The challenges faced by marine industry in logistics

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Abstract: As far as the Indian subcontinent, shipping plays a vital role within the transport sector of India's economy. Indian Shipping companies, Indian marine sector is at an advantageous position the large coastline of 7,500 km. With a coastline close to 7517 km and twelve major and 187 minor ports India happens to be a possible destination for shipping and trans shipment . This paper comprises of the introduction, the background and challenges faced by the marine industry in logistics, literature review, theoretical aspects of marine logistics. The data analysis and the research findings are discussed. The outcome of the research analysis are mentioned the last it has the details about how to overcome the challenges, methods to solve the issues and improve the marine logistics are been enlightened.

Keywords: logistics, challenges, pandemic, innovation

INTRODUCTION

The term logistics is originated from the military and is claimed to possess been initially to define troop and equipment movement within the various areas of military operations logistics is that the process involved in getting the cargo from the manufacturer's warehouse, point of origin, mine site, farm etc, to the receiver's warehouse, door, store etc .The process of logistics actually begins way before the particular shipment takes place because it involves discussing and choosing the delivery schedules suitable to both the customer and therefore the seller. Once these are decided, then the logistics services provider must choose the simplest method of moving the cargo from the seller's door to the receiver's door.   Shipping is the act of carriage of cargo from point A to point B using the ships which fall under the Maritime industry. Cargoes are carried by various sorts of ships all round the world, such as: Oil Tankers, Dry Bulk Carriers, General Cargo Carriers, Container Carriers, Gas Carriers, Chemical Tankers, offShore Vessels, Ro-Ro ships, Ferries/Passenger Ships, and other.The marine sector faces various challenges like freight rates, high fuel price , piracy, financial challenges ,government regulations, lack of labour , lack of government scheme and high tax rates And also during the pandemic there were shortage of crew and also marine industry faced a huge challenge in shipment of the goods from one place to another.The objectives of the study were to gain more knowledge about the logistics sector, analyze the importance of logistics, current challenges faced by the marine industry and find some possible solutions to overcome it. To find more information regarding logistics and marine industry, analyze various problems faced in marine logistics .To find the causes of the challenges faced by marine logistics and best possible ways to face or overcome the challenges.
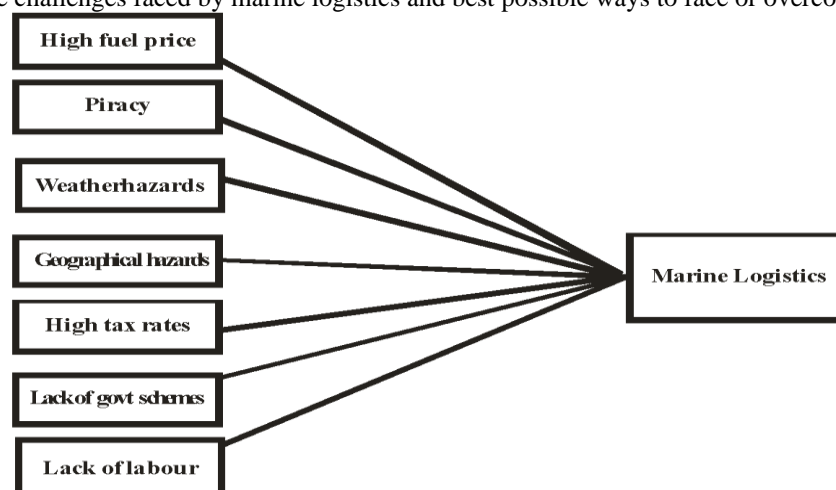

Fig.1:

REVIEW OF LITERATURE

(Bloor et al., 2000) the article states shipping business has always been one which workers relative risks of ill health, injury and death have been more . The industry has been completely reworked since the middle Nineteen Seventies by the shift to flags of convenience, the sub-contracting of operations by owners to international ship management firms and crewing firms, the explosive growth of mixed nationality crews, and technological and economic changes that have reduced crewing levels and extended operating hours. The shipping business has become the primary truly world business. The impact of globalization on seafarer's health and safety is reviewed and found to be fragmental of potentially serious injurious effects.(Fagerholt et al., 2010) this article states about the world maritime routing problems. Maritime has many restrictions and regulations that influence daily operations. This paper tells the matter of allocating bulk cargoes to tanks in maritime shipping. MariaProgoulak (2010) the Article focuses on resource based view RBV of the firm has been established as one of the most approaches to strategy formulation for the sustainable competitive advantage. Human resource management as a source of competitiveness. The paper analyses the findings of a field study, regarding the various human resource and crew management practices that are applied by Greek owned shipping corporations. (Melas, 2019) the paper discusses the company governance of the maritime enterprises that the safeguarding systems aim to enhance businesses with defenses against company functions. The paper discusses how company governance affects enterprises at a large level and why both academics and professionals are active within the field making an attempt to solve the problem of company boards and additionally to create policies. (Jung and Kim, 2012)) this article states Shipping industry development circumstances are different from each other consistent with the economic development phase of every country. These differences also reach the objectives and problems with shipping industry policies of those countries. (Caschili and Meda, 2012) the article states worldwide maritime shipping industry as a system observe that large variety of independent rational agents like port authorities, shipping service suppliers, shipping firms, and commodity producers play a role in achieving positions and in increasing market share. The maritime shipping industry from this perspective is defined as a complex System composed of comparatively independent parts that constantly search, learn and adapt to their surroundings, while their mutual interactions shape recognizable patterns.(Hurlburt and Seyle, 2013) this paper focuses on Filipino seafarers who were taken hostage by Somali pirates and explores their experiences and sufferings each throughout and after release. The seafarers reported that they received no systematic attention or treatment for psychological issues. The issue reveals a deficiency in the regulatory framework governing seafarer's occupational health and safety in the Philippines. (Ma, 2020)) This article the author explains about the shipping transport .The transportation sector is one of the most important mechanisms of the Indian economy. It improves the nation's market, employment and economy at a huge level. India's growth rate is slowing down day by day. (Stratigis et al., 2015) the article evaluate the economic impacts and risk of various situations and particularly the economic impact of vessel traffic rerouting and reducing the speed in order to reduce the vessel strikes or other impact to endangered marine species.(Karanassos, 2016) the article says about the Recent developments within the marine trade have resulted in the introduction of recent styles of Catamarans and ships that use novel fuels in their main engines. (Larkin et al., 2017)) the article states shipping trade faces an unsure future because the temperature change challenges faced by all sectors become increasingly urgent. Targeted at addressing gaps in information and understanding across technical, operational and demand side changes, it presents some of the most recent analysis to consider the opportunities , and barriers to overcome, to enable shipping industry low carbon transition and the sustainability of global trade. (ZhiYuan et al., 2019) this paper examines the past and current analysis within the container port and maritime field. Using Bibliometric analysis, the paper identifies the core affiliations, their rankings, and collaboration patterns. (Li et al., 2020)this article states Vessel speed optimization has increased in recent years and has been recognized as a practical and important cost reduction strategy within the maritime shipping industry. In this paper takes a check out the trade-off between sailing speed and therefore the number of vessels required to take care of a given service frequency. (Fei, 2018) the article states industry is very much capital intensive, attention has always been on managing the tangible assets of shipping firms. Because of the lasting talent shortage problem and issues regarding shipping safety related to the human factor, many efforts are created to boost each quantity and quality of the force of the trade. The industry's high level of difficulties in attracting new people faced by the trade challenge the effectiveness of some conventional human resource management practices. (Nhamo et al., 2020) the article states about cruise ship trade it is one amongst the fastest growing segments of the touristy sector. The article documents the impacts of the COVID-19 pandemic on the world cruise ship trade. The happening trade, which saw the value of shipping companies with major sources of revenue shut because of the suspension of cruises. The trade featured bankruptcy and collapse. COVID-19 also left the trade facing many criminal investigations and lawsuits because of passenger infections on board. Some ships were denied access to ports and medical facilities toward land because of concern of spreading the virus. (Dong et al., 2020)this paper tells about the shift from a primary road based to coastal shipping based freight distribution. Our research idea is based on the rich knowledge acquired by our peer teams across the university.(A.C.Gomathi, S.R.Xavier Rajarathinam, A.Mohammed Sadiqc, Rajeshkumar, 2020; Danda et al., 2009; Danda and Ravi, 2011; Dua et al., 2019; Ezhilarasan et al., 2019; Krishnan and Chary, 2015; Manivannan, I., Ranganathan, S., Gopalakannan, S. et

al., 2018; Narayanan et al., 2012, 2009; Neelakantan et al., 2013, 2011; Neelakantan and Sharma, 2015; Panchal et al., 2019; Prasanna et al., 2011; Priya S et al., 2009; Rajeshkumar et al., 2019; Ramadurai et al., 2019; Ramakrishnan et al., 2019; Ramesh et al., 2016; Venugopalan et al., 2014)A model is developed to optimize the coastal shipping route planning. The model is applied to a study of the outbound automotive logistics in india. Preliminary insights on the challenges to adopting coastal shipping-based distribution are presented along with the route configuration and the level of modal shift achievable based on the model results.

RESEARCH METHODS

Empirical research is conducted in this project. It focuses on the marine logistics and challenges faced by the industry. The study is done to identify the problem and provide some possible solution .Once the research problems were identified the research design was built to provide answers to the research questions. A questionnaire was created with open ended and closed ended questions. Statement type questions and multiple choice questions were used to get the responses. The target respondents were asked to mark the applicable statements according to their views based on the five point likert scale.In this research both primary and secondary data have been used. Primary data is collected through questionnaires and have recorded a response from 126 respondents. The respondents are from the marine logistics industry. These responses were collected through an online survey method with help of Google forms. The questionnaire was designed in a clear and understandable manner considering all the parameters of the study. The purpose of choosing different types of people was to know the opinion of people of logistics as well as different industries as marine logistics plays a greater role in recent times. And also to know their view about the challenges faced by the marine logistics industry.

DATA ANALYSIS
FREQUENCY ANALYSIS

The Frequency analysis consists of demographic profile of respondents such as name, age, general, educational details, qualification, preferred mode of logistics.
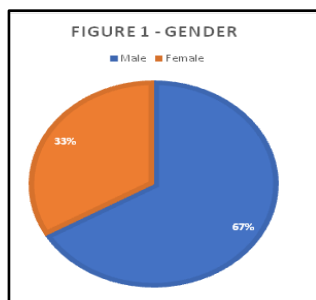

Fig.1: shows the frequency analysis of Gender . From the table it is clear that the majority respondents are male (66.7 %) and female respondents are (33.3 %).
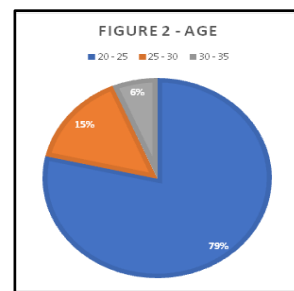

Fig.2: shows the frequency analysis of age. From the table it is clear that the majority of the respondents are between 20 – 25 (78.6%) , 25-30 (15.1 %) and lowest responses are from 30 – 35 age (6.3 %)
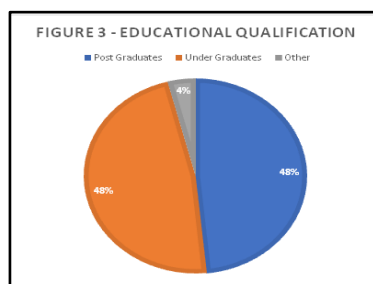

Fig.3: shows the frequency analysis of educational qualification . From the table it is clear that the majority of the respondents are post graduates (48.4 %) , undergraduates (47.6 %) and (4.0 %) are from other categories.
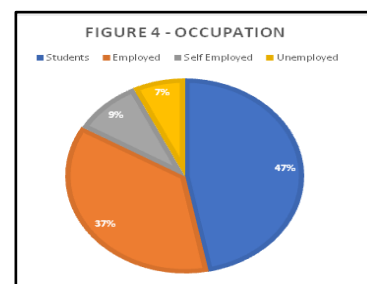

Fig.4: shows the frequency analysis of occupation. From the table it is clear that the majority of the respondents are students (46 .8 %) , employed (36.5%) , self employed(9.5%) and (7.1 %) are unemployed.
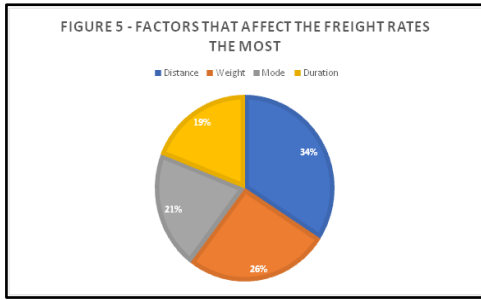
Fig.5: shows the frequency analysis of factors that affect the freight rates the most. From the table it is clear that the majority of the respondents choose distance (34.1%) , weight (26.2%) as the major factor and the lowest level of responses are for duration (19.0).
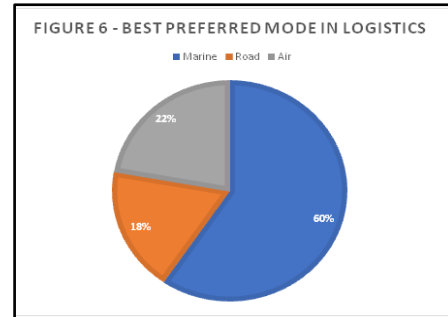
Fig.6: shows the frequency analysis of best preferred mode in logistics. From the table it is clear that the majority of the respondents prefer marine (59. 5%) and lowest responses are for road (18 .3%)
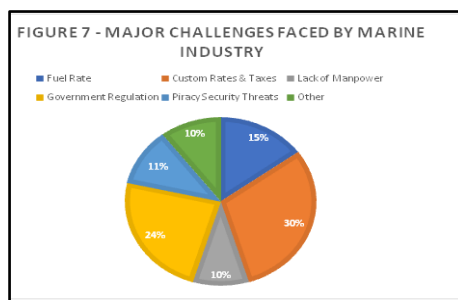

Fig.7: shows the frequency analysis of major challenges faced by the marine industry in logistics. From the table it is clear that majority of the respondents choose customs rates & taxes (30.2%), government regulations (23.8%) , fuel rates (15 .1 %) as the major challenge and the lowest responses are for lack of manpower (9.5%)

Table 1: ANOVA TEST

S.NO	AGE	F-VALUE	SIGNIFICANCE
1.	Current government regulations & tax regimes affect the shipping business	1.229	0.296
2.	Technological improvements & digitalization have improved the shipping industry	2.206	0.115
3.	Does lack of skilled labour & high wage rates affects the business	3.181	0.045
4.	Security threat & piracy a major problem in the shipping business	0.053	0.949
5.	The industry being highly capital intensive is a threat to the business	1.128	0.327
6.	Marine logistics involves high risk	0.438	0.646
7.	Weather changes & geographical hazards are the major challenge faced by shipping industry	0.309	0.735

Table 1 shows the Anova test. From the above table it is clear that the majority of the p value is greater than 0.05 hence it is interpreted that it is null and There is no significant difference among the age with respect to the challenges faced by the marine industry in logistics.

Table 2:

S.NO	EDUCATIONAL QUALIFICATION	F-VALUE	SIGNIFICANCE
1.	Current government regulations & tax regimes effect the shipping business	0.014	0986
2.	Technological improvements & digitalization have improved the shipping industry	1.641	0.198
3.	Does lack of skilled labour & high wage rates affects the business	0.408	0.666
4.	Security threat & piracy a major problem in the shipping business	1.735	0.181
5.	The industry being highly capital intensive is a threat to the business	0.957	0.387

6.	Marine logistics involves high risk	0.888	0.414
7.	Weather changes & geographical hazards are the major challenge faced by shipping industry	2.083	0.129

Table 2 shows the anova test. From the above table it is clear that majority of the p value is greater than 0.05 hence it is interpreted that it is null and There is no significance difference among the educational qualification with respect to the challenges faced by marine industry in logistics

Table 3:

S.NO	OCCUPATION	F-VALUE	SIGNIFICANCE
1.	Current government regulations & tax regimes affect the shipping business	1.218	0.306
2.	Technological improvements & digitalization have improved the shipping industry	2.536	0.060
3.	Does lack of skilled labour & high wage rates affects the business	0.702	0.553
4.	Security threat & piracy a major problem in the shipping business	0.430	0.732
5.	The industry being highly capital intensive is a threat to the business	1.948	0.125
6.	Marine logistics involves high risk	1.179	0.321
7.	Weather changes & geographical hazards are the major challenge faced by shipping industry	2.241	0.087

Table 3 shows the anova test .From the above table it is clear that majority of the p value is greater than 0.05 hence it is interpreted that it is null and there is no significance difference among the occupation with respect to the challenges faced by the marine industry in logistics.

Table 4: T- TEST

S.NO	GENDER	F-VALUE	SIGNIFICANCE
1.	Current government regulations & tax regimes affect the shipping business	0.215	0.965 0.965
2.	Technological improvements & digitalization have improved the shipping industry	0.274	0.460 0.439
3.	Does lack of skilled labour & high wage rates affects the business	1.117	0.467 0.453
4.	Security threat & piracy a major problem in the shipping business	0.030	0.836 0.837
5.	The industry being highly capital intensive is a threat to the business	1.238	0.062 0.066
6.	Marine logistics involves high risk	1.502	0.521 0.534
7.	Weather changes & geographical hazards are the major challenge faced by shipping industry	5.023	0.036 0.046

INTERPRETATION

From the following table it is clear that the majority of the f value is greater than 0.05 hence it is interpreted that its null and there is no significant difference between gender with respect to challenges faced by the marine industry in logistics . But there is a significant difference between gender vs weather changes and geographical hazards (0.036) (0.046) the major challenge faced by the marine industry in logistics.

Table 4: Mean Analysis

STATEMENTS	Mean	RANK
The industry being highly capital intensive is a threat to the business	2.9762	1
Security threat & piracy a major problem in the shipping business.	2.8413	2
Does lack of skilled labour and high wage rates affect the business	2.7937	3
Marine logistics involves high risk	2.7381	4
Current government regulations and tax regimes affect the shipping business.	2.6508	5
Technological improvements and digitalization have improved the shipping industry	2.4048	6
Weather changes and geographical hazards are the major challenges faced by shipping industry	2.3095	7

The mean analysis of various challenges faced by marine industry in logistics. It is clear from the table that industry being highly capital intensive is a threat to the business (2. 9762),security threat and piracy a major

problem in the shipping business (2.8413), lack of skilled labour and high wage rates affects the business (2.7937),marine logistics involves high risk (2.7381), current government regulations and tax regimes affects the shipping business, Technological improvements and digitalization have improved the industry by (2.4048), weather changes and geographical hazards are the major challenge faced by the shipping industry.

DISCUSSIONS

Some challenges like fuel rates are considered to be a great threat to the industry. So the government can provide measures to reduce the fuel price or provide considerations on fuel price to logistics industries so that they can perform better .To avoid weather hazards the shipping companies should use the strongest and most seaworthy ships as possible. Nowadays   modern container ships are designed to withstand most storms. Some engineers now use computer models to find the weather changes and make the ship work according to it so this kind of methods can be implemented to avoid problems related to weather. Geographical hazards can be controlled with proper planning and navigation. If something goes wrong because of geographic hazards it is due to lack of proper planning so companies should concentrate more in planning the voyage .Custom rates and taxes are considered to be the major challenges faced by the shipping companies. Some measures can be followed by the companies to reduce the tax burden like to have a proper supply chain , have checks on the value of the products in a proper manner, can use tariff codes and also get to know about the regulated products and plan for taxes in a proper way . But the government should also take measures and provide considerable rates as the shipping industry plays a vital role in the economy. To overcome security threat/ piracy the companies can use cyber softwares like Vessel Integrated Navigation System (VINS), Automatic Identification System (AIS), Radar systems, electronic systems and satellite communications. Shipping companies should employ skilled labour force and provide them with proper employment benefits so that the companies can work effectively and develop Government should take measures related to the regulations, provide schemes that will benefit the companies financially and encourage them to perform better and reduce tax rates. The shipping transportation industry is considered as the backbone of the economy. Proper growth in this sector leads to development of the whole economy of the country.

CONCLUSION

From the research it is clear that the marine transportation industry faces many challenges day to day. In the present scenario India appears to be the major economies in the world .So India will require a strong marine industry for economic growth and development. There are many factors, challenges faced by the industry that restrict the growth but the shipping industries have to overcome these challenges by following good plans and methods with the help, support of the government. Finally it is how the shipping companies use the opportunities to overcome the challenges and transform the sector into an engine of growth for India. Therefore it can be concluded that India as a strong transport sector , marine industry will go through big revolutions in upcoming years , all the current challenges will have its solutions, marine industry would be the leading in the transportation sector and contribute a major source for the upcoming future economic growth of the country.

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