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Bangladesh's Seafood Exports and the WTO Agreement on Sanitary and Phytosanitary (SPS) Measures

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Abstract: This research paper discusses the sea food sector with a specific reference to shrimp export from Bangladesh, the WTO and SPS measures. In the last about three decades, export of shrimp from Bangladesh has been fairly high and promising, with the export value rising from $250 million in the year 2000 to $ 650 million in the year 2023. However, the industry has received a considerable amount of opposition mainly the ban implemented by the Europeans Union (EU) and the United States due to issues on contamination and set standards on environmental conservation. The Dispute Settlement Mechanism of WTO, especially in the case Shrimp Turtle has been the center of operation in solving conflict within and between the countries with regard to trade issues and protection of rights as well as Straight, health and environmental concerns. This paper also describes the impacts of these SPS challenges on Bangladesh and its reactions through the enhancement of processing standards, worker awareness, and conformity to the global standards. Moreover, the research includes policy implications for Bangladesh for better competitive advantage such as the improvement of testing facilities and infrastructure, improvement of workforce capabilities, and more engagement and participation in WTO talks. Finally, the paper sustains the finding with the evidence that Bangladesh seafood industry can sustain if it complies with the SPS measures appropriately and engage in the WTO trade negotiations to protect fair access to the global markets.

Keywords: *WTO, SPS, Phytosanitary, DSM, Environment.*

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I. INTRODUCTION

Bangladesh is the country of large rivers and a long sea board. It has developed a clear pattern of fish production through both fishing and farming. Besides being cultural practices, these activities are economic activities and significant sources of people's livelihoods. Fish farming, fishing, and fish processing industries from where Fishery product exporter a significant source of our food and income for millions of people in Bangladesh. Presently Bangladesh becomes one of the leading fish-producing countries, which produces more than 1.4 million tons of fish annually. [1]

The country exports almost all type of seafood like shrimp, hilsa, ribbon fish, crabs, dried fish etc. in different market of the world especially in the USA, Japan, and China and in EU. Of these, shrimp, which is also known as "white gold", is the largest export item because of the high value of this commodity product. However, some of the other seafood products like hilsa fish which is a popular seafood in the country and crabs are on the increase and therefore are adding to export earnings. In 2023 the export of seafood was estimated at $500 million, of which the shrimp sector made up $300 million, 70 percent of the total seafood exports. [2] [3]

The seafood industry has a great potential; however, the industry has some barriers to overcome in the area of food safety and health essential for exporting to the international market. The regulation of SPS measures is done under WTO's Agreement of SPS Measures, which was formed in 1995. SPS Agreement makes it possible to maintain the proper risk tolerance as relates to food safety and animal and plant health and implements it based on science and international standard. It also calls for standardization of various practices across different nation in order to promote fairness in trade as well as the protection of health. [4]

This paper aims at identifying the importance of seafood exports of Bangladesh; especially shrimp, fish, crabs and dry fish. This paper looks at the specific ways in which WTO SPS Agreement affects this industry; the various difficulties that exporters experience and the benefits accrued to exporter upon compliance with WTO SPS Agreement.

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Particularly, by achieving the international standard Bangladesh not only can maintain the current market share, but also there is a lot more scope to promote and increase seafood trade in the global market.

II. LITERATURE REVIEW

Seafood business that is vital in global and regional business has been researched on various aspects including the industries and organization's strengths and weaknesses, technologies, and regulations. That is evident in the seafood market, particularly from Bangladesh, which has dependent on shrimp as its prime export product. SWOT analysis of Bangladesh shrimp sectors is given in Alam, S. M. (2024). Portraying the Bangladesh Shrimp Industry: A SWOT Analysis. Sustainability. 16. 16. 10.3390/su16031290. Showed that the sector has absolute strengths like preference of coastal geographical area, low cost of production and availability of skilled manpower. Nevertheless, some of the liabilities remain include low technology application, vulnerability to diseases and infrastructural shortcomings. Challenges include flexibility in value addition, foremost global market space, foremost global market space, and international certifications while the threats include climate disruptions, disastrous trade barriers. It implies that a strategic invest in disease control, in infra structure and in compliance with global standards is necessary for a sustainable growth. [5]

Subash, Abhirami & Ramanathan, Hareesh & Šostar, Marko. (2024). Market-Driven Mapping of Technological Advancements in the Seafood Industry: A Country-Level Analysis. Economies. 12. 313. 10.3390/economies12110313. explored the scenario of Industry 4.0 technologies – block chain, robotics and automation – in global seafood processing. Today it is driven by leading developed countries such as Norway and South Korea employing complex techniques to improve traceability, sustainability, and production. However, sources of challenges include high initial costs, lack of skilled labor and poor finance. This view is in line with the countries in the developing world like Bangladesh where such frameworks are likely to experience such challenges. These issues point to the crucial need for policy changes accompanied by formation and enhancement of capacity to close existing technological deficits for competitiveness. [6]

Ullah, Md & Islam, Md. Saiful & Ferdous, Farhana & Rana, Md. Liton & Hassan, Jayedul & Rahman, Md.Tanvir. (2024). Assessment of prevalence, antibiotic resistance, and virulence profiles of biofilm-forming Enterococcus faecalis isolated from raw seafood in Bangladesh. Heliyon. 10. e39294. 10.1016/j.heliyon. 2024.e39294. examined the scenario rates, anti-bacterial safe, and poisonousness of biofilm shaped Enterococcus faecalis in layer like seafood in Bangladesh. They were able to identify that 29·3% of the samples were contaminated with crabs and fish samples having the higher rate. Overall, 88.64% of the isolates formed biofilm by using the current endemic NGOH method, and SBF displayed more resistance against antibiotic such as penicillin and ampicillin used in the study simultaneously possessing more virulence genes. The researchers focus on the dangers that antibiotic resistant E. faecalis poses to public health through seafood and emphasis on cleaning practices and proper use of antibiotics. [7]

Lastly, Naser, Niamul & Sarker, Manmatha & Hosain, Md. (2022). Whiteleg shrimp Litopenaeus vennamei: Current status, future prospects and opportunities for Bangladesh Aquaculture. Bangladesh Journal of Zoology. 50. 143-184. 10.3329/bjz. v50i2.62051. have pointed out, sustainability in seafood supply chain. It unveils how the seafood industry of Bangladesh can conform to international environmental norms by applying green principles of processing as well as waste disposal. All these measures combined with compliance to SPS measures will go a long way in rebuilding image of the industry as a global competitive sustainable player. [8]

In sum, there are technological, regulatory and organizational deficiencies for the sustainable growth of seafood industry of Bangladesh. To develop strong market access and sustainable production, targeted investments in Industry 4.0 technologies alongside disease control measures, and conformity to WTO SPS measures are essential.

- *Research Gap*

Several research gaps have been identified that relate to the problem formulation concerning challenges and opportunities for the seafood industry of Bangladesh towards compliance with WTO SPS measures. First, there is a relatively low level of research on how technological developments like smart testing and block chain solutions can enhance the work of enterprises in the sphere. Furthermore, there is a lack of research on adopting environmentally friendly farming practices with regard to SPS compliance to determine how sustainable farming could help producers conform to the standards of the international markets. There is also need to encourage further research on capacity building, for various stakeholders inclusively farmers, processors and regulators so as to accord a uniform quality and regulatory standards. More significantly neglected in the literature and in policy evaluations are the bodies of economic research on the costs of ensuring compliance, particularly for the SMEs, as well as the net gains in business sustainability from their implementation in the long run. Moreover, Bangladesh's participation at WTO forums and effective utilization of more trade policy to obtain suitable SPS measures has not been examined. Finally, potential impacts of SPS compliance on export performance and global competitive index of Bangladesh have not been examined coherently. Filling these gaps will improve the capacity of the industry providing solutions towards the challenges arising from SPS barriers while improving stand of seafood industry across the international market.

III. MAIN BODY

- *Principles and Objectives of the WTO SPS Agreement*

The principles use of the WTO is to aid its members to employ trade as a way of increasing income, employment opportunities and standard of living of people. It administers

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the trade system by providing a set of rules consistent globally and supports the development of new economy by enhancing their trade sophistication and aims at developing a fair-trading world system. And the sanitary and phytosanitary measures are the legal instruments that countries employ in order to protect people, animals, and plants form any Harm that is as a result of introduction, establishment or spread of diseases and pets. The WTO operates the global system of trade rules, helps developing economies build their trade capacity and seeks to create a more inclusive trading system. Sanitary and phytosanitary measures are regulations which countries apply to help prevent the spread of diseases and pests which are hazardous to human, animal and plant lives. The SPS Agreement of WTO grants the WTO Members the right to connive SPS measures in an endeavor to safeguard human, animal or plant life or health. The Agreement also provides that each WTO Member can furnish level of protection that the member feels protective of the human, animal or plant life and health. [9]

➢ *There are Many Kinds of SPS Measures Such as:*

- *Protection of Human Health:*

The ultimate goal of SPS measures is to avoid pathogens and contaminants that are likely to infect food products that influence the health of man. These include code of practices on food safety, microbiological criteria, and maximum residue limit of pesticide.

- *Animal Health:*

In Animal Health SPS measures concentrate on measures to avoid introduction and spread of diseases in animals. These are legislation on exportation and importation of live animals, animal products, and animal by products.

- *Plant Health:*

In the interest of plant health, SPS measures aim at controlling the transfer of certain plants and plant products which may contain pests and diseases that are dangerous to the health of crop, forest and other vegetation.

- *Trade Facilitation:*

When adopted and operated to the latter, SPS measures contribute to global trade by providing health and physical attributes that should be met by traded products. This means there is trust among trading partners and consumers making cross border transactions to be more fluid.

- *Market Access:*

These measures also have the aspect of the laws of the SPS being an essential condition for access to the market. Such nations may either be barred from accessing international markets or some of their products may be banned altogether.

- *Economic Consequences:*

Failure to meet SPS measures is likely to lead to considerable losses in market, export earnings and also the livelihoods of individuals who are involved in the agricultural value chain.

- *Consumer Confidence:*

The measures included under SPS help the consumer to develop confidence in the quality and safety of the products imported in the country. This is much relevant especially those industries that have direct impacts on the people of Tanzania such as food and agriculture industries. [10]

➢ *Core Principles*

- *Scientific Basis:*

There is a scientific justification if a member having regard to the processes of review and assessment set out in the relevant provisions of this Agreement, concludes that the existence of insufficient scientific data for the applicable international standards, guidelines to achieve the appropriate level of protection of pharmaceuticals after having regarded the related measure. It is said that there exists a scientific rationale' if the SPS measure and the scientific information support each other in some sense.

- *Harmonization:*

Harmonization is the formation and identification of equivalent sanitary, iso sanitary and phytosanitary measures in a number of countries.

- *Equivalence and Mutual Recognition:*

The concept of equivalence means when an exporting country proves that its SPS measures provide the imported country risk at the acceptable level. In this case the importing country must accept the exporting country's SPS measures to be as acceptable as their own. This relieves the producers in the exporting country from the burden of meeting two sets of standards; domestic and international. [11]

- *International Standards:*

The WTO SPS Agreement encourages using global standards set by organizations such as:

✓ International Food Safety and Quality (Codex Alimentarius Commission).
✓ World Organization for Animal Health (OIE) (animal health).

Although not an example of this, the International Plant Protection Convention (IPPC) is an agreement among nations promoting plant health.

- *Transparency and Notification:*

Member countries should inform the WTO of SPS measures changing that affects trade, and give due consideration to exporters.

➢ *Bangladesh's Seafood Export Industry and SPS Compliance*

- *Major Export Destinations:*

In 2023 Bangladesh export seafood in different countries, where the largest buyer was the European Union (EU) particularly Shrimp at $422.28 million. [12] The USA was the second largest importer, importing $6, 26 million; Canada imported $1, 69 million. Exports to Japan and

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Australia were much lower with estimate of 0.782 million and 0.16 million US $ respectively. This demonstrates the fact that EU remains the largest market of Bangladeshi seafood while the export to other zones is considerably small. [13]

The graph below shows that the EU is the largest importer of Bangladeshi seafood in 2023, followed by much smaller exports to other countries:

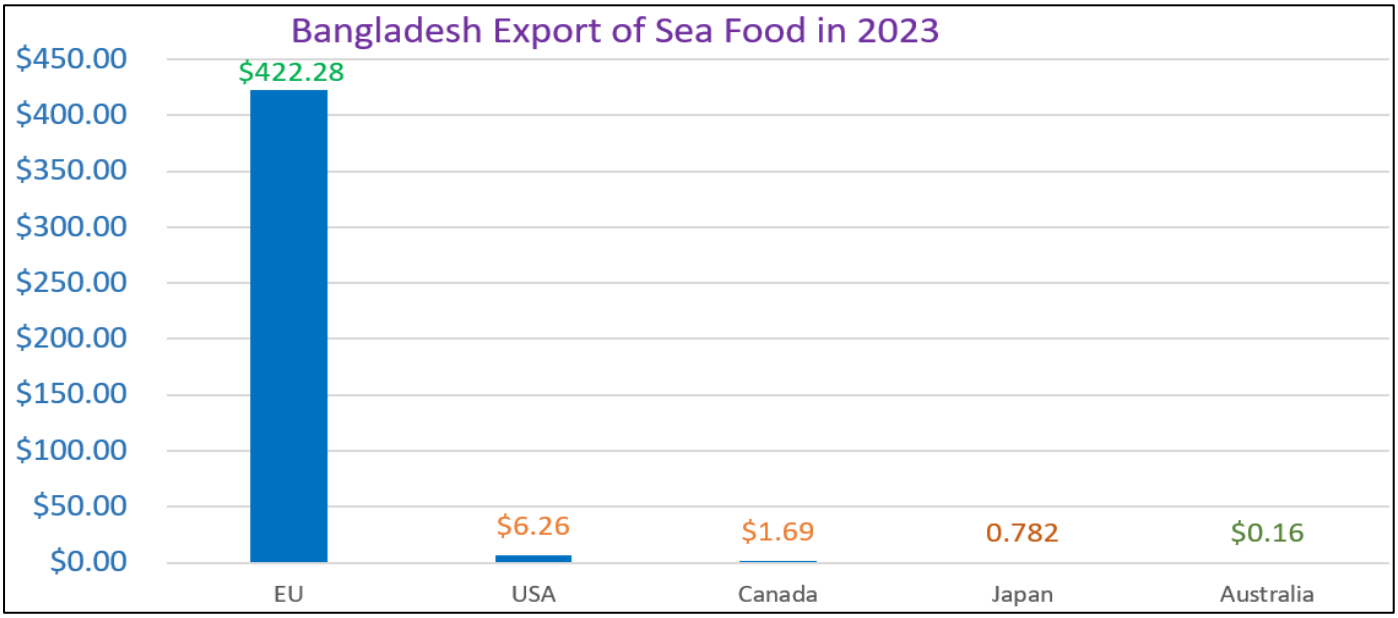

Fig 1 Bangladesh Export of Sea Food in 2023

➢ *SPS Challenges*

- *Historical Case:*

In July 1997 EU banned Bangladeshi shrimp due to the failure of Bangladeshi exporters to adhere to new health and safety rules enshrined under HACCP. The key issues under consideration were identified as lack of sanitation, lack of proper facilities & infrastructures in processing houses, and concerns over the credibility of the inspections carried out by the Bangladeshi authorities The banning of Bangladesh shrimp export to the EU in 1997 amounted to a reduce of $65.1 million that were equal to approximately 20% of the total export earnings of seafood's in Bangladesh. It stemmed from (a) apprehensions about standards in respect of aspects concerning health protection, quality, physical structure and cleanliness in the processing factories and (b) disbelief in the efficacy of the measures being conducted by the regulating agencies in Bangladesh. This degree of effect was attributable to the fact that the shrimp industry was hugely vital to the country's economy. As the country largely relies on export of shrimp, its export to EU was nil during the 5 months ban (August– December 1997). Bangladesh shifted export to the USA and Japan the two largest importers at the time made up 38% and 26% of export markets for shrimp in Bangladesh during the 1997 EU ban. Nonetheless, the industry has been facing a net loss of $14.7 million because of low prices and problems with shipment. [14]

➢ *SPS Compliance*

SPS compliance gives information on the compliance of food, plants and animal health and safety regulation. I the SPS conformity, safety and purity of these elements from contamination are guaranteed. The WTO makes these standards for countries that trade with each other.

➢ *Importance of SPS Compliance*

- *Safe Food:*

It makes the food dishes covering well-preparation and security from infected food. Selling Products: If a given area fails to adhere to these regulations is barred from marketing their produce in some markets such as the EU or the US.

- *Protecting Farms:*

Pests and diseases that affect plants and animals can be prevented by it.

- *How it Affects Seafood Exports:*

The message to Bangladesh is that shrimp and fish are safe products for sale in other countries. This includes the analysis of seafood samples for bacteria or chemicals, adequate cleanliness of seafood plants, identification of the source of seafood in case of an issue. [15]

➢ *Challenges for Bangladesh*

- *High Costs:*

What is quite funny is that laboratories, seafood had been in the past by this quite costly project as well as shrimp.

- *Past Problems:*

The Bangladeshi shrimp in the 1990s, EU was shamelessly wrong to ban as it wasn't clean.

- *Quality Control:*

This poses the difficulty in Fishery." It is very difficult in order to guarantee that all seafood is of the same quality.

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➢ *Why It Matters*

If Bangladeshi respectively follows these regulations, similar to what the Japanese, EU, and the US fish industries allow other countries to access their international markets, consequently, Bangladeshi economy expands, thus the development of trust in Bangladeshi products promotion. In addition to better demand of quality labors is better training is the main task for success. [16]

➢ *Case Study: EU Exports Ban on Bangladeshi Shrimp (1997)*

The EU banned importation of shrimp from Bangladesh in 1997 after they discovered dangerous bacteria in the shrimp. This event explains why it is essential always to adhere to food standards while dealing with food products in the foreign markets.

- *Background:*

Shrimp is one of the country's major exportable commodities through which a large of foreign exchange is earned. The EU remains as one of Bangladesh's largest importers of shrimp. But in the 1990s, it became rather difficult for Bangladesh to meet the requirement of the EU in food safety.

- *The Incident:*

Returning to European Union concerns, in 1997, the EU discovered pathogens such as dangerous bacteria, Vibrio Cholerae in Bangladeshi shrimp. This in turn caused consumers around the globe to question the hygiene of seafood's from Bangladesh. For this reason, the EU suspended the importation of shrimp from Bangladesh for some time.

➢ *Effects Within a Short Span of Time in Bangladesh*

- *Economic Loss:*

The ban so devastated the shrimp industry because the EU was one of the biggest importers of Bangladeshi shrimp. Some shrimp factories were closed, and employees were laid off.

- *Reputation Damage:*

A consequence of the ban was the creation of negative image of Bangladesh in the export market. Other countries also began to develop doubts about the safety of Bangladeshi seafood.

- *Response to the Ban:*

Bangladesh also started short term and long-term measures to fight the problem.

- *Improved Facilities:*

Shrimp factories got upgraded in order to ensure hygiene norms that are implemented all over the world. New technologies were put in place to make seafood more secure.

- *Adoption of HACCP Standards:*

Bangladesh started implementing the latest technologies in food safety hazards in production through HACCP (Hazard Analysis and Critical Control Point).

- *Training Workers:*

Training of the Workers in the shrimp industry was about handling of foods safely as well as cleaning parts of the working environment.

The Awareness programs were conducted in order to educate people the relevance of food safety rules.

➢ *Outcome*

- *Ban Lifted:*

After these improvements the EU again opened the door for the imports of shrimp from Bangladesh.

- *A Stronger Industry:*

The positions of shrimp industry improved and became safer to compete internationally with stipulated food safety.

➢ *Lessons Learned*

- *Cost of Non-Compliance:*

Failure to observe those regulations results to heavy losses and exclusion from strategic markets. The costs involved in rectifying issues that must have been prevented are always so much higher than the costs of observing set standards once banned.

- *Importance of Food Safety Systems:*

Safety systems such as the HACCP benefit the firm in sustaining safety and also reassuring the buyers.

- *Being Proactive:*

At least the problems can be prevented in future through regular checks on the structures, improving on the structures and proper training of the personnel.

It was a bitter lesson for Bangladesh when the EU banned its shrimp in 1997. However, when applied it led to short term harm but together with it brought about improvements on the shrimp industry. This made it clear how pertinent the capability regarding the safety rules that help ensure access to global markets as well as expansion of the export business. [17]

➢ *Impact of SPS Measures on Bangladesh's Seafood Industry*

- *Compliance Costs:*

Since exports of shrimp has become a key part of its seafood market, sanitary and phytosanitary (SPS) measures are especially important in Bangladesh. To conform to these international standards the seafood processors have to open new sophisticated processing plants and acquire the HACCP membership which guarantees the food safety through critical points of production. To achieve this, it can be costly; launching at $232,492 for initial enhancements and $181,512 in compliance every year. In addition, it is required to frequently test the seafood for antibiotics, pesticides and all other forms of chemicals which are prohibited throughout the world, all these increases even further the costs. These costs though tough I would say especially to the producing

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companies are head necessary in order to break into the EU market and in this case the US market is also tight on food safety measures. Nonetheless, attaining these standards may not be very easy and affordable for instance small seafood farming companies may lack the capital to invest in these aspirations. However, the non-observance of SPS measures can have more productive outcomes for the industry by giving a better quality of seafood products and enhance the level of confidence among the buyers. It means that with time, there will be high demand in the foreign markets, and thus offer a good growth strategy in the long run. According to global standards, the seafood sector setup in Bangladesh can emerge stronger in world market thereby and increasing exports and exports' contribution to the Bangladeshi economy. [18]

- *Market Access and Growth in Bangladesh's Seafood Industry:*

Stringent implementation of SPS measures have helped increase seafood exports significantly especially to the EU and US markets. Thus, the DC consumed these hugely profitable markets that are strictly health and safety locked in addition to meeting global food safety standard. Shrimp exportation has been one of the biggest success stories in the years past and up to date. Subsequently, the processing plants were modernized, and HACCP accreditation was obtained, and Bangladesh shrimp exports reached more than $500 million per year. These increases have been brought about by efforts to conform to SPS standards, thus continually promoting the export of high-quality seafood. The SPS compliance has not only helped Bangladesh in entering into major markets of the world but it has also ensured the steady growth of shrimp export from Bangladesh to become one of the leading players in the world market of seafood exporting country. [19]

➢ *Shrimp Export Value Growth:*

- *Before SPS Compliance:*

Being constraint by the inability to secure these certifications, Bangladesh shrimp exports were tiny and erratic.

- *After SPS Compliance:*

You know, they introduced betterment in processing plants and implementation of HACCP certification, shrimp export was increasing gradually.

- *Market Access:*

Taking SPS measures led to the access to high value-added markets such as EU and the US for Bangladesh. These markets require adherence to food safety and quality requirement in equal measure. Thus, Bangladesh not only got access to the market but also doubled the value of exports and became an accredited supplier of seafood around the world.

➢ *Growth Trend*

- *2000–2005 (Laying the Groundwork):*

In the early 2000 and prior to the start of the global financial crisis in 2008 Bangladesh shrimp export was a modest $200-$300 million. Failure to adhere with the international food safety standards, and aged processing plants resulted to limited market opportunities especially in high end markets such as EU and US. This period was concerned with groundwork as Bangladesh started making attempts to know what was required to adopt international standards.

- *2005–2010 (Turning Point):*

This period also seen the beginning of changed for the shrimp industry. Large improvements to the processing plants were made & Bangladesh embraced the HACCP certification & became in line with the international SPS measures. Such improvements lead to gradual increases in export since Bangladesh was building trust from the high value markets. These measures paid off and by 2010 the shrimp export was valued at $300 million annually.

- *2015–2023(Sustained Growth and Stability):*

Bangladesh seafood industry revitalize from the year 2015 onward. Having exports of between $500 million and $550 million a year and rising to well over $600 million in recent years, the industry also reinforced its standing in global markets. Pursuing SPS measures consecutively along with the reputation of the export quality, Bangladeshi seafood sector continued to be a premier export sector. [20]

The graph below presents the trend analysis of exported shrimp of Bangladesh over the years. It discusses particular time frames, including the period of low and fluctuating exports up to 2005, the growth coupled with the primary upgrades and SPS conformity in 2005-2010, and the seven years of relatively stable exports at levels in the range of $600 million as from 2015.

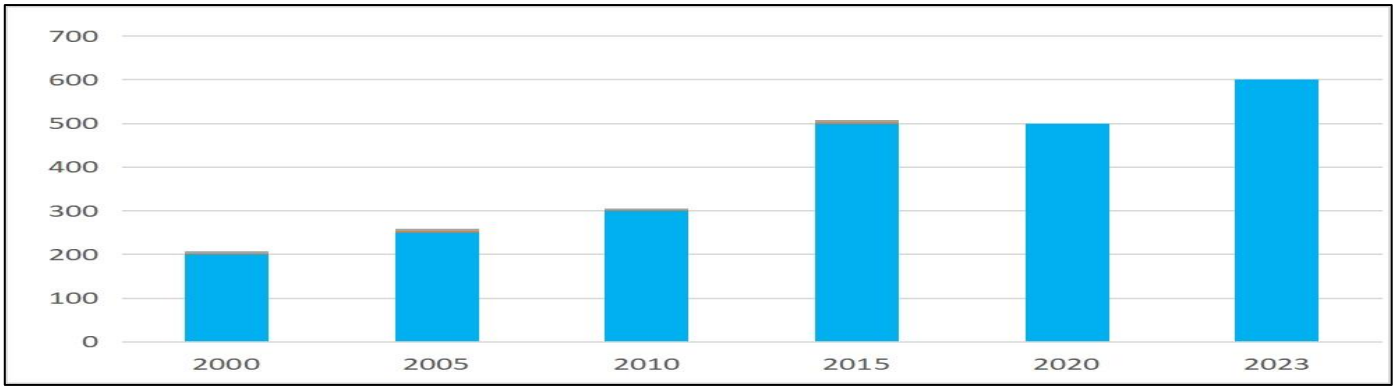

Fig 2 Market Growth in Bangladesh's Seafood Industry

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➢ *Economic Growth of Bangladesh Seafood Industry*

The following chart depicts the figure of Bangladesh shrimp export from the year 2000 to 2023. It outlines year by year export value and main trends of export value over the production years. [21]

Table 1 Economic Growth of Bangladesh Seafood Industry

Year	Amount
2000	250 Million USD
2005	300 Million USD
2010	300 Million USD
2015	500 Million USD
2020	600 Million USD
2023	650BMillion USD

➢ *Role of WTO Framework in Addressing SPS-Related Disputes*

- *WTO Dispute Settlement Mechanism:*

The World Trade Organization (WTO) plays an important role in resolving trade disputes, including those related to Sanitary and Phytosanitary (SPS) measures. SPS measures are rules that protect human, animal, and plant health. When countries disagree over these rules, the WTO provides a clear process for resolving the conflict. The WTO's Dispute Settlement Mechanism (DSM) works step by step. First, countries try to solve the issue through talks. If that doesn't work, a group of experts is asked to look at the problem. If one country disagrees with the decision, they can appeal. This process ensures that all countries are treated fairly and that the rules are followed. By providing this system, the WTO helps countries trust the global trading system. It ensures that trade is fair and transparent, and that countries can protect their health and safety without using unfair trade barriers. The WTO's work in resolving SPS disputes makes global trade smoother and more predictable, helping countries trade with confidence. [22]

➢ *Bangladesh's Experience with SPS Disputes*

- *Shrimp-Turtle Case (Bangladesh vs. US):*

A significant case involving Bangladesh and SPS measures is the Shrimp-Turtle Case with the United States.

- *The Issue:*

In this case, the United States imposed a ban on shrimp imports from countries, including Bangladesh that did not use turtle-excluder devices (TEDs) in their shrimp fishing. TEDs are designed to allow sea turtles to escape from fishing nets, which is crucial for protecting marine life. This measure was aimed at preventing harm to endangered sea turtles during shrimp harvesting.

- *Bangladesh's Response:*

Bangladesh objected to the ban, taking the matter to the World Trade Organization (WTO). The country argued that the ban was discriminatory and violated the Most-Favored-Nation (MFN) principle, which ensures that trade rules should be applied equally to all WTO members. Bangladesh claimed the ban was unfairly targeting certain countries while others did not face the same restrictions.

- *The Outcome:*

The WTO ruled partly in favor of Bangladesh. The organization recognized the importance of environmental protection measures like TEDs but stated that such measures should not be used to discriminate against specific countries. The ruling emphasized that environmental measures should be non-discriminatory and justified only if they meet clear, fair standards. The WTO made it clear that such measures should not unnecessarily restrict trade.

- *Key Takeaway:*

This case demonstrated that the WTO's dispute settlement system can address both trade and environmental concerns effectively. It also highlighted how the WTO works to ensure that countries can adopt necessary environmental protections while maintaining fair and open trade practices. The case shows the WTO's role in balancing the protection of the environment with the need for non-discriminatory international trade. [23]

- *Preventive Role of WTO:*

The WTO plays an important role in preventing trade disputes, especially when it comes to Sanitary and Phytosanitary (SPS) measures.

- *Encouraging Notifications:*

The SPS Agreement encourages WTO members to notify other countries about new SPS standards before they are enforced. This reduces the chances of misunderstandings or disputes. When a country plans to introduce a new food safety rule or plant health standard, it must inform other WTO members, giving them time to adjust and prevent unfair trade barriers.

- *Negotiating Standards:*

Countries like Bangladesh use WTO platforms to discuss and negotiate SPS standards that affect their industries. For example, Bangladesh engages in WTO discussions to ensure its seafood exports meet international standards, making sure they remain competitive in global markets. By participating in these forums, Bangladesh can protect its export interests and avoid unnecessary trade restrictions. [24]

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➢ *Policy Recommendations for Bangladesh*

- *Enhancing Compliance with SPS Measures:*

To improve compliance with Sanitary and Phytosanitary (SPS) measures, countries need to focus on several key areas that can help ensure their products meet global standards and maintain competitiveness in international markets.

- *Strengthening Testing and Certification:*

One of the most important steps is investing in modern testing labs. These labs help ensure that products, especially in industries like seafood, meet the required food safety and quality standards. Regular updates and audits of these testing facilities are also crucial. This ensures that products pass inspection and prevents issues like export rejections due to outdated practices or non-compliance with new global standards.

- *Capacity Building and Training:*

Another critical area is training. By educating farmers and workers on best practices for handling and processing products, especially seafood, countries can avoid mistakes that could lead to compliance issues. Additionally, focusing on sustainable farming methods, like reducing the use of antibiotics, helps ensure that production processes meet not only safety standards but also environmental and health guidelines that are becoming more important in global trade.

- *Public-Private Partnerships:*

Collaboration between the government, private exporters, and international organizations can strengthen the implementation of SPS measures. Governments can work with private companies to create programs that encourage adherence to best practices. Countries can also tap into technical assistance provided by the WTO or other international organizations to build local expertise and capacity. This helps ensure that the country's agricultural and seafood products are in line with international standards, boosting trade opportunities. [25]

By focusing on these areas improving testing and certification, capacity building, and creating partnerships countries can enhance their ability to comply with SPS measures, avoid trade barriers, and increase the competitiveness of their exports.

- *Engagement in WTO Negotiations:*

For developing countries like Bangladesh, being actively involved in WTO negotiations is very important, especially when it comes to Sanitary and Phytosanitary (SPS) **measures**. These measures often affect trade, so it's crucial for countries to have a voice in the discussions to protect their interests and ensure fair treatment.

- *More Time for Compliance:*

One of the key priorities for developing countries in WTO negotiations is securing more time to comply with new standards. Least-developed countries (LDCs) often face significant challenges in meeting the strict SPS requirements due to limited resources, technology, and infrastructure. By negotiating for longer compliance periods, they can get the necessary time to enhance their facilities, train workers, and improve the quality of their products. This adjustment period is essential for ensuring that countries can meet international standards without facing trade barriers or losing export opportunities. [26]

- *Building Stronger Partnerships and Accessing Support:*

In addition to seeking longer compliance periods, developing countries can strengthen their position by forming stronger partnerships with other nations. By working together, these countries can pool their resources, share knowledge, and advocate for policies that better support their development goals. Active engagement in WTO discussions also provides an opportunity for countries to access technical support and training. This assistance from the WTO helps improve local industries, enhance product quality, and ensure compliance with global SPS standards. As a result, developing countries can improve their trade capacity and competitiveness in the international market. [27]

IV. CONCLUSION

The seafood industry in Bangladesh over the years: shrimp export was $250 in 2000 and expected to reach over $ 650 million in 2023. This growth has been as a result of the country's flexibility to WTO SPS measures for agriculture, horticulture, and livestock production. However, some setbacks like the EU and the US banned the importation of seafood from Bangladesh because of the poor standards of safety compulsory across the country, Bangladesh seafood industry has been able to prove stubbornness.

There were barriers such as the EU's ban on Bangladeshi shrimp in 1997 due to contaminants such as Vibrio Cholerae and the US rejection of shrimp from countries that did not use TEDs in fishing. But these difficulties led Bangladesh to transform the seafood sector by improving the processing factories, implementing HACCP standard, and training its employee. These efforts paved way to the removal of the bans that prevented Raw materials to be exported to Bangladesh and regain necessary markets.

The DSM of the WTO made a significant contribution to the identification of trade issues regarding the measures of SPS. In the Shrimp-Turtle case between Bangladesh and the US, the WTO backed its agreement to the protection of the environment as well as SPS measures ifuts applied fairly and without discrimination. This case has shown the potential of the WTO to accommodate trade and environmentalism, to provide equal chances for participation in world markets for the states, including Bangladesh, and to protect endangered species, for example.

In the future, seafood industry of Bangladesh needs to ensure that adequate measures on new and emerging SPS measures are taken so that the export business remains competitive in the world. To provide continued market access, measures to enhance testing and certification, access to training and support of private sector development and PPPs will be necessary. Another reason for full engagement

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in WTO negotiations is also important for the extension of compliance periods as Bangladesh needs more time to meet WTO standards.

So, with improving its commitment towards international export rules and regime and towards SPS measures. Bangladesh can stimulate sustainable and improved growth of seafood exports. By these endeavors the country can sustain the export of seafood which is a major export product without compromising public health and the environment as well as sticking to free and ethical world market practices.

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