

# Customer Perception and Economic Analysis of Sustainable Maritime Supply Chain Initiatives in Dar es Salaam.

Chesco Fulgence Komba

Department of Science and Management  
Dar es Salaam Maritime Institute (DMI)  
Dar es Salaam, Tanzania

[joja2622@gmail.com](mailto:joja2622@gmail.com), [chesco.komba@dmi.ac.tz](mailto:chesco.komba@dmi.ac.tz)

**Abstract:** *The maritime sector plays an important role in global trade and economic development, yet faces increasing pressure to adopt sustainable practices to mitigate environmental impacts and meet evolving customer expectations. This study examined the perceptions of customers and conducted an economic analysis of sustainable maritime supply chain initiatives in Dar es Salaam, Tanzania. Using a mixed-methods approach, including surveys and economic modeling, this research investigated customer awareness, preferences, and willingness to pay premiums for sustainable maritime services. It also assessed the economic implications of adopting green technologies and practices within the sector. Findings from this study indicated a growing awareness and positive reception among customers towards sustainable initiatives, driven by environmental consciousness and expectations of corporate responsibility. However, significant gaps existed between perceived sustainability and actual implementation by maritime businesses, highlighting challenges in transparency and communication. Economic analysis revealed potential cost savings from efficiency gains and environmental benefits, yet also underlined the initial investment required for technology adoption. In the future, research must be carried out in investigating the specific barriers that hinder the widespread adoption of sustainable practices among maritime businesses in Dar es Salaam.*

**Keywords— Sustainable maritime supply chain, Customer Perception, Economic Analysis, Environmental Sustainability, Sustainability Initiatives.**

## 1. INTRODUCTION

The maritime industry plays a pivotal role in global trade and economic development, with ports serving as critical nodes in the supply chain network. In recent years, there has been an increasing emphasis on sustainability within maritime supply chains, driven by environmental concerns, regulatory pressures, and the need for long-term economic viability. The port of Dar es Salaam, one of the major ports in East Africa, is no exception. As a key hub for maritime trade, the adoption of sustainable supply chain initiatives in Dar es Salaam has significant implications for both the local and regional economy. Understanding customer perception is fundamental as it stimulates the success and acceptance of sustainable practices within the maritime supply chain. Customers, including shipping companies, importers, exporters, and other stakeholders, play a vibrant role in driving demand for sustainable solutions. In addition to customer perception, an economic analysis of sustainable maritime supply chain initiatives is important to assess their feasibility and long-term benefits.

The maritime industry, particularly ports, is increasingly focusing on sustainability initiatives to reduce environmental impact, enhance operational efficiency, and foster economic growth [1-5]. However, there is a need for a thorough economic analysis and understanding of customer perceptions to evaluate the effectiveness and viability of these initiatives [1]. The European seaports have made more progress in adopting sustainability initiatives compared to

North American and Asia Pacific seaports [1]. The drivers of corporate sustainability in maritime ports include competitive pressure, external effects, and stakeholder perspectives [2]. Sustainable logistics and supply chain management are crucial for creating value and ensuring growth in the port and maritime industry [6]. Maritime green supply chain management practices can indirectly facilitate sustainable economic, environmental, operational, and social performance [7].

The significance of maritime transport in East Africa's international trade is underlined by the region's growing economies and the need for efficient supply chain management [8, 9]. However, this growth has led to challenges such as port congestion and environmental pollution [9]. To address these issues, there is a growing focus on sustainable maritime supply chain initiatives, including the integration of the Extended Gateway Concept and the development of Maritime Green Supply Chain Management [9, 10]. These initiatives aim to reduce environmental impacts, enhance operational efficiencies, and promote economic development [8]. Understanding the dynamics of these initiatives, particularly in major ports such as Dar es Salaam, is crucial for evaluating their success and future potential [8].

The maritime sector's role in fostering environmental sustainability and economic prosperity is emphasized by a range of initiatives. [11], emphasized the need for a supportive policy environment and the role of the International Maritime Organisation in addressing environmental challenges. [12], highlighted the urgency of

sustainable shipping practices in mitigating the sector's ecological footprint. [13], identifies the Sustainable Development Goals (SDGs) most relevant to the maritime industry, emphasizing the need for practical applications to effectively contribute to these goals. [14], proposed a framework for incorporating sustainability dimensions into maritime policy-making, emphasizing the importance of local governance structures and strategic planning.

The port of Dar es Salaam has implemented various sustainable maritime supply chain initiatives, but their effectiveness requires a deep understanding of customer perceptions and economic implications [1]. However, the service quality of the port is perceived as poor, with reliability being a significant factor in customer dissatisfaction [15]. In the broader context of seaports, the role of seaports in green supply chain management is essential, with a focus on green shipping, port development, inland logistics, circular economy, and knowledge development [16]. To improve port sustainability, a coordinated approach involving various stakeholders is essential [17].

Customer perception is a key factor in the success of sustainable practices in the maritime industry, with various stakeholders exhibiting diverse levels of awareness and attitudes toward sustainability [18]. This perception influences the adoption of sustainable business practices, which in turn enhances environmental and business performance [19]. The concept of Corporate Social Responsibility (CSR) is also evolving in the industry, further emphasizing the importance of customer perception [20]. In the context of sustainable supply chain management, customer perception and participation play crucial roles, impacting self-brand connection, trust, purchase intention, and willingness to pay a price premium [21].

Studies in East Africa, particularly in Dar es Salaam, have highlighted the importance of understanding the perceptions of stakeholders in the implementation of sustainable maritime supply chain practices. [22] and [23], both emphasize the need for improved integration and management in small and medium-sized enterprises (SMEs), with [23] specifically identifying low knowledge, ineffective management, unsophisticated technologies, and weak supplier relationships as key barriers. [24], further highlights the influence of employees' perceptions on sustainable procurement practices, with compatibility and complexity playing significant roles. [7], provides a broader perspective, demonstrating the positive impact of maritime green supply chain management on sustainable business performance. These studies jointly stress the need for a comprehensive understanding of stakeholder perceptions and the potential benefits of sustainable practices in the maritime supply chain.

Most of the literatures have highlighted the economic benefits of sustainable maritime supply chain initiatives for example, [25] argues that such initiatives can increase sales, decrease costs, reduce financial risk, and ultimately lead to higher stock valuations. [1], further supports this, finding that European seaports, which have

made more progress in sustainability, have seen positive operational trends. [7] and [5], both emphasize the importance of sustainable practices in the maritime industry, with [7], finding that green supply chain management can indirectly improve economic, environmental, operational, and social performance, and [5], highlighting the need for accountability and transparency in addressing sustainability concerns. These studies together underline the financial viability and broader economic impact of sustainable maritime supply chain initiatives.

Likewise, a series of studies have highlighted the potential of green technologies in reducing the environmental footprint of ports and fostering sustainable growth [26]. These technologies, including renewable energy sources, have been found to enhance operational efficiencies and reduce costs, ultimately contributing to sustainable business performance [7]. However, the adoption of these technologies is not without its challenges, including initial investment hurdles and complex regulations [26]. Despite these obstacles, the role of seaports in green supply chain management has been emphasized, with a focus on actions such as green shipping and knowledge development [16]. The potential of renewable energy technologies in green ports has also been explored, with a call for their integration into port facilities [27].

In the case of Tanzania, many studies have explored the perceptions and practices of supply chain management like [22], found that SMEs in the country are less likely to prioritize supply chain management, while [28], identified key issues affecting supply chain performance in manufacturing companies. [29], highlighted the valuable knowledge possessed by local fishers, suggesting that their perspectives should be integrated into fisheries management initiatives. [30], demonstrated the positive impact of supply chain innovative practices on customer satisfaction in manufacturing SMEs. In general, most of these studies stress the importance of understanding and integrating diverse perspectives in the development of sustainable maritime supply chain initiatives in Tanzania.

Global trade depends heavily on the maritime sector, especially in East Africa, with the port of Dar es Salaam acting as an important center. Even though efforts to improve operational efficiency and lessen environmental effect are increasingly being implemented in the maritime supply chain, little is known about how customers see these programs and their financial ramifications. The success and broad adoption of these sustainable practices depend heavily on customer perception; if stakeholders, such as shipping firms, logistics providers, and end users, do not see their benefits or encounter significant obstacles, the initiatives may not have the desired effect. Furthermore, even while sustainable practices have the potential to produce long-term advantages like reduced costs and improved environmental results, they also come with a high upfront cost and possible disruptions to business operations. To evaluate these expenses and benefits and ascertain the feasibility and long-term sustainability of these initiatives, a thorough economic study was necessary. In order to close this knowledge gap, this study looks at how

customers view sustainable maritime supply chain initiatives in Dar es Salaam and conducts a thorough economic analysis of them. The results will give stakeholders, industry leaders, and policymakers important information that will help increase the uptake and efficacy of these practices.

The main objective of this study was to comprehensively evaluate customer perceptions and conduct an economic analysis of sustainable maritime supply chain initiatives in Dar es Salaam, with the aim of providing strategic insights and recommendations to enhance the adoption and effectiveness of these initiatives in promoting environmental sustainability and economic efficiency within the maritime sector.

## 2. METHODOLOGY

With a sample size of 150 respondents, the study used a mixed-methods approach to combine quantitative and qualitative research techniques in order to fully assess customer views and carry out an economic analysis of sustainable maritime supply chain efforts in Dar es Salaam. Structured surveys were given to a wide range of stakeholders, including end users, logistics providers, and shipping firms, as part of the quantitative component. Variables including awareness, attitudes, perceived benefits, and difficulties related to sustainable activities were measured in these studies. To find patterns and relationships in the data, statistical techniques such as descriptive statistics was applied. This gave a general picture of stakeholder perceptions and emphasized important variables affecting their views on sustainability.

In-depth interviews and focus groups with important stakeholders were conducted as part of the qualitative component to acquire a deeper understanding of the subtleties of their perspectives and experiences. These techniques made it possible to investigate intricate problems that quantitative measurements were unable to adequately address, like particular adoption hurdles and in-depth economic concerns. Thematic analysis was used to look for recurring themes and insights in the qualitative data. By combining these approaches, a thorough grasp of the economic and perceptual aspects of Dar es Salaam's sustainable maritime supply chain activities was achieved, guaranteeing reliable and useful results.

## 3. RESULTS AND DISCUSSION

In this part the results and discussion of the findings are presented, they begin with simple demographic information of 150 respondents followed by main indicating factors such in the form of Customer Perception of Sustainable Maritime Supply Chain and Economic Analysis of Sustainable Practices.

### 2.1 Demographic information of respondents

This section presents general information of respondents such as age, gender of the respondents, education level and

occupation of the respondents approached with interview and questionnaires.

#### 2.1.1 Age of the respondents

The distribution by age group revealed perceptions and priorities about sustainable maritime supply chain projects among various generations. Table 1 indicates that the study was primarily focused on adults and young adults because the proportion of respondents under the age of 18 was very small (18 respondents, or 12% of the total sample). The primary factors influencing their attitudes and preferences with respect to sustainable practices in the maritime industry were parental or educational assistance. Their answers show that early attitudes and awareness of sustainability are crucial for long-term behavior and participation.

The age group (18–25) has 35 respondents, making up 23.33% of all respondents. They make up a sizable portion of the study sample and are frequently among the first to adopt new trends and technology, such as sustainability programs. Their answers might indicate that they are eager to interact with environmentally friendly maritime services and that they have a keen interest in sustainable practices. When selecting maritime services, they may give precedence to environmental considerations and long-term effects, so driving market trends towards sustainability.

With 65 respondents, the age group 26–35 accounts for 43.33% of all respondents, making it the largest category. This suggests that a mature adult population is actively engaged in the study. Professionals and decision-makers in the maritime industry or similar fields are probably in this age bracket. Their choices and views on sustainability could have a big impact on how businesses operate and how policies are made. Their answers may emphasize the financial benefits of implementing sustainable practices as well as the advantages they see in the marketplace over competitors.

Twenty respondents or 13.33% of total respondents, are between the ages of 36 and 45. These respondents usually contribute a variety of viewpoints from their professional experiences and responsibilities. Their answers may have taken into account practicality and cost-effectiveness while putting sustainable efforts into the maritime supply chain. They usually give priority to the financial gains and operational effectiveness that come with sustainable practices, which could have an impact on industry investments and strategic choices. Those above 45 years old comprise 8.00% of respondents, indicating a smaller representation of older adults who may have different priorities and perspectives on sustainable practices in the maritime sector.

Table 1: Showing age distribution of the respondents

Variable	Attribute	Frequency (n=150)	Frequency (100%)
Age	Below 18	18	12
	18 -25	35	23.34
	26 – 35	65	43.33

	36 – 45	20	13.33
	Above 45	12	8
	<b>Total</b>	<b>150</b>	<b>100</b>

The study's age distribution analysis emphasizes how crucial it is to take age-related variations in attitudes and actions toward sustainable maritime supply chain efforts into account. Developing tactics that are specific to different age groups can improve the industry's adoption and efficacy of sustainability initiatives.

### 2.1.2 Gender of the respondents

Figure 1, shows the gender of the respondents and as shown the findings reveal intriguing insights into how gender influences perceptions and attitudes towards sustainable maritime supply chain initiatives in Dar es Salaam. A notable majority of male respondents (90), comprising 60% of the total respondents, expressed strong support for eco-friendly practices within the maritime industry. According to one male participant:

*"...I believe it's crucial for maritime companies to adopt sustainable practices. It not only benefits the environment but also enhances the company's reputation and attracts environmentally mindful customers..."*

This statement reflects a prevalent view among male respondents who recognize the dual benefits of sustainability in terms of environmental impact and market competitiveness.

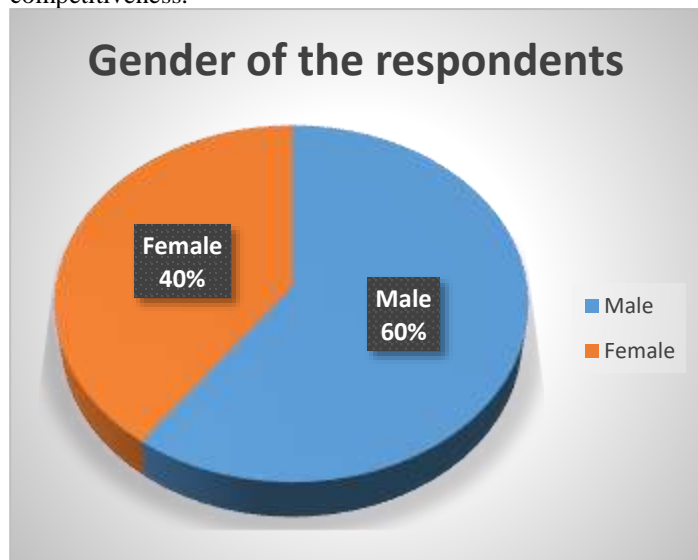


Figure 1: Showing the gender of respondents

However, female respondents (60), who made up 40% of the entire sample, also showed a strong interest in sustainability, however they tended to place more emphasis on its social and ethical dimensions.

*"...I prefer companies that prioritize sustainability because it shows they care about future generations and the community at large..."*, emphasized a female participant.

This viewpoint highlights the significance of corporate social responsibility by highlighting the wider societal consequences of sustainable practices in the maritime industry.

Overall, the survey indicates that although people of both genders support sustainable projects, there may be a small difference in their priorities and reasons. While female respondents frequently place more emphasis on ethical considerations and communal consequences, men respondents are more likely to highlight the economic rewards and competitive advantage of sustainability. These results highlight how crucial gender-sensitive tactics are for encouraging and putting sustainable practices into practice in the marine sector. Stakeholders can promote wider engagement and optimize the benefits of sustainability initiatives in Dar es Salaam's maritime supply chain by addressing a variety of viewpoints and motives.

### 2.1.3 Education level of respondents

Respondents' opinions on the significance and application of sustainable practices in the maritime sector were diverse and varied depending on their educational background. As shown in figure 2, a significant portion of the respondents (80), comprising 53.33%, possessed a diploma/degree qualification, demonstrating a strong understanding of the complexities and benefits associated with sustainable practices. One participant with a diploma stated:

*"...Sustainable practices in the maritime industry are crucial not only for environmental preservation but also for reducing long-term operational costs. It's a win-win situation for both business and the planet..."*

Similarly, respondents with secondary education backgrounds (40), accounting for 26.67% of the sample, highlighted their appreciation for companies that prioritize sustainability. A respondent with secondary education mentioned:

*"...I support companies that are committed to sustainability because it shows they are responsible and forward-thinking. It's important for them to consider the environment in their operations..."*

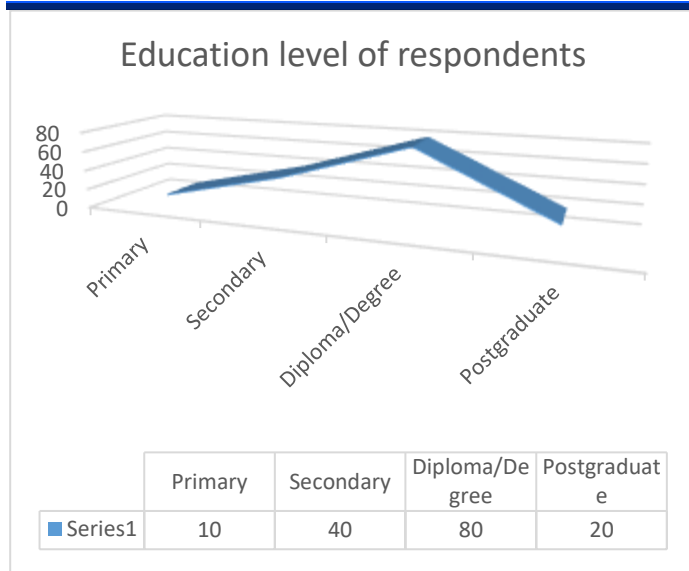


Figure 2: Showing the education level of respondents

Furthermore, respondents with postgraduate qualifications (20), representing 13.33% of total respondents, often emphasized the strategic advantages of sustainability.

"...As a postgraduate student, I believe sustainable practices can enhance a company's reputation and attract investors who value ethical business practices..." noted one participant.

This perspective highlights the role of advanced education in recognizing the broader implications of sustainability in corporate strategy and stakeholder engagement.

Contrariwise, respondents (10) with primary education backgrounds, making up 6.67% of the sample, also recognized the importance of sustainability but often highlighted community and health impacts. A respondent with primary education said:

"...I support eco-friendly practices because they benefit our health and the environment. It's essential for companies to consider these factors in their operations..."

The study concludes by showing how educational backgrounds have a substantial impact on people's attitudes and perceptions of sustainable maritime supply chain activities. Although respondents with varying levels of education acknowledge the significance of sustainability, their reasons for doing so and their comprehension of it differ. While respondents in secondary and primary education frequently highlight ethical and community-centric factors, diploma/degree holders and postgraduates typically concentrate on the strategic and economic benefits of sustainability. These results highlight the necessity of inclusive methods and focused education efforts to successfully promote and execute sustainable practices in Dar es Salaam's maritime sector.

### 2.1.4 Occupation of the respondents

The study provides informative insights into how occupational backgrounds influence perceptions and attitudes

towards sustainable maritime supply chain initiatives in Dar es Salaam. Respondents from diverse occupational backgrounds expressed varied perspectives on the adoption and importance of sustainability practices within the maritime industry.

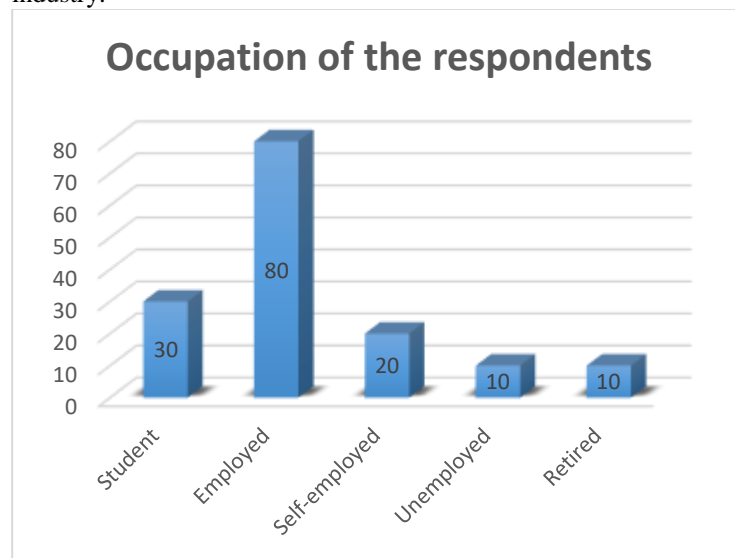


Figure 3: Showing the occupation of the respondents

A substantial number of respondents (80), representing 53.33%, were employed individuals who recognized the multifaceted benefits of sustainability. One employed participant stated:

"...In my line of work, I see firsthand how sustainable practices can streamline operations and reduce costs. It's not just about compliance but also about staying competitive in a global market that values sustainability..."

Students, comprising 20% of the total respondents, demonstrated a strong interest in sustainability as future stakeholders in the maritime sector. A student respondent highlighted:

"...As a student, I believe it's crucial for companies to adopt sustainable practices because it sets the foundation for a greener future. It's about responsibility towards the environment and future generations..."

This view emphasizes the role of education in shaping future leaders' attitudes towards corporate sustainability and environmental stewardship.

Self-employed individuals, accounting for 13.33% of respondents, often emphasized the practical benefits of sustainability for small businesses.

"...As a self-employed person, I've implemented sustainable practices to reduce costs and attract environmentally conscious customers. It's a good business decision that also aligns with my personal values..." noted one respondent.

This perspective highlights the entrepreneurial spirit in integrating sustainability into business strategies for competitive advantage and ethical considerations.

Contrariwise, unemployed and retired respondents, each representing 6.67% of the total respondents, also recognized the importance of sustainability albeit from different perspectives. A retired respondent commented:

"...Even in retirement, I support sustainable initiatives because they contribute to a better quality of life for future generations. Companies should consider their long-term impacts on society and the environment..."

The study's result shows how occupational backgrounds have a substantial impact on people's attitudes and perceptions of sustainable maritime supply chain activities. While students and self-employed respondents place more emphasis on the practical and future-oriented benefits of sustainability, employed individuals frequently highlight the economic and competitive advantages of sustainability. Respondents who are retired or unemployed offer perspectives based on long-term sustainability and societal factors. In order to successfully promote and implement sustainable practices within the maritime industry in Dar es Salaam, catering to varied occupational views and motives, our findings highlight the significance of personalized methods and inclusive initiatives.

## 2.2 Awareness and Perception of Sustainable Maritime Supply Chain Initiatives

The "Awareness and Perception of Sustainable Maritime Supply Chain Initiatives" indicator provides insight into the attitudes of stakeholders and consumers toward eco-friendly activities in the marine sector. This entails evaluating their knowledge of ideas such as shore power, biofuels, and fuel-efficient route optimization. It also explores how important sustainability is to them when selecting transportation methods and how ready they are to pay extra for services that put a lower environmental impact first. Through the examination of these factors, it is possible to determine the general perception of sustainable practices in the maritime supply chain.

### 2.2.1 Familiarity with Sustainable Maritime Supply Chain Initiatives

The data on familiarity with sustainable maritime supply chain initiatives among the 150 respondents in Dar es Salaam reveals varying levels of awareness and understanding. The respondents' familiarity levels are categorized into five groups: Not familiar at all, Slightly familiar, Moderately familiar, Very familiar, and Extremely familiar as shown in figure 4. From the figure, it can be easily observed that, half of the respondents (75) which accounts to 50% of the total respondents fall into the lower end of the familiarity (Not familiar at all & Slightly familiar) spectrum. This suggests a substantial gap in awareness and knowledge dissemination regarding sustainable maritime practices. Efforts to educate and inform the public about these initiatives appear to be insufficient. For example one respondent was quoted saying:

"...I have never heard about sustainable maritime initiatives before. It seems like something only industry insiders would know about..."

This response shows that the respondent might not have encountered enough information or resources that highlight the importance and implementation of such initiatives. For example another respondent was quoted:

"...I haven't heard much about sustainable maritime initiatives. It seems like it's not a widely discussed topic in my circles..."

Another respondent from slightly familiar category was quoted:

"...I've come across the term once or twice, but I don't really understand what it entails or its importance..."

This response shows that the respondents might have heard about the initiatives in passing but do not have a comprehensive understanding of it like another respondents said:

"...I've come across the term 'sustainable maritime initiatives,' but I'm not really sure what it involves or how it impacts the industry..."

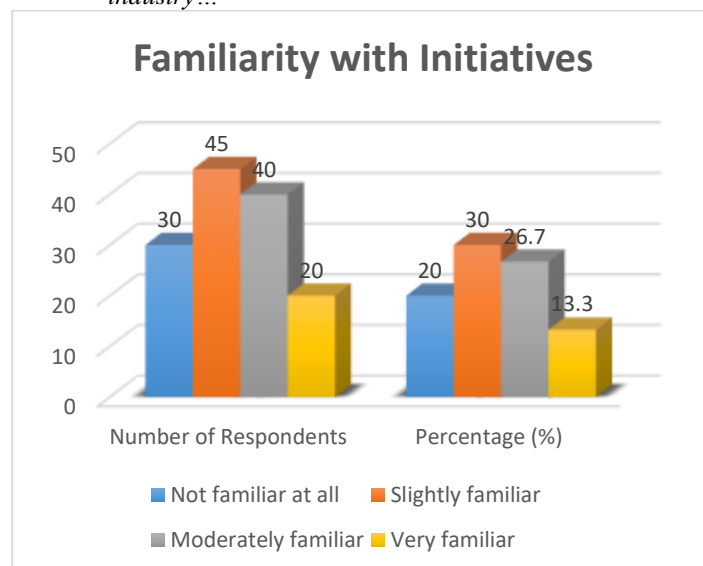


Figure 4: Showing the familiarity of respondents with initiatives

Around a quarter of the respondents (40) who accounts to 26.7% of the total respondents, are moderately familiar with sustainable maritime initiatives and they likely have a basic understanding but lacks in-depth knowledge or engagement with the subject, they represents a key target for educational campaigns to deepen their understanding and involvement. One respondent from this category was quoted:

"...I know that some companies are trying to be more eco-friendly, but I'm not sure about the specifics or how effective these measures are..."

Another respondent from the same category also echoed:

"...I've read a few articles about sustainable shipping, but I wouldn't say I'm very knowledgeable..."

Less than a quarter of the respondents (35) which accounts to 23.33% of the total respondents are very or extremely familiar with sustainable maritime initiatives, they likely includes persons with a vested interest in environmental issues or those working in related sectors. Like one respondent argued that:

*"...I follow several maritime companies that are leading the way in sustainability. It's crucial for the future of our environment and industry..."*

Another respondent from this category was quoted:

*"...Sustainable practices in maritime supply chains are something I'm very passionate about. I actively seek out information and support companies that prioritize sustainability..."*

Their higher awareness levels suggest that targeted outreach to these groups can be effective, but broader educational efforts are needed to reach the wider population. The analysis highlights the varying degrees of familiarity with sustainable maritime supply chain initiatives among respondents in Dar es Salaam. While a substantial portion of the population is only slightly or not familiar at all with these initiatives, there is a core group of well-informed individuals who understand and advocate for the benefits. To bridge the awareness gap, targeted education and outreach programs are essential to enhance understanding and engagement with sustainable maritime practices across all demographic groups.

### 2.2.2 Importance of Sustainability in Maritime Supply Chain Initiatives

Sustainability in maritime supply chain initiatives is increasingly recognized as essential for environmental preservation, economic efficiency, and social responsibility. The data on the importance of sustainability in maritime supply chain initiatives offers significant insights into how respondents perceive the criticality of sustainable practices within this industry. The responses were gathered from 150 participants, reflecting varying degrees of importance attributed to sustainability. As indicated in figure 5, Only 5 respondents (3%) indicated that sustainability is not important and this minority suggests that there is a small segment of the population that either lacks awareness of sustainability issues or does not see its relevance to the maritime supply chain. The negligible number of respondents who consider sustainability unimportant highlights the overwhelming recognition of its significance. However, this small group could benefit from targeted educational initiatives to enhance their understanding of sustainability's critical role. And this is echoed by one respondent who said:

*"...I don't see how sustainability affects the efficiency of maritime operations. My focus is more on cost and time..."*

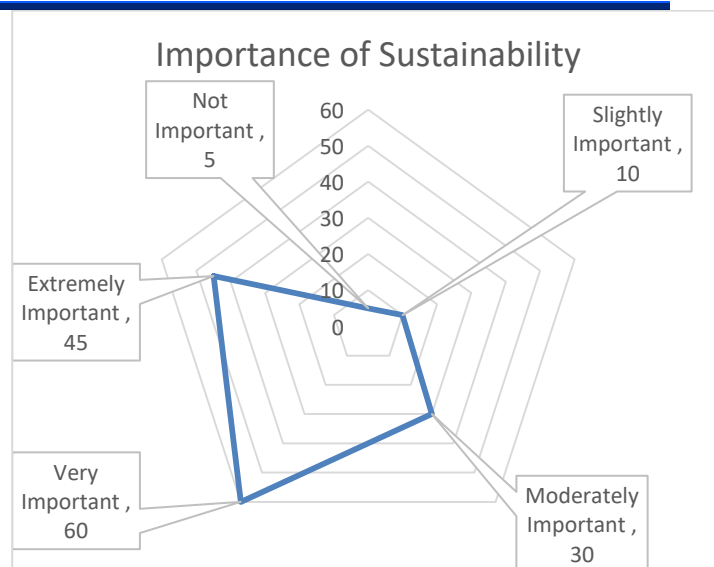


Figure 5: Showing the importance of sustainability

A slightly larger group, 10 respondents (7%), rated sustainability as only slightly important and these respondents acknowledged sustainability but does not view it as a priority. Those who considered sustainability slightly important may be aware of the concept but prioritize other factors such as cost, speed, and reliability over environmental concerns. Those respondents usually are influenced by demonstrating the long-term benefits and potential cost savings associated with sustainable practices. For example one respondent stated:

*"...Sustainability is somewhat important, but I'm more concerned about the immediate operational costs and efficiency..."*

Notably, 20% of respondents—or fifteen people—rated sustainability as moderately important. This suggests that sustainability is viewed in a balanced light, taking other operational concerns into account. In order to completely incorporate sustainable practices into their decision-making processes, the majority of respondents who saw sustainability as moderately essential they needed additional proof or incentives. If the advantages are made evident, they will probably be willing to embrace sustainable practices.

*"...I believe sustainability is important, but it needs to be balanced with cost-effectiveness and operational efficiency..."*, noted one respondent

The largest segment, comprising 60 respondents (40%), views sustainability as very important and this group recognizes sustainability as a fundamental factor in enhancing operational resilience and meeting stakeholder expectations. Respondents who rated sustainability as very important likely understand its broader implications for reputation management, regulatory compliance, and long-term business sustainability and they are supporters for integrating sustainability into core business strategies. Like one respondent stated:

"...Sustainability is critical for our business strategy. It's not just about compliance but about securing our future in a responsible manner..."

Another sizable cohort, comprising 45 respondents (30%), believes sustainability is extremely important and these includes industry leaders, advocates, and stakeholders who are deeply committed to sustainability principles and practices. Those who rate sustainability as extremely important prioritize environmental responsibility and ethical business practices and they back for stringent sustainability measures and may influence industry standards and policies.

"...We prioritize sustainability in every aspect of our operations. It's integral to our mission and values..." stated one respondent

Regarding the significance of sustainability in maritime supply chain activities, the data reveals a solid consensus among the majority of respondents. The relevance of sustainability in influencing industry practices and strategy is highlighted by the 70% of respondents who assessed it as very or extremely important overall. Although there are others who hold a less critical view of sustainability, these perspectives offer possibilities for lobbying and education to emphasize the positive effects and broader advantages of sustainable practices. Based on financial incentives, regulatory compliance, and environmental responsibility, the results generally show a favorable trend towards increased acceptance and integration of sustainability within the maritime sector.

### 2.2.3 Willingness to Pay Premium for Sustainable Maritime Supply Chain Initiatives

The data on respondents' willingness to pay a premium for sustainable maritime supply chain initiatives provides valuable insights into consumer behavior and perceptions regarding sustainability within the industry. This analysis is based on responses from 150 participants, reflecting varying degrees of willingness to invest in sustainable practices. As indicated in figure 6, a significant majority of respondents, 97 individuals (64.7%), expressed willingness to pay a premium for sustainable maritime supply chain initiatives and they value sustainability and is prepared to invest financially to support environmentally responsible practices. Respondents who are willing to pay a premium likely perceived sustainable practices as beneficial in terms of environmental stewardship, long-term cost savings, and brand reputation, they mostly prioritize sustainability as a key factor influencing their purchasing decisions and support companies that demonstrate commitment to sustainable operations.

"...I believe in supporting businesses that prioritize sustainability. I am willing to pay more if it means reducing environmental impact and promoting responsible practices..." as noted by respondent

A notable portion of respondents, 33 individuals (22%), indicated that they are not willing to pay a premium for sustainable maritime initiatives and they usually

prioritizes cost-effectiveness and may perceive sustainability as an added expense without immediate returns.. Those who are unwilling to pay a premium perceived sustainable products or services as overpriced or may not see immediate benefits that justify the additional cost so educating this group about the economic, environmental, and social advantages of sustainability could potentially shift their perspective, as echoed by one respondent who said:

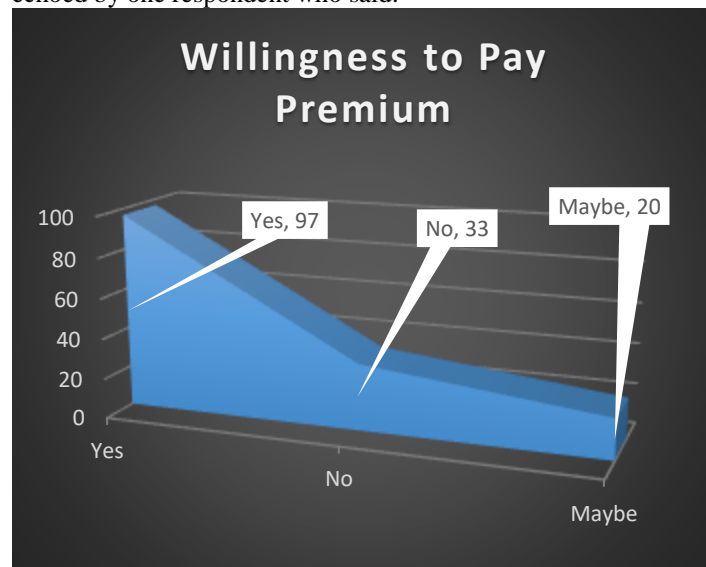


Figure 6: Showing willingness to pay premium

"...While I support sustainability, I'm not convinced it's worth paying more for at this time. Cost is a significant factor in my decision-making..."

Another respondent from this category was also noted:

"...I understand the importance of sustainability, but I can't justify paying more for it when other options are available at lower costs..."

A smaller but significant group, 20 respondents (13.3%), expressed uncertainty or consideration regarding their willingness to pay a premium for sustainable maritime initiatives and most of them were open to the idea but they needed more information or incentives to make a commitment. Respondents who are undecided mostly are interested in sustainability but require more transparency regarding the added value and impacts of sustainable practices. They are also influenced by market trends, regulatory changes, or competitive pricing. This is supported by views from one respondent who was quoted:

"...I'm open to paying more for sustainable options if I see clear benefits in terms of quality and environmental impact. It depends on how companies communicate their sustainability efforts..."

According to the statistics, most respondents (64.7%) were significantly willing to pay more for sustainable marine efforts, indicating that the significance of sustainability in the maritime industry is becoming increasingly recognized.



Customers who prioritize environmental responsibility and are willing to financially support sustainable practices are indicated by their positive attitude. The minority viewpoints, on the other hand, (22% no, 13.3% maybe), point to the need for more involvement and education to allay worries about cost-effectiveness and make clear the advantages of sustainable solutions. Initiatives that emphasize sustainability's benefits to the economy, environment, and society at large are expected to increase market acceptance and promote wider adoption in the marine sector in the future. All things considered, the results show a positive trend toward incorporating sustainability into consumer preferences and company strategy, opening the door for a more resilient and responsible maritime supply chain.

### 2.3 Economic Analysis of Sustainable Practices

In the maritime industry, the growing emphasis on environmental responsibility is an extension of the business world. In relation to this, in order for sustainability to take place within this sector, it is important to undertake a thorough economic analysis. This analysis involves much more than simply measuring costs since it digs into sustainable initiatives that can yield cost savings. Moreover, this section looks at how economic analysis can contribute to job creation, operational efficiency improvement as well as cost savings and competitiveness enhancement.

#### 2.3.1 Job Creation Perception

The integration of sustainable practices in maritime supply chains is increasingly being recognized as a crucial step towards achieving environmental and economic sustainability. The data presented in figure 7, reflects the perception of job creation due to sustainable maritime supply chain initiatives among 150 respondents. As shown, 10 respondents were strongly disagreed with the statement about job creation and they likely harbor a deeply pessimistic view. Their perception usually reflects a belief that job opportunities are severely lacking or that economic conditions are stagnant. This sentiment could stem from personal experiences of unemployment, observations of local economic decline, or dissatisfaction with government policies perceived as ineffective in stimulating job growth. One respondent stated:

*"...I disagree that job creation is adequate. While I see some new positions being advertised, many of them are low-wage or temporary. It doesn't feel like a sustainable recovery for the workforce..."*

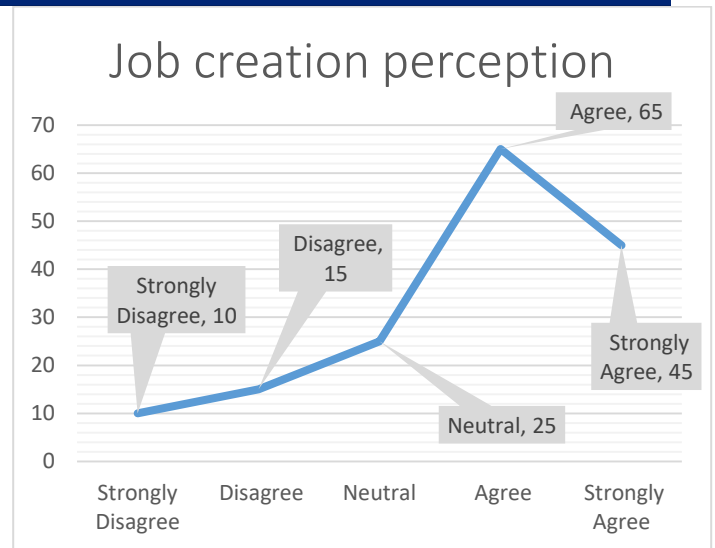


Figure 7: Showing job creation perception in economic analysis

Another respondent was quoted:

*"...Job creation has been minimal, and there are few opportunities available for employment..."*

Strong disagreements are a sign of underlying issues or discontent with the state of the labor market. Reduced consumer confidence, frugal spending, and maybe unfavorable attitudes toward politicians and economic policies can all result from such assumptions. Targeted interventions like workforce development programs, incentives for job growth in particular industries, or educational initiatives to match skills with market demands may be necessary to address these challenges.

The 15 respondents who disagreed held a negative perception of current job creation efforts but perhaps with less intensity than those who strongly disagree. They like to acknowledge some job creation initiatives but feel these efforts are insufficient or inadequately implemented to meet broader employment needs and this view usually reflect concerns about underemployment, precarious job conditions, or perceived disparities in job availability across different demographics or regions. For example one respondent echoed that:

*"...I disagree that job creation is effective. While there are some new job listings, many are low-paying or temporary. There's a lack of stable, well-paying jobs that provide long-term security..."*

Another respondent was also quoted:

*"...I disagree that job creation is adequate. While I see some new positions being advertised, many of them are low-wage or temporary. It doesn't feel like a sustainable recovery for the workforce..."*

This category highlights nuanced dissatisfaction with the quality or sustainability of available jobs. Their concerns are critical for policymakers aiming to address not only the

quantity but also the quality of job opportunities. Effective responses might involve policies promoting skill development, supporting entrepreneurship, or incentivizing industries with higher job creation potential.

Respondents who were neutral (25) neither agreed nor disagreed with the statement on job creation and they include individuals uncertain about economic trends or those who feel disconnected from broader economic discussions. Their perception usually stem from limited personal engagement with job markets, ambiguous economic signals, or a lack of clear information on local job opportunities. One respondent stated:

*"...I'm neutral about job creation because I haven't noticed significant changes in job availability lately. It's not something I think about much in my day-to-day life..."*

The neutral category highlights the importance of improving public awareness and engagement regarding economic issues. Addressing their concerns usually involve enhancing accessibility to job market information, fostering community dialogues on economic development, or promoting educational initiatives that highlight career pathways.

Respondents who agreed (65) perceived job creation positively, indicating a belief that there are adequate job opportunities available and these respondents see signs of economic growth and view current job creation efforts favorably. So this perception could be influenced by personal employment successes, positive economic news, or a belief in the effectiveness of government policies supporting job creation. And this was echoed by one participant who said:

*"...I strongly agree that job creation is on the rise. I've seen firsthand how new businesses are hiring, and there's a palpable sense of economic optimism in my city..."*

Another one was quoted:

*"...I agree that there are plenty of job opportunities out there. I've seen many new postings in my field, and friends have been finding work easily..."*

Likewise one more respondent also stated:

*"...I agree that job creation is happening. Several new companies have opened up nearby, and there are plenty of job listings in my field. It feels like things are moving in the right direction..."*

This category conveys positivity and assurance regarding the state of the economy. Gaining public support for ongoing job creation measures and maintaining favorable economic momentum require an understanding of their point of view. In order to effectively respond, one may promote projects that are in line with the needs of the evolving labor market, expand industries with potential for job creation, or reinforce policies that have proven to be effective.

Those who strongly agreed with the statement (45) had a robust belief in the effectiveness and sufficiency of job creation efforts and they perceive significant job growth,

stability, and economic opportunities within their communities or industries. Their perception are shaped by personal success in finding employment, positive economic outlooks in their communities, or favorable government policies. A strongly agreeing respondent might express:

*"...I strongly agree that job creation is on the rise. I've seen firsthand how new businesses are hiring, and there's a palpable sense of economic optimism in my city..."*

Strong agreement denotes a positive public attitude toward the economic and governmental policies of the present, as well as a strong sense of economic optimism. These kinds of beliefs frequently encourage long-term economic growth, draw investment, and reinforce beneficial economic behaviors. This optimism could be used by policymakers to generate support for additional economic changes or programs that maintain job growth and promote inclusive prosperity.

The range of responses reveals that respondents have differing opinions about how jobs are created. Gaining an understanding of these impressions is essential for understanding consumer behavior, policy efficacy, and economic sentiment. By taking into account the concerns of people who disagree or disagree vehemently, authorities can assist allay economic fears and provide guidance for developing targeted policies to promote job development. On the other hand, capitalizing on the optimism of those who concur or strongly concur can boost economic confidence and promote long-term growth. In general, dissecting these views facilitates the development of complex economic plans that satisfy the public and improve the state of the economy as a whole.

### 2.3.2 Operational Efficiency Improvement

Operational efficiency refers to the ability of an organization to deliver goods or services with minimal waste, while maximizing productivity and quality. Increasing operational efficiency in maritime initiatives involves optimizing various aspects of vessel operations and management to enhance performance, reduce costs, and improve overall effectiveness. As figure 8 indicates, 5 respondents strongly disagreed with the statement on increased operational efficiency in maritime initiatives believing that there has been minimal or no improvement in efficiency. They perceive persistent inefficiencies, operational bottlenecks, or challenges that hinder progress. This sentiment normally stem from experiences of operational delays, high maintenance costs, or outdated technology affecting their operations. A respondent in this category might express:

*"...I strongly disagree that operational efficiency has increased. Our fleet still faces frequent delays at ports, and maintenance costs continue to rise. It feels like we're falling behind rather than making progress..."*

Another respondent from this category was quoted:

*"...I strongly disagree that operational efficiency has increased in maritime initiatives. Despite efforts to implement new technologies, the processes remain cumbersome and inefficient. There's a lack of integration and coordination among stakeholders, which hampers any real progress..."*

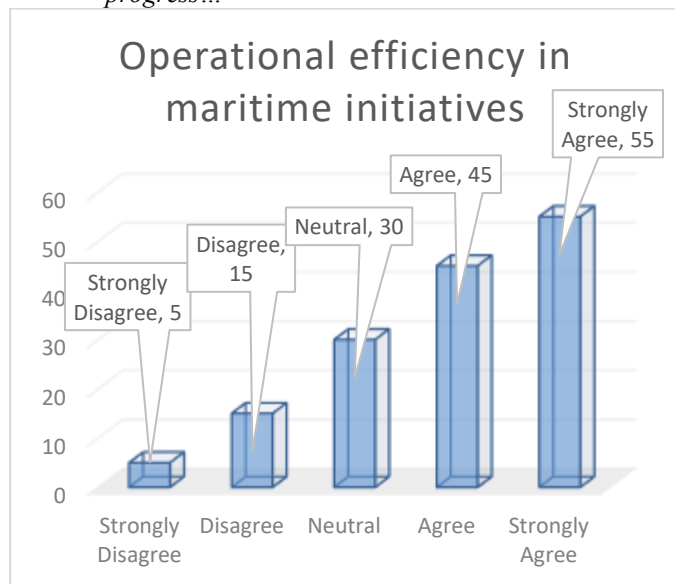


Figure 8: Showing responses for operational Efficiency Improvement

Stakeholders in this category draw attention to important obstacles that stand in the way of improving operational efficiency. Their doubts might force a review of present procedures, highlighting the need for more all-encompassing approaches to systemic problems like out-of-date infrastructure, inadequate technological uptake, and regulatory compliance. It is essential to address these issues if industry efforts are to be in line with stakeholder expectations and promote long-term increases in operational efficiency.

Those respondents (15) who disagreed, acknowledged some incremental improvements in operational efficiency but believe that progress has been insufficient or slow-paced and they recognize efforts and initiatives aimed at enhancing efficiency but feel that these measures have not fully addressed underlying challenges or achieved desired outcomes within the maritime industry. This was supported by one respondent who said:

*"...I disagree that there has been a significant increase in operational efficiency. While there have been attempts to streamline processes and adopt new technologies, the impact on overall efficiency has been marginal. There are still too many bottlenecks and inefficiencies that need to be addressed..."*

Respondents in this group exhibit cautious optimism that is nuanced by their awareness of enduring difficulties. Their

point of view emphasizes how crucial it is to quicken innovation and reform in marine operations in order to realize real efficiency improvements. By implementing focused technological investments, upgrading infrastructure, and fostering industry collaboration, these issues can be addressed and the gap between present endeavors and ideal efficiency standards closed.

30 respondents were neutral in which they neither affirm nor reject the notion of increased operational efficiency in maritime initiatives and they perceived mixed results or have limited visibility into recent developments affecting efficiency within the sector. Their stance commonly shoot from a lack of firsthand experience with recent initiatives or from varying perceptions of efficiency across different operational contexts.

*"...I'm neutral on the issue of increased operational efficiency in maritime initiatives. While there's talk of improvements, I haven't seen significant changes in the operational processes I deal with. It's unclear whether the initiatives are making a substantial impact overall..."* noted one respondent.

The impartiality of this group emphasizes how important it is to communicate and be transparent about the results of efficiency projects in the maritime industry. Improving stakeholder participation, disseminating success stories, and offering data-driven insights into the quantifiable effects of recent efficiency initiatives are some ways to address perceptions of ambiguity or inconsistency. Increased awareness and comprehension among stakeholders can equip them to participate in and reap the benefits of continuous efforts to improve operational efficiency.

45 respondents agreed perceived that there are noticeable improvements in operational efficiency within maritime initiatives and they recognize the positive impacts of recent strategies, technologies, or regulatory changes aimed at streamlining operations, reducing costs, and enhancing overall effectiveness within the sector. Like one respondent agreed that:

*"...I agree that there has been an increase in operational efficiency in maritime initiatives. We've seen significant improvements in fuel management systems, automated processes, and better utilization of data analytics. These advancements have streamlined operations and improved our ability to respond quickly to market demands..."*

The group's optimistic view is a reflection of their realization of the observable advantages brought about by recent initiatives to increase productivity. Their experiences demonstrate effective implementations as well as the revolutionary potential of strategic changes and technical advancements. Accepting these achievements can spur more innovation and cooperation in the maritime sector, resulting

in ongoing enhancements to operational effectiveness and competitiveness globally.

Those who strongly agreed (55) strongly believe that operational efficiency in maritime initiatives has significantly improved and they perceived substantial advancements in efficiency metrics, cost savings, and environmental sustainability as evidence of successful initiatives and strategic investments within the sector.

*"...I strongly agree that operational efficiency has increased markedly in maritime initiatives. Through innovative technologies like predictive maintenance and real-time data analytics, we've optimized our fleet operations and reduced operational costs by over 20%. These efficiencies not only enhance profitability but also demonstrate our commitment to sustainable practices..."* noted one respondent

This group is made up of stakeholders and leaders in the field who support innovative methods and radical adjustments to maritime operations. Their strong agreement highlights how efficiency-focused projects can have a revolutionary effect and lead to favorable outcomes in terms of financial, environmental, and operational measures. Accepting and growing on these achievements might inspire a global acceptance of efficiency-boosting approaches and establish industry standards.

Diverse perspectives and experiences within the marine industry are reflected in the various perceptions of greater operational efficiency in initiatives. It is imperative to tackle skepticism and capitalize on favorable feedback in order to promote innovation and ongoing progress. The marine sector can effectively handle obstacles, capitalize on opportunities, and sustainably boost operational efficiency in the next years by aligning stakeholder expectations with measurable outcomes and strategic objectives.

### 2.3.3 Cost savings

Cost savings in business contexts refer to initiatives and strategies aimed at reducing expenses across various operational facets without compromising quality or performance. Achieving cost savings is crucial for improving profitability, reinvesting in growth opportunities, and maintaining competitiveness. Cost saving in maritime initiatives involves implementing strategies and adopting technologies aimed at reducing operational expenses, improving efficiency, and enhancing profitability within the maritime industry. Figure 9, shows the responses from respondents regarding whether sustainability in maritime initiatives saves cost or not. Referring figure 9, respondents who strongly disagreed (10%) with the effectiveness of cost-saving initiatives in maritime operations perceived minimal or no significant benefits from current strategies or implementations aimed at reducing expenses. They believed that the cost-saving measures adopted are ineffective,

insufficient, or inadequately implemented to achieve meaningful financial improvements within their maritime operations. For example one respondent stated:

*"...I strongly disagree that our current cost-saving initiatives in maritime operations have been effective. Despite efforts to optimize fuel consumption and streamline operations, we continue to face significant challenges that hinder substantial savings. The high costs associated with regulatory compliance and maintenance overshadow any perceived benefits..."*

The stakeholders in this category draw attention to important obstacles and difficulties that hinder the efficacy of cost-cutting measures in maritime operations. Their criticism highlights the necessity of reevaluating current tactics and possibly investigating novel avenues that more successfully tackle particular operational inefficiencies and regulatory restrictions. It is imperative to tackle these concerns if industry efforts are to be in line with stakeholder expectations and promote long-term enhancements in cost management in the maritime sector.

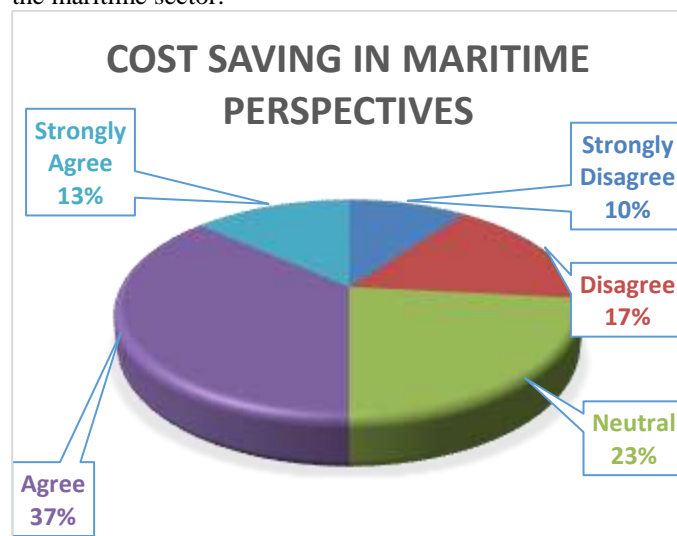


Figure 9: Showing the responses from respondents regarding sustainability in maritime initiatives

Those who disagreed (17%) acknowledged some efforts towards cost savings in maritime operations but felt that the outcomes have been limited or below expectations. They normally recognize challenges or barriers that have prevented more substantial cost reductions, despite organizational efforts and investments in cost-saving measures. This was supported by one respondent who said:

*"...I disagree that our cost-saving initiatives in maritime operations have yielded significant benefits. While we've implemented fuel efficiency measures and optimized maintenance schedules, the expected cost reductions have not materialized as anticipated. Operational*

*complexities and external factors continue to impact our ability to achieve meaningful savings..."*

This category of respondents exhibits cautious optimism that is nuanced by acknowledging persistent obstacles. In order to accomplish the intended cost-saving effects in marine operations, their approach emphasizes the significance of tackling operational difficulties, improving stakeholder collaboration, and more efficiently utilizing technology. The maritime industry can become more competitive overall by improving efficiency and financial performance as a result of finding solutions to these problems.

23% of the total respondents were neutral which means they neither affirm nor reject the notion of effective cost-saving initiatives in maritime operations as they have varying perceptions or insufficient data to evaluate the overall impact of cost-saving measures within their specific maritime context. Their stance usually reflect a need for more clarity or transparency regarding the outcomes of current initiatives. For example one respondent said:

*"...I'm neutral on the effectiveness of our cost-saving initiatives in maritime operations. While there have been efforts to implement efficiency measures, the actual savings achieved are unclear. More data and analysis are needed to assess the true impact on our operational expenses..."*

The neutrality of this group highlights the value of performance measurements and data-driven insights in determining how well cost-cutting efforts are working. Improving communication, laying out more precise success criteria, and showcasing quantifiable gains in operational effectiveness and financial results are some ways to reduce people's perceptions of ambiguity or variability. In the marine industry, this strategy can contribute to increasing trust and support for current and upcoming cost-cutting projects.

37% of the total respondents who agreed, perceive noticeable achievements and benefits from cost-saving initiatives in maritime operations and they recognized successful implementations of strategies aimed at reducing expenses, improving operational efficiency, and enhancing financial performance within their maritime operations.

*"...I agree that our cost-saving initiatives in maritime operations have been effective. Through investments in fuel-efficient technologies and optimized logistics, we've achieved significant reductions in operational costs. These initiatives not only improve profitability but also contribute to environmental sustainability..."*, noted one respondent

This group's optimistic attitude is a reflection of their awareness of the observable advantages brought about by successful cost-cutting measures. Their experiences demonstrate effective implementations as well as the revolutionary power of strategic changes and technical advancements. Accepting these achievements can spur

additional cooperation and creativity in the marine sector, resulting in ongoing advancements in operational effectiveness and cost control. Sustained competitive advantage and resilience in a changing global maritime market might result from ongoing investment in these areas. Those who strongly agree (13% of the total respondents) strongly believed in the effectiveness of cost-saving measures in maritime operations as they have experienced substantial reductions in expenses, improved profitability, or enhanced financial resilience due to successful cost-saving initiatives implemented within their maritime operations. For instance one respondent echoed:

*"...I strongly agree that our cost-saving initiatives in maritime operations have significantly improved our financial performance. By implementing advanced fuel management systems and optimizing supply chain logistics, we've not only reduced costs but also positioned ourselves as a leader in sustainable maritime practices..."*

Supporters of best practices and revolutionary modifications to cost management in maritime operations, this category consists of influential people and leaders in the field. Their broad consensus highlights the revolutionary power of efficiency-driven programs, which produce favorable results in terms of finances, operations, and the environment. A global acceptance of cost-cutting techniques can be stimulated by embracing and growing these achievements, which have the potential to establish industry standards. Utilizing these insights and stakeholder perceptions is critical for firms in order to improve their plans and activities targeted at operational excellence and sustainable cost savings in the maritime industry.

Diverse viewpoints and experiences within the industry are highlighted by the differing opinions on cost-cutting measures in maritime operations. It is imperative to tackle skepticism and capitalize on favorable feedback in order to promote innovation and ongoing progress. The marine industry may effectively handle difficulties, capitalize on opportunities, and sustainably increase cost management processes for long-term success by aligning stakeholder expectations with measurable outcomes and strategic initiatives.

#### **2.3.4 Estimated Economic Impact on Dar es Salaam Port**

Estimating the economic impact of initiatives on ports, such as the one in Dar es Salaam, involves considering various factors such as operational efficiency improvements, cost savings, revenue generation, and broader economic contributions. As shown in figure 10, respondents who strongly disagree (15) with the estimated economic impact on Dar es Salaam Port perceived minimal or no tangible benefits from recent initiatives or developments as they believed that the investments made have not translated into significant

economic gains for the port or the region. This sentiment could stem from concerns about the effectiveness of strategies, inadequate infrastructure, or regulatory hurdles that hinder economic growth. Like one respondent was quoted:

*"...I strongly disagree with the estimated economic impact of recent initiatives at Dar es Salaam Port. Despite investments in infrastructure upgrades, the port's operational inefficiencies and bureaucratic challenges continue to impede its potential economic contributions. We need more robust reforms to see meaningful economic growth..."*

The stakeholders in this particular category draw attention to significant obstacles that impede the attainment of economic advantages at Dar es Salaam Port. Their doubts highlight the need for thorough reforms to alleviate infrastructural bottlenecks, expedite processes, and strengthen regulatory frameworks, as well as a reevaluation of current approaches.

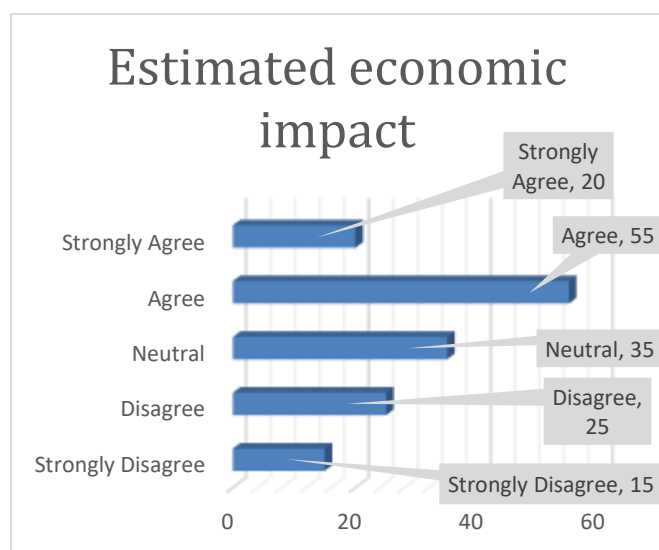


Figure 10: Showing the responses for Estimated Economic Impact

Respondents who disagreed (25) acknowledged some efforts towards enhancing the economic impact of Dar es Salaam Port but feel that the outcomes have been limited or below expectations. As they recognized challenges or barriers that have prevented more substantial economic contributions, despite efforts and investments in infrastructure development and operational improvements. And this was echoed by one respondent who stated:

*"...I disagree with the estimated economic impact of recent initiatives at Dar es Salaam Port. While there have been improvements in infrastructure and operational efficiency, the port's economic growth has not met our expectations. Issues such as port congestion and bureaucratic*

*delays continue to hamper its potential as a regional economic hub..."*

This view is tempered by the awareness of persistent obstacles and exhibits a cautious optimism. It emphasizes that in order to realize the port's full economic potential, operational complexity must be addressed, stakeholder participation must be improved, and efficient governance and regulatory reforms must be put in place.

Respondents who were neutral (35) neither affirmed nor rejected the estimated economic impact of initiatives at Dar es Salaam Port as they had varying perceptions or insufficient data to evaluate the overall economic contributions accurately. Their stance usually reflected a need for more comprehensive data analysis, transparency in reporting, or clearer benchmarks to assess the port's economic performance.

*"...I'm neutral on the estimated economic impact of recent initiatives at Dar es Salaam Port. While there have been improvements in infrastructure and operational efficiency, the actual economic benefits to the region are unclear. More data and analysis are needed to assess the port's economic contributions accurately..."*, noted one respondent

The neutrality of this group emphasizes how crucial it is to evaluate the success of projects at Dar es Salaam Port using thorough economic analyses and evidence-based insights. A deeper comprehension of the port's economic significance and prospects for future expansion can be attained by filling up data gaps and increasing stakeholder participation.

Respondents who agreed (55) perceived noticeable economic benefits from recent initiatives at Dar es Salaam Port and they recognized successful implementations of strategies aimed at enhancing operational efficiency, attracting investment, and stimulating economic activity in the region. They believed that the port plays a crucial role in driving economic growth and development. This was evidenced by one respondent who said:

*"...I agree with the estimated economic impact of recent initiatives at Dar es Salaam Port. Through investments in infrastructure, technology upgrades, and streamlined processes, the port has become more efficient, attracting increased trade volumes and contributing significantly to regional economic development..."*

This optimistic view is a reflection of an understanding of the observable advantages brought about by successful projects and wise investments. It emphasizes how modern infrastructure and improved operations can significantly boost the port's economic contributions and competitiveness.

Those who strongly agreed (20) strongly believed in the substantial economic impact of recent initiatives at Dar es Salaam Port as they have witnessed firsthand the port's transformation into a key economic gateway, driving job creation, trade expansion, and broader economic prosperity in the region. Like the respondent who said:

*"...I strongly agree with the estimated economic impact of recent initiatives at Dar es Salaam Port. The port's strategic investments in infrastructure, coupled with efficient operations and improved logistics, have significantly boosted trade volumes, attracted foreign investment, and spurred economic growth across various sectors in Tanzania...."*

This category represents stakeholders who advocate for continued support and investment in initiatives that enhance Dar es Salaam Port's economic role. Their high level of agreement underscores the port's critical importance as a driver of economic development, regional integration, and competitiveness in global trade markets.

The varying perceptions regarding the estimated economic impact of initiatives at Dar es Salaam Port highlight the diverse perspectives within stakeholders. Addressing skepticism and leveraging positive feedback are crucial for fostering consensus and sustaining momentum in port development initiatives. By aligning stakeholder expectations with measurable outcomes and strategic investments, Dar es Salaam Port can effectively capitalize on its potential as a pivotal economic hub in East Africa, driving sustainable economic growth and prosperity for the region.

#### 4. CONCLUSION AND RECOMMENDATION

From the findings, it was revealed that there is a positive shift towards sustainability in the maritime sector, driven by increasing customer awareness and preference for eco-friendly practices. Customers in Dar es Salaam showed a significant inclination to support and even pay a premium for sustainable maritime supply chain initiatives, recognizing their long-term environmental and economic benefits.

The findings revealed a positive trend in customer awareness and preference for businesses that prioritize environmental responsibility. However, there exists a notable gap between customer expectations and the actual implementation and transparency of sustainable practices among maritime businesses in Dar es Salaam. This disconnect highlights opportunities for improvement in communication, implementation, and policy support to foster a more sustainable maritime supply chain.

From an economic perspective, sustainable maritime supply chain practices presented a dual-edged sword. On one hand, they promise cost savings through enhanced efficiency, waste reduction, and energy conservation, alongside opening

up new market opportunities, especially in environmentally conscious regions. On the other hand, the initial investment required for these sustainable practices can be substantial, posing a barrier particularly for small and medium-sized enterprises (SMEs).

To address the identified gaps and enhance the effectiveness of sustainable maritime supply chain initiatives in Dar es Salaam, the study recommends:

- Maritime businesses should adopt transparent communication strategies to clearly report their sustainability efforts and achievements.
- Government bodies should consider implementing policies that support and incentivize sustainable practices in the maritime supply chain.
- Collaboration among stakeholders—such as businesses, government agencies, academic institutions, and international organizations—is crucial for advancing sustainability in the maritime sector.

In the future research must be carried out in:

- ✓ Conducting comprehensive impact assessments to quantify the economic, environmental, and social benefits of sustainable initiatives in the maritime sector.
- ✓ Exploring customer perceptions, behaviors, and preferences regarding sustainable products and services in the maritime sector.
- ✓ Studying emerging technologies and best practices that enhance sustainability in maritime operations.
- ✓ Evaluating the impact of capacity building programs and training initiatives aimed at enhancing sustainability literacy and skills among maritime industry stakeholders.
- ✓ Investigating the specific barriers that hinder the widespread adoption of sustainable practices among maritime businesses in Dar es Salaam.

#### 5. ACKNOWLEDGMENT

The author would like to acknowledge the management of Dar es Salaam Maritime Institute for their support during preparation of this manuscript.

#### 6. REFERENCES

- [1] T. Hossain, M. Adams, and T. R. Walker, "Role of sustainability in global seaports," *Ocean & Coastal Management*, vol. 202, p. 105435, 2021.
- [2] M. Ashrafi, T. R. Walker, G. M. Magnan, M. Adams, and M. Acciaro, "A review of corporate sustainability drivers in maritime ports: a multi-stakeholder perspective," *Maritime Policy & Management*, vol. 47, no. 8, pp. 1027-1044, 2020.
- [3] D. M. Russell, D. Swanson, and M. Blinge, "Sustainable logistics and supply chain management: a holistic view through the lens of the

- wicked problem," *World Review of Intermodal Transportation Research*, vol. 7, no. 1, pp. 36-56, 2018.
- [4] D. B. Grant, C. Y. Wong, and A. Trautrim, *Sustainable logistics and supply chain management: principles and practices for sustainable operations and management*. Kogan Page Publishers, 2017.
- [5] I. Babenko, A. Y. Anisimov, V. Y. Melnikov, I. Kubrak, I. Golubov, and V. Boyko, "Sustainable supply chain management in city logistics solutions," *International Journal of Supply Chain Management*, vol. 9, no. 2, pp. 1081-1085, 2020.
- [6] G. David B, A. Trautrim, and C. Y. Wong, *Sustainable logistics and supply chain management*. Kogan page, 2021.
- [7] Y. Fernando, M. F. A. Jasmi, and M. S. Shaharudin, "Maritime green supply chain management: Its light and shadow on the bottom line dimensions of sustainable business performance," *International Journal of Shipping and Transport Logistics*, vol. 11, no. 1, pp. 60-93, 2019.
- [8] M. Humphreys, A. Stokenberga, M. H. Dappe, and O. Hartmann, "Port development and competition in East and Southern Africa: Prospects and challenges," 2019.
- [9] G. W. Werikhe and Z. H. Jin, "Integration of the extended gateway concept in Supply Chain disruptions Management in East Africa-Conceptual paper," *International Journal of Engineering Research in Africa*, vol. 20, pp. 235-247, 2016.
- [10] F. Jasmi and Y. Fernando, "Notions of maritime green supply chain management," in *Encyclopedia of Information Science and Technology, Fourth Edition*: IGI Global, 2018, pp. 5465-5475.
- [11] D. Jean-Marie, "The role of shipping and marine transport in developing blue economies," in *The Caribbean blue economy*: Routledge, 2020, pp. 143-155.
- [12] M. F. B. Yusup, "Sustainable Shipping Practices: A Review of Environmental Initiatives in the Maritime Industry," *Maritime Park Journal of Maritime Technology and Society*, pp. 140-142, 2023.
- [13] N. Viana Diniz, D. Ribeiro Cunha, M. de Santana Porte, and C. B. Mendonça Oliveira, "Disclosure of the sustainable development goals in the maritime industry and port sector," *GeSec: Revista de Gestao e Secretariado*, vol. 14, no. 5, 2023.
- [14] K. Nõmmela and K. Kõrbe Kaare, "Incorporated maritime policy concept: adopting ESRS principles to support maritime sector's sustainable growth," *Sustainability*, vol. 14, no. 20, p. 13593, 2022.
- [15] M. J. Mwendapole and Z. Jin, "Evaluation of Seaport Service Quality in Tanzania: From the Dar es Salaam Seaport Perspective," *Sustainability*, vol. 13, no. 18, p. 10076, 2021.
- [16] T. Notteboom, L. van der Lugt, N. van Saase, S. Sel, and K. Neyens, "The role of seaports in green supply chain management: Initiatives, attitudes, and perspectives in Rotterdam, Antwerp, North Sea Port, and Zeebrugge," *Sustainability*, vol. 12, no. 4, p. 1688, 2020.
- [17] S. Cheon and E. Deakin, "Supply chain coordination for port sustainability: lessons for new institutional designs," *Transportation research record*, vol. 2166, no. 1, pp. 10-19, 2010.
- [18] M. E. Justavino-Castillo, I. Gil-Saura, M. Fuentes-Blasco, and B. Moliner-Velázquez, "How to increase company loyalty: using relational variables and sustainable practices to segment the maritime transport sector," *Economic research-Ekonomska istraživanja*, vol. 36, no. 2, 2023.
- [19] Z. Raza and J. Woxenius, "Customer-driven sustainable business practices and their relationships with environmental and business performance— Insights from the European shipping industry," *Business Strategy and the Environment*, vol. 32, no. 8, pp. 6138-6153, 2023.
- [20] L. L. Froholdt, "The Perception of Corporate Social Responsibility in the Maritime Industry," *Corporate Social Responsibility in the Maritime Industry*, pp. 5-23, 2018.
- [21] H. Kim and C. W. Lee, "The effects of customer perception and participation in sustainable supply chain management: A smartphone industry study," *Sustainability*, vol. 10, no. 7, p. 2271, 2018.
- [22] T. M. Katunzi and Q. Zheng, "Tanzanian SMEs' perceptions towards adoption of supply chain management (SCM) strategy," *International Journal of Business and Management*, vol. 5, no. 10, p. 42, 2010.
- [23] J. M. Nkwabi and J. Fallon, "Assessing the factors affecting the effective implementation of supply chain management (SCM) in food manufacturing small and medium enterprises (SMEs) in Dar Es Salaam," *American International Journal of Business Management*, vol. 10, no. 7, pp. 67-83, 2020.
- [24] D. Etse, A. McMurray, and N. Muenjohn, "Sustainable procurement practice: The effect of procurement officers' perceptions," *Journal of business ethics*, vol. 184, no. 2, pp. 525-548, 2023.
- [25] R. N. Mefford, "The economic value of a sustainable supply chain," *Business and Society Review*, vol. 116, no. 1, pp. 109-143, 2011.
- [26] M. N. Elnabawi and H. B. AbdElsalam, "Assessing the role of green technologies in reducing environmental footprint of ports," *MRT Maritime Research and Technology*, 2023.
- [27] M. Parhamfar, I. Sadeghkhani, and A. M. Adeli, "Towards the application of renewable energy technologies in green ports: Technical and economic perspectives," *IET Renewable Power Generation*, vol. 17, no. 12, pp. 3120-3132, 2023.
- [28] F. Lemenge and S. K. Tripathi, "Critical Issues in Realising Best-Value through Strategically Aligned



- Supply Chains: A Study of Selected Manufacturing Companies in Tanzania," *Management Convergence*, vol. 1, no. 2, pp. 32-44, 2011.
- [29] G. Bulengela, "Perception of marine fisheries resources in Tanzania from past to present: Evidence through local knowledge," 2024.
- [30] J. M. Lelo and B. Israel, "Supply Chain Innovative Practices and Customer Satisfaction: Insights from Manufacturing SMEs," *Management Dynamics in the Knowledge Economy*, vol. 12, no. 1, pp. 54-69, 2024.