

Evolution of the strategies for betterment of future: A case study of export oriented seafood industry in Sri Lanka

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ABSTRACT

Exports of fish products are important to diversify sources of income and achieve higher standards of living to fisher folk. This paper attempts to trace the strategic situation of export oriented seafood industry in Sri Lanka, focusing on how the international market dynamics have influenced the emergence and development of the sector. The study was heavily based on primary data collected from major exporting commodities such as prawn, tuna, and shark fin. Situation audit highlighted that structural problems among policy makers, research and fishers hurdle in the way for further development. Location and resources are crucial geographic factors influencing to stimulate the export diversification across fishery products with competitive pricing. International market regulations have significant impact on adaptation for export markets. Explore non-traditional species, value addition and product differentiation, market expansion and marketing campaigns for identical products, improve domestic marketing, expansion of prawn (abundant limestone pits in southern coast) and crab farming and competitive export pricing with quality products are the important S-T strategies. More influential W-O strategies are lowering the dependency on subsidies, access opportunity for capital and technology, trade fairs for promote brand names and prior opportunities for private sector participation. S-T and W-T strategies show the ways to develop competitive advantage overcome by threats. Industry is far from a situation where it can live up to the demands expected to be place upon it by the international market in future.

Keywords: Export oriented seafood, strategies, international market dynamics, competitive advantage, export diversification, Sri Lanka

INTRODUCTION

The seafood industry is considered to be of disproportionate importance to the economies of many less developed countries, where production and commercialization of fishery products may contribute an important source of animal protein, employment and export revenues. Although non-traditional resource exports are central to the Sri Lankan's new economic model. The country's fisheries production has received little attention. Fisheries in the island can be broadly divided into four categories, coastal or inshore fisheries, off shore and deep-sea fisheries, inland fisheries and coastal aquaculture. A wide range of coastal pelagic and demersal species, typical of tropical multi-species fisheries, supports fisheries on the self. Today more than 500,000 people are directly employed in the fisheries sector and total landings are almost 120,000 Metric Tons (Central Bank of Sri Lanka, 2001). Export of fish and fishery products from Sri Lanka on a commercial scale began in the early 1970's and has grown rapidly in the 1980's. Particularly of importance is the growth of shrimp culture, ornamental fisheries and shark fins, the chilled and frozen fish export sub sectors, which consist of the most promising fishery export industries, that have a high potential for further development. The value of fish exports also increased at similar rate to Rs. 4677 million. The increase in marine fish production and recovery of the prawn industry from the white spot and yellow head diseases were the main reasons for the faster growth of fish exports. Technological advancement in the fields of scientific culture of fish, aquarium production, fish preservation, grading, quality standards, packing, etc., have all contributed heavily to the development of these industries. The frozen items entered in the export basket in 1981 in negligible quantities of frozen shrimp. From this benchmark year export of processed items were making steady progress. With the devaluation of Sri Lankan currency in mid 1980's the frozen and processed items registered a significant rise. These items continued to dominate the trade. Markets for Sri Lankan products spread fast to developed countries mainly Japan, European union and USA, from the traditional buyers.

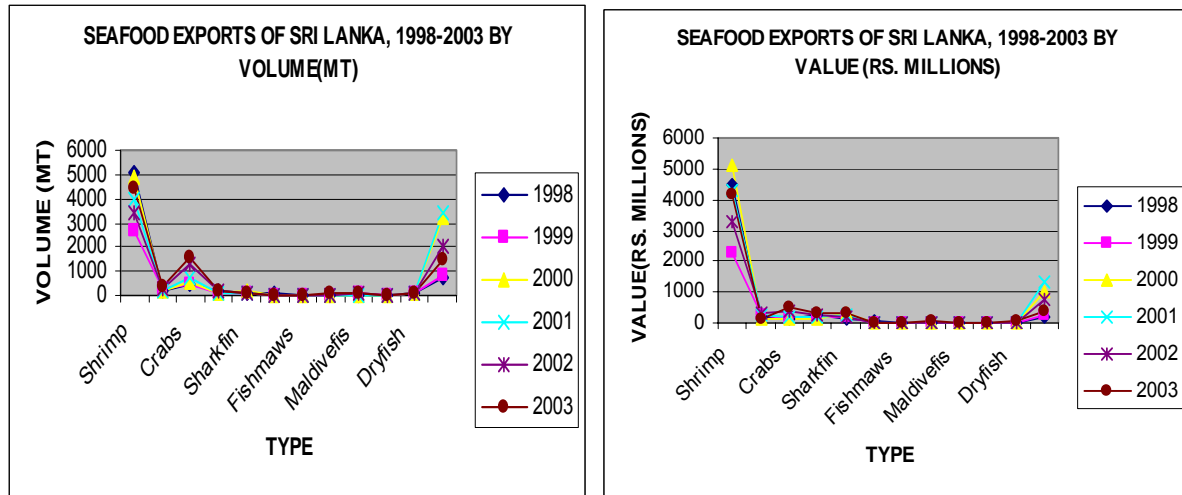


Figure 1. Present status of the sea food exports of Sri Lanka.

Objectives of the study

This paper attempts to trace the strengths, weaknesses, opportunities and threats of the Sri Lankan seafood industry, examine the export strategies adopted by different sub sectors as well as its role in poverty alleviation and its contribution to enlistment of livelihood of rural fish folk. The main aim of this study was to identify strengths, weaknesses, opportunities and threats of different sub sectors, such as shrimp, prawn and lobsters, tuna, crabs, shark fins and cephalopods of Sri Lankan seafood industry for the future strategic planning purposes. Secondly, aims to construct SWOT matrix and identify the competitive advantage of Sri Lankan seafood industry. Finally attempts to trace the developments of Sri Lankan seafood industry and to evaluate its future as a suitable industry for generating income while providing nutritional diet to its inhabitants. Little research attention has previously been paid to examine the potentials, possibilities and problems that hinder the progress of Sri Lankan seafood industry. This attempt is willing to fulfill the very important need of the hour as well as the country.

MATERIALS AND METHODS

This study has mainly based on primary data gathered from in-depth interviews of key informants of various sub sectors, i.e. shrimp, prawn, lobsters, tuna, crabs, shark fins, cephalopods of Sri Lankan seafood industry. On the other hand secondary data is also used analysis the present situation of Sri Lankan seafood industry was published by export development Board of Sri Lanka, Central Bank of Sri Lanka and Dept. of Customs of Sri Lanka. Data analysis mainly based on Michael Porter's (1980) five-forces model (industry analysis), PEST analysis for understanding macro-environment and SWOT analysis (analysis of the external and internal environment of the industry). SWOT matrix was used to construct the strategies. The industry's strengths are its resources and capabilities that can be used as a basis for developing competitive advantage. The absence of certain strengths may be viewed as a weakness and some times, a weakness may be the flip side of strength. The external environmental analysis may reveal certain new opportunities for profit and growth changes in the external environment also pay present threats to the firm.

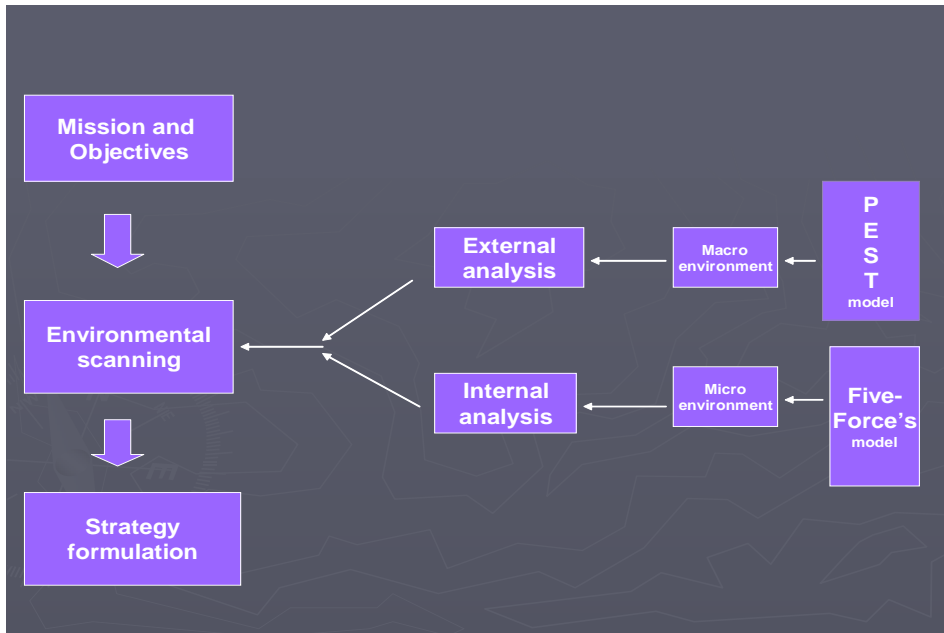


Figure 2. Conceptual frame work

SWOT analysis

SWOT analysis provides a framework for identifying critical issues of Sri Lankan seafood industry. First the focus is on the concerned industry: country, region and entities. Then, analysis is limited to the significant strengths, weaknesses, opportunities and threats that characterize the situation. Strengths are positive aspects internal to the industry, weaknesses are negative aspects external to the industry, opportunities are positive aspects external to the industry and threats are negative aspects external to the industry (Johnson and Scholes, 1999). SWOT analysis is a tool for auditing an organization and its environment. It is the first stage of planning and it helps to focus on key issues (Johnson and Scholes, 1999). A scan of the internal and external environment is an important part of the strategic planning process. The SWOT analysis provides information that is helpful in matching the firms resources and capabilities to the competitive environment in which it operates and it is instrumental in strategy formulation and selection (Johnson and Scholes, 1999).

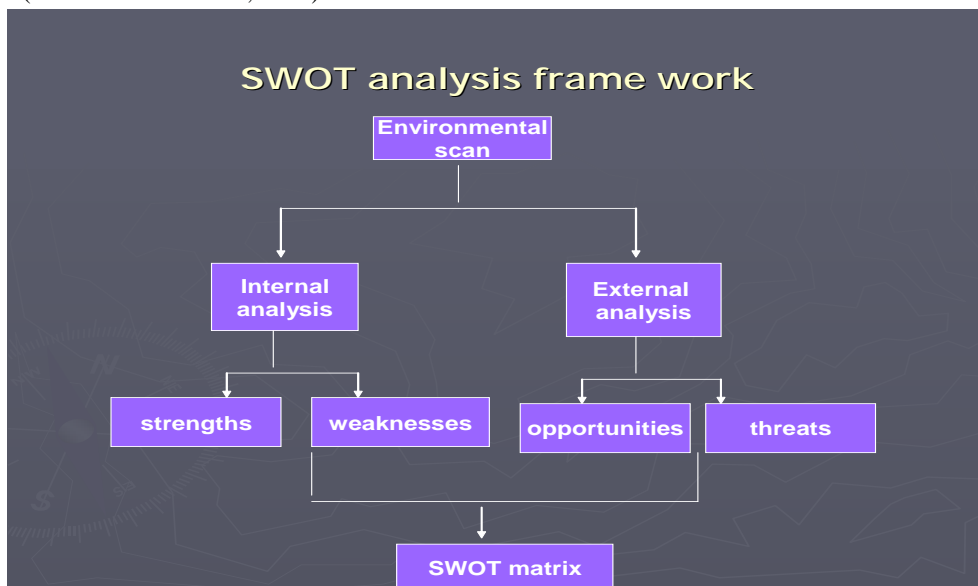


Figure 3. SWOT analysis framework

The SWOT matrix

The Sri Lankan seafood industry should not necessarily pursue the more lucrative opportunities. Rather it may have a better chance at developing a competitive advantage by identifying a fit between the industry's strengths and upcoming opportunities. In some cases, the industry can overcome a weakness in order to prepare itself to pursue a compelling opportunity. To develop strategies that take into account the SWOT profile, a matrix of these factors can be constructed and called as SWOT matrix (also known as a TOWS matrix) (Bradford, et al, 1999).

Table I: SWOT/TOWS matrix

	S	W
O	S – O Strategies	W – O Strategies
T	S – T Strategies	W – T Strategies

S – O strategies pursue opportunities that are a good fit to the industry's strengths.

W – O strategies overcome weaknesses to pursue opportunities

S – T strategies identify ways that the industry can use its strengths to reduce its vulnerability to external threats

W – T strategies establish a defensive plan to prevent the industry weaknesses from making it highly susceptible to external threats

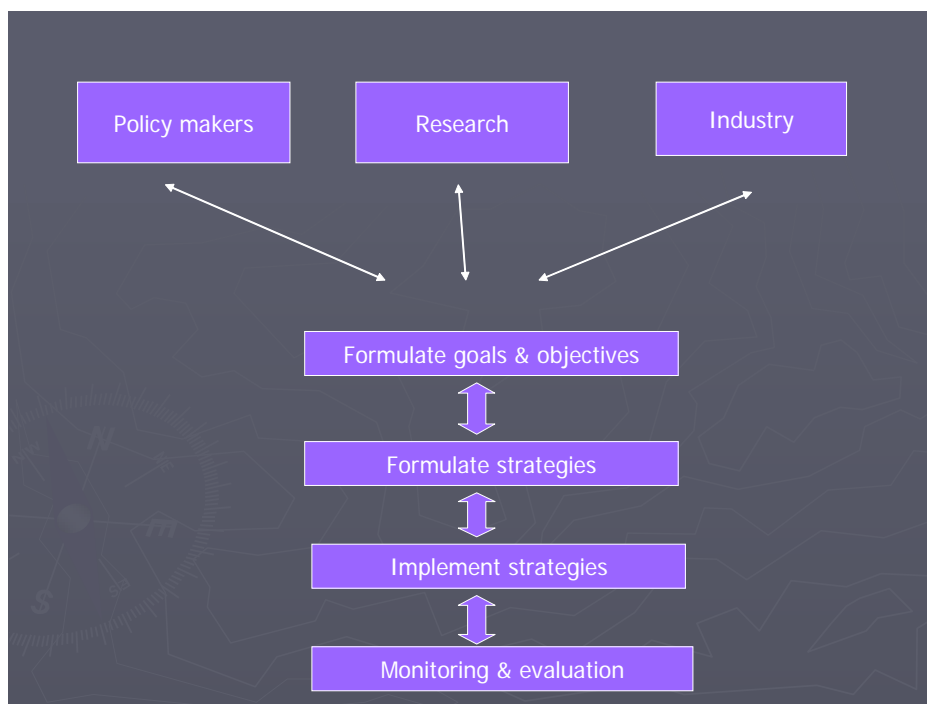


Figure 4. Proposed structure for the decision making on seafood industry

RESULTS AND DISCUSSION

Strengths

First attempt is to trace the identified strengths of the Sri Lankan seafood industry. Sri Lanka is geographically located in the strategically important center of the Indian Ocean and especially the very important point in international shipping lines. Where connecting east and west and proximity to the world's largest fish market (Japan) and other very important destinations in Europe and Asia. Sri Lanka's significant biophysical resource base, having a coastal belt of 1700km and Exclusive Economic Zone (EEZ) of 2018Km² around the island and open to the

great Indian Ocean with almost ideal environmental conditions for coastal and inland aquaculture. Especially very large resource base: rich fish stocks with wide variety of fish in marine, brackish and fresh water and ideal for prawn (*Penaeus monodon*), shrimp, tuna, shark fin cephalopods and crab fishery. Good climatic conditions and marine coastal topography for aquaculture production. Rich in inland water bodies {Sri Lanka is reputed to have one of the highest densities of reservoirs in relation to the land area (De Silva, 1988)} and suitable for different cultured species, mainly Tilapia, Crabs and fresh water prawns. Good image in international market as a supplier of quality food fish with great tasting and receive premium prices from overseas markets. Relatively good reputation on the export markets for quality products produced under HACCP, ISO 9000, ISO 14000, Eco-labeling and special quality requirements for EU. Well trained fishers with flexible fishing fleet: vessels are relatively small and employ sensitive and selective methods for fishing. On the other hand fishers are rich in historical experience of wide range of fishing and fish processing technologies. Relatively large home market (19.5 million), especially religious beliefs and health considerations lead to more towards for seafood than meat. Av. Annual per capita consumption in domestic market is about 12.5 Kg/person/year. Special concern on crab farming, high returns to the investment {IRR/ Internal rate of Return is about 134.99% (De Silva and Jayantha, 2000) and potential of using abandon shrimp farms for crab culture {*Scylla serrata* (De Silva and Jayantha)}. Special concern on Prawn farming (Black Tiger), Semi-intensive and extensive production systems receive highest yields of the Asian region {Semi-intensive system – 5054 Kg ha⁻¹ and extensive system-2944 Kg ha⁻¹ (Ling et al., 1999)}.

Weaknesses

Sri Lankan seafood industry is not diversified. Mainly reliant on shrimp and prawn (22% of export earnings) and the rest are tuna, shark fins, lobsters, crabs and beach de mer. Great dependence on certain species and it has made dead locks to the industry during 1988-89 and 1993-94 periods due to severe disease out breaks. Poor efficiency in catch sectors with limited availability of quality infrastructure always hinders the progress of the industry. Unstable catches due to bad climatic conditions and disease outbreaks cause low level of production and which leads to irregular supply of products to the international market. Especially in monsoon rainy season (July-September) catches are very low due to rough conditions in sea and non-availability of high tech large fishing fleets. Capital deficiency is the most important cause for low level of production among Sri Lankan fishers. Limited availability and difficult access of capital (borrowing rate is about 17%) make new entrants away and hinder the present expansion of the seafood industry. Lack of infrastructure for first sale (port markets and ice plants) limits potential for distribution away from coastal region to the countryside (fresh and frozen fish prices are relatively high in countryside). Subsidies to sector through income guarantees, which attracts too many people into the fisheries and this is common among both coastal and inland fisheries. Generally their level of effort is beyond to MSY (Maximum Sustainable Yield) and they make their effort even with zero income. Mean time high levels of unemployment (9%) also make people more towards to the fishing. Great capital concentration within the fishing and processing industry, especially upgrading of vessels for deep-sea fishing are another barriers to enter into the sector. On the other hand expensive technology with limited availability and low level of management training facilities were restricted access to water at low price. Large investment in fish farming have driven the prices for cultured fresh water fishes down and low margin in farming leads to away from the aquaculture. This is not attractive to new entrants and even today the government and overseas aid programmes heavily support to the aquaculture industry. Expansion of aquaculture, such as prawn, shrimp and crab is difficult due to opposition by environmentalists. Because country experiences the great loss of mangrove forests due to rapid expansion of prawn farming during 1980's. Weak links between fisheries research, industry and policy makers in matching resources away industry form the sustainability. Big gap between researchers lead to non-availability of new technological know-how for the fishers. Meantime One-way communication with top to bottom approach of technology transfer is prominent in the sector and which generate lots of problems. The lack of guaranteed fingerling supply, which lead to frustrated the stakeholders in fresh water aquaculture. Seasonal production is damage the continuous supply for the home and foreign markets and common in both inland (cultured under seasonal water tanks which produce only in rainy season) and marine fisheries. Non availability of enough air transport facilities to Japan, Europe and USA make large barrier to export daily production (Percent availability is only one daily flight to those destinations). Especially this is very important to supply fresh fish for Japanese sashimi market Poor marketing effort with the low level of sales promotion and advertising in overseas markets and limited access to the fisheries database and non-availability of data on fish populations (especially about tuna and shark) are also make barriers to production and sustainability. High cost of production {US\$ 4.56 Kg and cost for feed account for 54.2% with the overhead cost accounted for 38.6% of total cost (Ling, et al, 1999)} in prawn processing industry make low profit margins to the investors.

Opportunities

Potentials are available for exploiting non-traditional species for the overseas niche markets at higher prices. On the other hand strong position to exploit the increase in demand for fresh fish and live fish exports to Asian market. Demand from EU, mainly UK, USA and Japanese markets will keep growing due to increasing demand for healthy diet and disease threats from other livestock products. On the other hand growing concern about food safety leads to improve the demand for fish. Tariff reductions (estimated to reduce at the level of 4.8%) and other issues related to international trade of seafood products will open up new chances to export to overseas markets with the removal of barriers to trade under new WTO negotiations (Tarasofsky, 2003). Sri Lanka will concern on investment in market infrastructure and processing. It will increase demand, resulting in increased exploitation and improved incomes for fishers. Development of producer organizations will result in orderly marketing and concentration of landings at main landing sites. SAFTA (South Asian Free Trade agreement) has open up new avenues to produce and duty free access of South Asian market. This is especially important for re-export business between Maldives and Sri Lanka. Re-processing of imported raw material (mainly tuna from Maldives) is labour intensive processes. There is better opportunity to tap Maldivian tuna resources for producing high value products for the international market. Local super markets with rising share of food shopping presents new distribution opportunities to countryside and also market opportunities are available for aquaculture products through super markets far from the production sites. Production of shrimp feed is an untapped opportunity with the using of locally available cheap but nutritious raw material. On the other hand production of high value products like Chitosan from shrimp waste will be new avenue in export oriented fisheries. Another opportunities available in Tuna industry: special bait, i.e. *Chanos chanos* and shark fin industry i.e. production of fish paste using shark flesh. Sri Lanka has vast unpopulated coastal areas and abundant clean water resources in North and East that could be utilized for any expansion effort. The Sri Lankan government both at national and provincial level generally encourages fisheries development. Especially coastal areas in North and East were not function during past 22 years, because of civil war in the region. Market for fish based ready meals show steady growth in both international and local markets will create better opportunity for food service sector. Large numbers of abandon shrimp ponds in north-western province can be used for production ground for mud crabs and limestone mines in southern coastal belt can be used for prawn and fresh water fishes.

Threats

Falling resource base, due to over, illegal and unreported fishing in Indian Ocean, especially for tuna and shark fishery becomes major threat to the industry. The large scale clearing of mangrove forests for the construction of shrimp farms made huge environmental threat to the brackish water eco-systems. Poor sanitary systems, i.e. poor water quality due to high density and high level of application of chemicals make nonreversible damage to the environment. Local producers of dried, smoked and Maldivian fish, have to face severe competition with the cheaper products from India under SAFTA and it make problems to their vulnerability. Sri Lanka has to face tough competition from the lower priced products from neighboring countries in international market with their diversified product range. Recent WTO negotiations on subsidies, anti-dumping and environmental labeling (Eco-labeling) will create new problems to the industry. Sri Lankan seafood industry is currently heavily subsidized and will create regulatory problems with new WTO negotiations. On the other hand poor fishers have to suffer in future. Non availability of capital to invest in modern facilities make barriers to expansion of the industry and mean time voice of environmental groups limit the expansion of production sites. Disease outbreaks (white spot and yellow tail diseases) increase production costs while damaging the country's image in international market. High unemployment in coastal regions results in uncontrolled and unlicensed fishing. Meantime excessive exploitation of migratory stocks by others uses resources in Indian Ocean lead to declining accessible resources. Local consumers presented with a widening choice of imported food and changes in life style of fishing younger households make unclear picture of the industry.

Table II: SWOT matrix

	STRENGTHS	WEAKNESSES
● OPPORTUNITIES	<ul style="list-style-type: none"> ● S – O Strategies ● Exploit under utilize marine, brackish and fresh water resources, especially non-traditional species under sustainable levels. ● More emphasis on product 	<ul style="list-style-type: none"> ● W – O Strategies ● Change the product range for export and look for diversified products other than prawn and shrimp ● Improve capital and technology access to the both fisheries and entrepreneurs ● Away from the dependency on subsidies

	<p>differentiation and value addition</p> <ul style="list-style-type: none"> ● Expand the market and investing for a marketing campaign in overseas markets. Make people aware about the identical products from Sri Lanka ● Improve marketing and distribution channels to cater large home market ● Expand the crab and prawn farming using abandon resources 	<p>and provide better access of needy resources than money.</p> <ul style="list-style-type: none"> ● Organize Sri Lankan fish fairs in major markets and promote brand names of main seafood products ● Give priority to send business officials in private sector to overseas exhibitions and seminars in major markets
<ul style="list-style-type: none"> ● THREATS 	<ul style="list-style-type: none"> ● S – T Strategies ● Possibility to exploit the under utilize fresh and brackish water resources and explore for non-traditional species for overseas markets. ● Expansion of the industry to abandon fishery grounds in north and east provinces. ● Stakeholders should pay more attention on environment conservation, especially on mangrove forests. ● Making product more competitive and penetrating to new markets. ● Improve the local awareness about the food safety levels, quality and importance of fish in diet ● Invest for more on expansion of export market using the advantage of recent tariff reduction under WTO negotiations. ● More towards to private sector intervention than the public sector with access to capital ● Spending more on trade promotion 	<ul style="list-style-type: none"> ● W – T Strategies ● Strengthen the relationship between research, policy makers and fishers and construct the new system for export oriented fisheries according to the needs of the country ● Explore new niche markets for non-traditional species than the traditional markets and improve the marketing of fishery products including handling, grading, processing, packaging, transportation and sales promotion. ● Open up new avenues for private sector investors and make capital available at reasonable rates. ● Expansion of private sector will create new employment opportunities to the coastal youth. ● Diversify the production with more emphasis on higher value products, especially ready to eat products for both local and international markets ● To reduce business risks through proper planning. and diversify the markets (not to reliant on one market) such as potential markets in Europe, Australia and Asia.

Industry analysis - Porter's five forces model

1. Competitive rivalry

Competition among rival firms drives profits to zero. But competition is not perfect and seafood processing firms are not unsophisticated passive price takers. Seafood processing firms strive for a competitive advantage over their rivals. Industry concentration is a measure for rivalry and high concentration ratio indicates that a high concentration of market share.

Intensity of rivalry is influenced by;

- i. Many players of same size of operation (80% is small-medium scale) increases rivalry. Rivalry intensifies if the firms have similar market share, leading to a struggle for market leadership.
- ii. Slow market growth causes firms to fight for market share and growing market allow firms to improve revenue.
- iii. High fixed costs lead to increases rivalry. Seafood processing firms must produce near capacity to attain the lowest unit cost.
- iv. Highly perishable nature of products cause producer to sell quickly and if others limiting their production will lead to intensifying the competition of customers.
- v. Low switching costs increases rivalry and have to struggle to capture customers. i.e. South East Asian currency crises made market full in low cost products and south Asian producers had to face difficult time.
- vi. Low levels of product differentiation (i.e. tuna-fresh, frozen loins; shrimp-fresh, frozen or semi processed forms mainly) is associated with higher levels of rivalry. Country of origin identification tends to constrain rivalry due to good reputation
- vii. Strategic stakes are high when firms have potential for gains and this intensifies rivalry.
- viii. High exit barriers place a high cost on abandoning the product. This causes a company to remain in an industry, even when venture is not profitable. Asset specificity-plant and equipment required for manufacturing is highly specialized and these are not easily transferable.
- ix. A diversity of rivals with different cultures and philosophies make an industry unstable.
- x. Industry shakeout; a growing market and the potential for high profits induce new entrants and incumbent terms to increase production. i.e. Late 1980's and early 1990's severe white spot and yellow tail disease outbreaks were experienced due to poor management of production sites with huge new entrants

2. Threat of Substitutes

In Porter's model substitute products refer to products in other industries. A threat of substitutes exists when a product's demand is affected by the price change of a substitute. Adverse economic conditions in main markets (Japan and USA) lead to demand for cheaper or budget size products, i.e. previously Japanese market prefer Jumbo prawns and the demand change to smaller or medium sized prawns recently.

3. Buyer power

The bargaining power of customers is the impact that buyers have on a seafood industry. Buyers of industry are powerful, because they possess a credible backward integration threat and purchase a significant proportion of output. On the other hand buyers are weak, because producers threaten forward integration, no longer has any particular influence on product or price and producers supply critical portions of buyers' input.

4. Supplier power

Seafood industry requires raw materials- fish, labor, packaging materials, etc. and this leads to buyer-supplier relationship between the industries. Powerful suppliers can exert an influence on seafood industry. Especially, selling raw fish at a high price leads to capture some of the industry's profits. Suppliers are powerful if they practice credible forward integration, high supplier concentration (Prawn and shrimp), significant cost to switch suppliers (buying arrangements) and powerful customers (Follow HACCP plan). On the other hand suppliers are weak if many competitive suppliers (Tuna suppliers of Maldives), credible backward integration threat by purchases, concentrated purchase and weak customers.

5. Barriers to entry

Seafood industry possesses characteristics that protect the high profit levels of firms in the market and inhibit additional rivals from entering the market. Seafood industry's present gains attract new entrants to take advantage of high profit levels over times. South East Asian currency crises made entry deterring pricing barrier. Barriers exist in seafood industry reduce the rate of entry of new firms, maintaining a level of profits of those who already in the industry. Barriers to entry arise from; government actions (legislations on fish catch to quality control), proprietary knowledge (ideas and knowledge that provide competitive advantages), asset specificity (seafood industry requires highly specialized technology, plants, equipment) reluctant to commit to acquiring specialized assets and new entrants can anticipate aggressive rivalry and economies of scale.

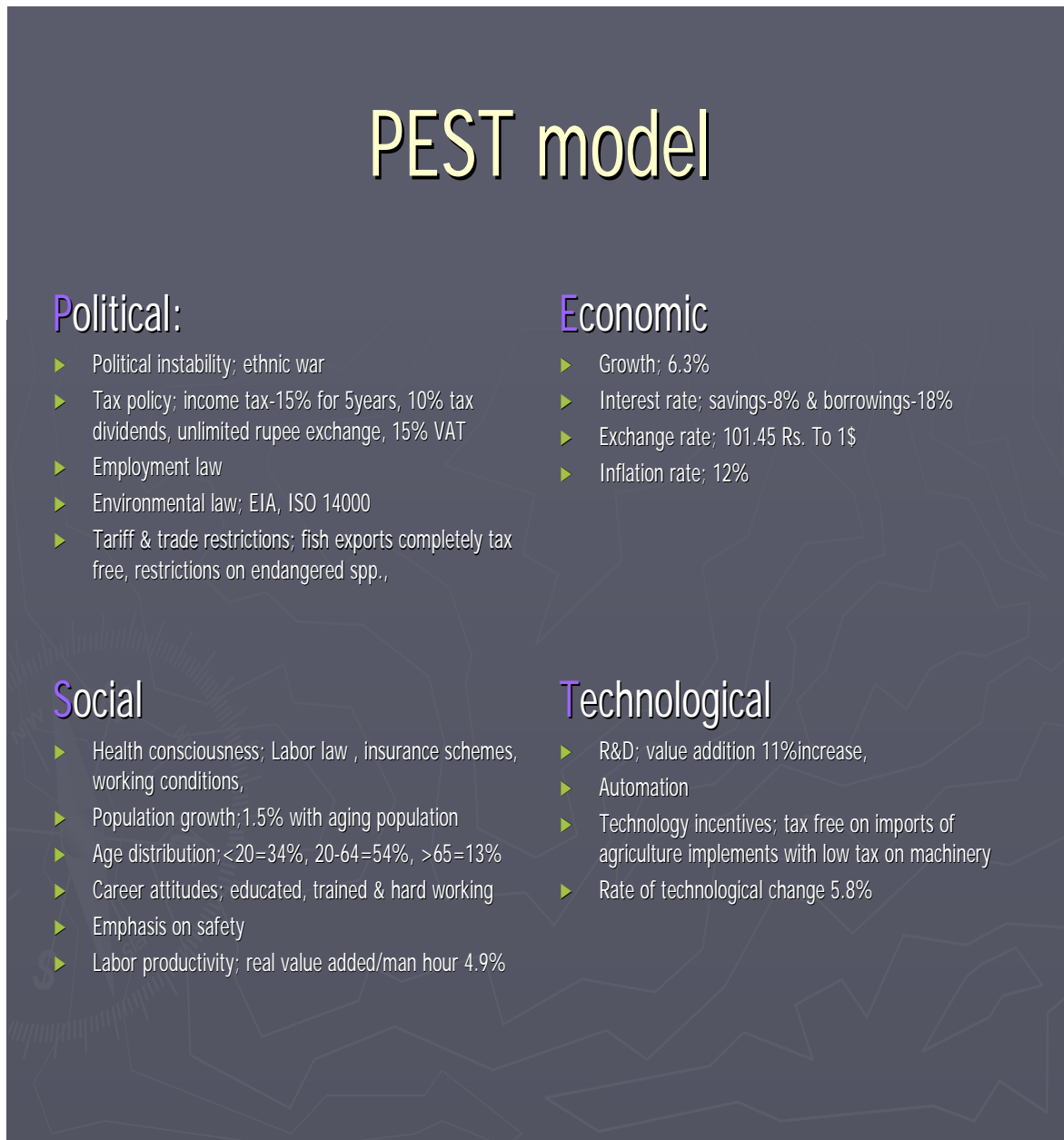


Figure 6. Macro-environment analysis-PEST model

CONCLUSION

Sri Lanka's fisheries sector plays an important role in providing protein supplement to diet of its people and minor role in the country's national economy. However in regional economic terms and cultural terms the sector is important. The information derived from the SWOT analysis will provide the basis for the strategic planning needs of the Sri Lanka seafood industry. Sri Lanka fisheries industry is largely domestic market oriented and little attention has been played in past for exportation. Structural problems hurdle in the way for an increase in cost effectiveness in the Sri Lanka fisheries, especially the shrimp industry. Export oriented fisheries are characterized by a unique interdisciplinary collaboration about regulations and international standards, with the reputation from largest fish markets as the visible result. Sri Lanka is equi distant from Europe and Japan and ability to cater to both markets. Especially geographical proximity to Japanese market opens the doors of world famous Japanese sashimi market. Country's pre conditions are best for fresh quality products. But the seafood industry is not currently geared towards a high level of processing. It would be something of a challenge for the industry to make fish processing

practices more sophisticated. The emphasis on fish farming has not yet taken into account the consumers increasing demands for natural products in overseas market. This will open up new avenues to the Sri Lankan seafood industry. Available resources are over exploited especially tuna and shark. Exploring of non-traditional species will provide secure place in international market. There are opportunities to radically reform fish marketing through introduction of new infrastructure and improved organization to enable distribution of fish in good condition. Finally, establishing proper link between research, policy makers and industry people is a crying need of hour.

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