cars, electric tractors, and cranes for port transportation. This lessens noise pollution inside the port in addition to reducing emissions. The conservation of water and energy is a key component of green ports. This can be accomplished by using energy-efficient devices and by using renewable energy sources like solar or wind power. Green ports encourage waste reduction and recycling as well. This can involve appropriately disposing of hazardous waste as well as recycling materials like paper, plastic, and metal (Inal, 2023).

One of the SDGs is number 14 or "Life below Water," which emphasizes ocean stewardship and acknowledges the oceans' vital role in supporting life on Earth. Eighty percent of all life forms are found in the oceans, which also generate more than fifty percent of the oxygen on Earth and are essential for climate regulation (European Parliamentary Research Service, 2022).

When cargo holds are light, ships load water for stability and balance. However, when the water is off-loaded, invasive species can spread through the water

and contaminate it (Lancaster et al., 2021).

The GloBallast Programmer was developed by the IMO to track and manage the issue of invasive species. In order to restrict the spread of potentially invasive species, international laws were introduced in 2004 with the adoption of the International Convention for the Restriction and Management of Ships' Ballast Water and Sediments (BWMC) (IMO, 2017). It is one of the IMO's initiatives to fulfil Goal No. 14.

## METHODOLOGY

In order to improve the awareness, knowledge and abilities of marine officers in the shipping business concerning the importance of sustainable development in the field of maritime industry, the current study uses a questionnaire as part of its methodology. This methodology aligns with earlier studies carried out by Omisore et al. (2017), Guan et al. (2019) and Smaniotto et al. (2022).

## MATERIAL AND METHODS OF ANALYSIS

The research problem, which focused on the awareness of seafarers operating on board commercial ships of sustainable development goals related to the maritime industry, was chosen to be investigated using the methodology used in this study. The methodological approach that has been adopted can be considered a scientific and systematic way to approach the research problem. This strategy makes it easier to integrate the research findings into the larger theoretical and methodological framework of the subject (Kothari, 2004).

The qualities of the research questions and the topic being studied are the main factors that influence the choice of research methodology. As suggested by Denzin and Lincoln (2005), the current study has used a quantitative analysis technique, which has been judged as suitable for examining relationships between variables and producing numerical data that can be statistically analyzed. It is crucial to recognize that this research aims to investigate a certain facet of

the phenomenon rather than providing an exhaustive truth about the subject. The goal is to add to the body of knowledge already available on the topic.

### Questionnaires Design

The research design of the study was guided by the primary objective to conduct a descriptive analysis of the correlation between a single independent variable (maritime experience for seafarers) and three dependent variables (knowledge of sustainable development goals, awareness of sustainable development goals related to the maritime industry and familiarity with IMO response in relation to each goal) A questionnaire was used as the main method of data collecting in this investigation.

The questionnaire underwent multiple revisions to ensure it adhered to the guidelines of a pilot study, reviewed data and completed options, and used proper vocabulary and language. To guarantee the security and precision of the language and scientific construction of the survey questions, as well as the degree to which the study's problem and its goals have been addressed in the questionnaire. To enhance the study tool and the application of the five-level Likert scale, more phrases were added and some were reformulated in addition to the review by industry experts.

The questionnaires were sent by the link on Google Drive sent directly to some officers and engineers by social media.

### Sampling Procedure

Using stratified sampling, the researchers were able to choose seafarers who belonged to the Arab Academy for Science, Technology, and Maritime Transport (AASTMT) and were of various ranks (marine officers and engineers) who have sailing experience on different types of ships.

By using this specific sampling technique, all the categories that are present in the population were represented proportionately in the sample, which increased the results' overall validity and

generalizability.

(Abutabenjeh and Jaradat, 2018). All returned questionnaires were reviewed for stray signs and other damages and valid questionnaires. Correct questionnaires were received, and then the data were entered into an EXCEL sheet.

### Data Collection

A standardized questionnaire was employed to gather the data. The previously described tool was specifically designed to collect information about the demographic characteristics of the respondents and their awareness of sustainable development objectives.

Any information obtained from the participants regarding this study will remain confidential and will not be disclosed except with the permission of the participant or as required by law.

### Research Limitations

Any scientific research has limitations that can prevent generalization of the results. This research faced a limitation regarding the place as this research targeted the seafarers (officers and engineers) in Egypt. The researcher suggests conducting future studies on different nationalities to see whether the same results will be reached.

### Data Analysis

The data that were gathered underwent analysis through the utilization of the Statistical Package for the Social Sciences (SPSS), specifically version 27. To look into the relationship between the independent and dependent variables, the study used a Chi-Square test of independence. Using a set of instructions, the Chi-Square test was carried out. These instructions included calculating the expected and observed frequencies, deducting the expected value from each observed value, squaring the difference, dividing the squares obtained for each cell by the expected value for that cell, adding up all the values, and finally figuring out the degrees of freedom for the contingency table.



To ascertain whether the computed  $\chi^2$  exceeded the critical value given in the table, a comparison with a  $\chi^2$  table was performed following the computation of the degrees of freedom and the Chi-Square statistic. The observed result was considered statistically significant at the designated level when the computed  $\chi^2$  value was greater than the critical value.

### Variables of the Study

Examining the relationship between one predictor variable and three responder variables was the aim of this study. Figure 1 outlines the variables that are being examined:

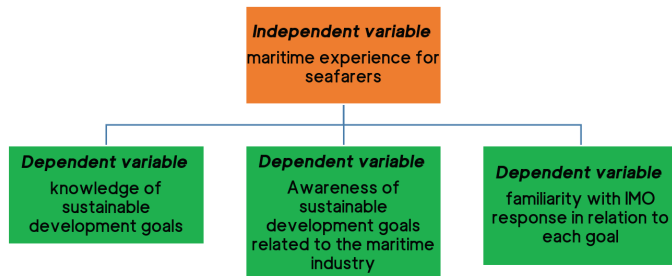


Fig. 1. Research variables

## RESULTS

### Research Sample

As shown in Figure 2, Along with a wide range of years of experience, a significant portion of participants held the rank of first or second officer. Both managerial and

operational viewpoints are included in data analysis, which improves the comprehensiveness and accuracy of the findings.

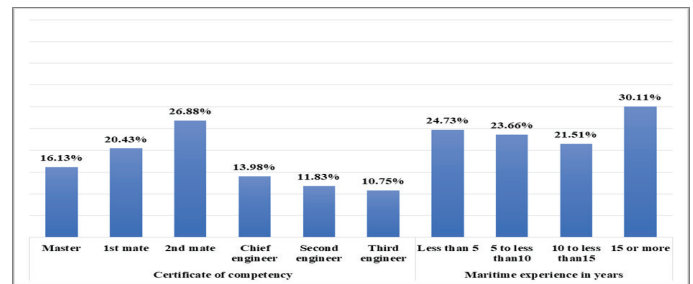


Fig. 2. Research sample

## ANALYSIS OF QUESTIONNAIRE RESULTS

In order to determine the correlation between the dependent variables linked to understanding of SDGs and the independent variable of seafarers' maritime experience, an analysis of the questionnaire responses is presented in this section. The Chi-square test of independence is used in the study.

### Examining Relationships between Variables

**Relationship between maritime experience and understanding the aims of sustainable development goals.** Table 1 shows results of study sample responses about understanding the aims of sustainable development goals according to the maritime experience:

Maritime experience in years Not understanding at all		How well do you understand the aims of sustainable development goals?				Total
		Merely understand	Understand	Fully understand		
Less than 5	Count	13	7	3	0	23
	%	56.52%	30.43%	13.04%	0.00%	100.00%
5 to less than10	Count	5	12	5	0	22
	%	22.73%	54.55%	22.73%	0.00%	100.00%
10 to less than15	Count	4	10	5	1	20
	%	20.00%	50.00%	25.00%	5.00%	100.00%
15 or more	Count	3	5	9	11	28
	%	10.71%	17.86%	32.14%	39.29%	100.00%
Total	Count	25	34	22	12	93
	%	26.88%	36.56%	23.66%	12.90%	100.00%
Chi-Square		40.43				
Sig.		0.00				

The results of the chi-square test in Table 1 indicate that there are significant differences at the level of (0.01) in the distribution of the sample responses about understanding the aims of sustainable development goals according to the maritime experience.

Those with the highest years of experience were the ones who understood the aims of sustainable development goals, these results indicate a lack of

knowledge of these goals in general among a number of recent graduate participants.

**Relationship between maritime experience and the main sources of information on sustainable development goals.** Table 2 shows results of study sample responses about the main sources of information on sustainable development goals according to the maritime experience:

Maritime experience in years IMO		What are the main sources of information on sustainable development goals?					Total
		Social media	Newspapers	Lectures	Other		
Less than 5	Count	2	21	1	1	10	23
	%	8.70%	91.30%	4.35%	4.35%	43.48%	100.00%
5 to less than10	Count	2	19	2	1	10	22
	%	9.09%	86.36%	9.09%	4.55%	45.45%	100.00%
10 to less than15	Count	2	18	0	1	14	20
	%	10.00%	90.00%	0.00%	5.00%	70.00%	100.00%
15 or more	Count	16	14	0	1	6	28
	%	57.14%	50.00%	0.00%	3.57%	21.43%	100.00%
Total	Count	22	72	3	4	40	93
	%	23.66%	77.42%	3.23%	4.30%	43.01%	100.00%

The results in Table 2 indicate that the most experienced have the greatest reliance for their knowledge of these goals through the international maritime organization, which can be explained by the lack of knowledge of what the international maritime organization provides among the less experienced. This is consistent with the results reached by a study that showed that there is relationship between years of experience and

source of information.

**Relationship between maritime experience and understanding the current situation for each goal related to the maritime industry.** Table 3 shows results of study sample responses about understanding the current situation for each goal related to the maritime industry according to the maritime experience:

Maritime experience in years Not understanding at all		To what extent do you understand the current situation for each goal related to the maritime industry?				Total
		Merely understand	Understand	Fully understand		
Less than 5	Count	13	7	3	0	23
	%	56.52%	30.43%	13.04%	0.00%	100.00%
5 to less than10	Count	2	14	6	0	22
	%	9.09%	63.64%	27.27%	0.00%	100.00%
10 to less than15	Count	8	6	5	1	20
	%	40.00%	30.00%	25.00%	5.00%	100.00%

Maritime experience in years Not understanding at all		To what extent do you understand the current situation for each goal related to the maritime industry?				Total
		Merely understand	Understand	Fully understand		
15 or more	Count	1	6	8	13	28
	%	3.57%	21.43%	28.57%	46.43%	100.00%
Total	Count	24	33	22	14	93
	%	25.81%	35.48%	23.66%	15.05%	100.00%
Chi-Square		52.47				
Sig.		0.00				

The results of the Chi-square test in Table 3 indicate that there are significant differences at the level of (0.01) in the distribution of the sample responses about understanding the current situation for each goal related to the maritime industry according to the maritime experience.

Those with the highest years of experience were the ones who understood the current situation for each goal related to the maritime industry, these results

indicate weak awareness of the goals related to the field of the maritime transport industry among a group of less experienced participants.

**The relationship between maritime experience and familiarity with the IMO's support for sustainable development goals.** Table 4 shows results of study sample responses about the IMO supporting the goals of sustainable development according to the maritime experience:

Maritime experience in years Strongly disagree		The International Maritime Organization supports the goals of sustainable development.					Total
		Somewhat disagree	Neutral	Somewhat agree	Strongly agree		
Less than 5	Count	8	7	4	3	1	23
	%	34.78%	30.43%	17.39%	13.04%	4.35%	100.00%
5 to less than 10	Count	2	5	9	6	0	22
	%	9.09%	22.73%	40.91%	27.27%	0.00%	100.00%
10 to less than 15	Count	1	8	7	3	1	20
	%	5.00%	40.00%	35.00%	15.00%	5.00%	100.00%
15 or more	Count	0	4	6	6	12	28
	%	0.00%	14.29%	21.43%	21.43%	42.86%	100.00%
Total	Count	11	24	26	18	14	93
	%	11.83%	25.81%	27.96%	19.35%	15.05%	100.00%
Chi-Square		43.01					
Sig.		0.00					

The results of the Chi-square test in Table 4 indicate that there are significant differences at the level of (0.01) in the distribution of the sample responses about the IMO supporting the goals of sustainable development according to maritime experience.

Those with the highest years of experience were the most likely to agree on this question, these results indicate a lack of familiarity with the efforts undertaken through the IMO among a number of participants in this questionnaire with less experience.



The relationship between maritime experience and familiarity with IMO support for Goal No. 9. Table 5 shows the results of the study sample responses about response from the IMO regarding goal No. 9 on industry, innovation and infrastructure according to the maritime experience.

Maritime experience in years Strongly disagree		There is a response from the International Maritime Organization regarding Goal No. 9 on industry, innovation and infrastructure					Total
		Somewhat disagree	Neutral	Somewhat agree	Strongly agree		
Less than 5	Count	7	8	4	4	0	23
	%	30.43%	34.78%	17.39%	17.39%	0.00%	100.00%
5 to less than10	Count	5	7	7	3	0	22
	%	22.73%	31.82%	31.82%	13.64%	0.00%	100.00%
10 to less than15	Count	2	6	8	3	1	20
	%	10.00%	30.00%	40.00%	15.00%	5.00%	100.00%
15 or more	Count	0	4	7	6	11	28
	%	0.00%	14.29%	25.00%	21.43%	39.29%	100.00%
Total	Count	14	25	26	16	12	93
	%	15.05%	26.88%	27.96%	17.20%	12.90%	100.00%
Chi-Square		36.04					
Sig.		0.00					

The results of the Chi-square test in Table 5 indicate that there are significant differences at the level of (0.01) in the distribution of the sample responses about response from the IMO regarding goal No. 9 on industry, innovation and infrastructure according to the maritime experience.

Those with the highest years of experience were the most likely to agree on this question, these results

indicate a lack of familiarity with the concrete efforts undertaken by the IMO among a number of recent graduate participants.

The relationship between maritime experience and familiarity with IMO support for Goal No. 13. Table 6 shows the results of study sample responses about response from the IMO regarding goal No. 13 on climate action according to maritime experience.

Maritime experience in years Strongly disagree		There is a response from the International Maritime Organization regarding Goal No. 13 on climate action					Total
		Somewhat disagree	Neutral	Somewhat agree	Strongly agree		
Less than 5	Count	7	7	5	3	1	23
	%	30.43%	30.43%	21.74%	13.04%	4.35%	100.00%
5 to less than10	Count	3	3	10	6	0	22
	%	13.64%	13.64%	45.45%	27.27%	0.00%	100.00%
10 to less than15	Count	1	6	6	4	3	20
	%	5.00%	30.00%	30.00%	20.00%	15.00%	100.00%
15 or more	Count	0	1	6	7	14	28
	%	0.00%	3.57%	21.43%	25.00%	50.00%	100.00%

Maritime experience in years Strongly disagree		There is a response from the International Maritime Organization regarding Goal No. 13 on climate action					Total
		Somewhat disagree	Neutral	Somewhat agree	Strongly agree		
Total	Count	11	17	27	20	18	93
	%	11.83%	18.28%	29.03%	21.51%	19.35%	100.00%
Chi-Square		42.86					
Sig.		0.00					

The results of the Chi-square test in Table 6 indicate that there are significant differences at the level of (0.01) in the distribution of the sample responses about response from the IMO regarding goal No. 13 on climate action according to the maritime experience.

Those with the highest years of experience were the most likely to agree with this question, and these results indicate that although climate change is one of the environmental challenges most frequently discussed

at both national and international levels, there is still a group of people who are less experienced and are not familiar with this topic or IMO procedures.

**The relationship between maritime experience and familiarity with IMO support for Goal No. 14.** Table 7 shows results of study sample responses about response from the IMO regarding goal No. 14 on life below water according to the maritime experience.

Maritime experience in years Strongly disagree		There is a response from the International Maritime Organization regarding Goal No. 14 on life below water					Total
		Somewhat dis-agree	Neutral	Somewhat agree	Strongly agree		
Less than 5	Count	8	7	5	3	0	23
	%	34.78%	30.43%	21.74%	13.04%	0.00%	100.00%
5 to less than10	Count	4	6	10	2	0	22
	%	18.18%	27.27%	45.45%	9.09%	0.00%	100.00%
10 to less than15	Count	3	6	6	4	1	20
	%	15.00%	30.00%	30.00%	20.00%	5.00%	100.00%
15 or more	Count	0	4	5	7	12	28
	%	0.00%	14.29%	17.86%	25.00%	42.86%	100.00%
Total	Count	15	23	26	16	13	93
	%	16.13%	24.73%	27.96%	17.20%	13.98%	100.00%
Chi-Square		41.45					
Sig.		0.00					

The results of the Chi-square test in Table 7 indicate that there are significant differences at the level of (0.01) in the distribution of the sample responses about response from the IMO regarding goal No. 14 on life below water according to the maritime experience.

Those with the highest years of experience were the most likely to agree on this question, and these results indicate that the participants in this questionnaire, who have less experience in the field of the maritime transport industry, do not have sufficient knowledge of the procedures implemented through the IMO related to this goal.

## DISCUSSION

The main research question we posed is whether seafarers are aware of and have sufficient knowledge about the SDGs after analyzing the results, it can be concluded that, as in other similar studies but in other areas such as Omisore et al., (2017), Guan et al., (2019) and Smaniotto et al., (2022), raising awareness about the SDGs is still a major task.

The shipping sector is widely seen as a major contributor to the achievement of the SDGs, and as such, it plays a crucial role in achieving the goals. This study looked at the relationship between a set of independent variables (marine experience) and dependent variables (those working in the maritime industry's understanding, attitudes, and behavior regarding the SDGs).

One point that has to be emphasized is the significant correlation that exists between sailors' years of experience and their awareness of these goals, with the knowledge of these goals increasing with experience.

The significance of the increasing attention to educating marine officers in the shipping sector on the SDGs and the IMO's plans pertaining to these goals should be considered by decision makers in shipping businesses.

In order to familiarize maritime students with the objectives of sustainable development, the study also suggests that colleges and institutions of marine education create new curricula. In addition to other policies, agreements and strategies adopted by governmental and non-governmental organizations.

The aforementioned suggestions aim to bridge acknowledged gaps in knowledge and cultivate an atmosphere that supports proactive conduct and

policy-making that acknowledges the pressing need to accomplish the SDGs.

One of the main limitations of the study is that the research faced a limitation regarding the place as this research targeted the seafarers (officers and engineers) in Egypt. As a result, it would be ideal to increase the sample size to include individuals of other nationalities.

## CONCLUSION AND RECOMMENDATIONS

The findings of this study can serve as a foundation for evaluating the level of awareness that exists today about the SDGs. Furthermore, the understandings gathered from the study at hand may help develop a better information-dissemination plan that will raise seafarers' awareness of and attitudes towards those objectives. The study also intends to stimulate more scientific research into the perceptions and comprehension of the SDGs among mariners in the future.

The maritime education sector must now actively contribute to sustainable development goals and use them as a springboard for their own growth and long-term objectives.

In order to give sailors a thorough understanding of all facets of sustainable development and equip them to spearhead sustainability initiatives in their future careers, this is accomplished by incorporating the goals of sustainable development into the curricula of colleges and maritime institutes, whether through the undergraduate or postgraduate stages.

Since this study was conducted on Egyptians, the researcher suggests conducting future studies on other nationalities from different maritime colleges and institutes to see whether the same results will be reached.

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