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An Empirical Assessment of Indian Seafood Export Performance and Competitiveness

Mahida Navghan and Nalini Ranjan Kumar*

Central Institute of Fisheries Education, Versova, Mumbai- 400 061

*Corresponding Author E-mail: nrkumar@cife.edu.in

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ABSTRACT

The fisheries sector plays a significant role in the Indian economy contributing nearly 1 percent to the nation's GDP (FAO, 2015). The present study focuses on explaining the competitiveness of seafood trade of India and its efficiency and relative advantage in Indian market. These results have clearly shown that India does have comparative advantage in exporting Fish and fish products. India is facing the decline of XCI (>1) since last two years and it was repeated in past too, but it founds competitive in the export of fish. If proper attention has been paid towards the export procedure and quality enhancement in export of seafood, India can incorporate this irregularity in competitiveness which lead fisheries a major foreign currency contributing sector. India has less import and increasing export thus leading to positive trade advantage (RTA) and is progressing consistently. India reflects the strong competitive power in the export of seafood as it was greater than 1 to a large extent. The study suggests major determinants like fluctuations of price in international market and exchange rate should be incorporated to achieve expected growth rate.

Key words: *GDP, Fisheries, Seafood, Prawns,*

INTRODUCTION

The fisheries sector plays a significant role in the Indian economy contributing nearly one percent to the nation's GDP and provide livelihood to nearly 14 million peoples especially located in the coastal areas. These households can generate income from the sector due to the fact that many varieties of marine fishes are exported from the country including chilled and dried items, fish oil, shrimp and prawns[15]. The fish and fish product is the major contributor as the largest group in the agricultural exports of India. Seafood exports from India touched an all-time- high of. 33,441.61 Crore during the year 2014-15[4]. The export in volumes terms was 1.05 million tons and in dollar terms, the export value stood at $5.51 billion[4]. The fisheries export diversified a lot in last few decades due to shrimp export. During the financial year 2014-15, India witness the certain rise and fall in several seafood items. The overall export of shrimp during 2014-15 was to the tone of 0.369 million MT worth 3.71billion USD. Fish, is the second largest export item, accounting for a share of about 29.44% in quantity and 11.24% in value terms and Export of Value added products during 2014-15 was 95,436 MT worth 746.59 Million USD[4,11,16,17].

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Thus international trade significantly contributed in employment and income generation. Even though performance of Indian seafood industry' is spectacular, its full potential is yet to be tapped[13]. There is concern about the competitiveness of seafood export from India and exploration of constraints of the sector will help in tapping its potential. The competitiveness and relative advantage of India in seafood export can provide an idea about the strength and weakness of industry and also aware about the lacuna which needs to be upgraded in order to make industry more competitive. Hence, in this study, an attempt has been made to analyze the status, performance, relative trade advantage, competitiveness, determinants of trade and its suitable measures of fish export from India.

The study is based on the data collected from the different sources like *MPEDA, SEAI, Indiastat.com,* UNTRADE.COM, and MAHDF etc. for the period 2001-2014. The export competitiveness and comparative advantage of seafood export from India were estimated with the fact that it contributes the 4.5% share in total Agricultural export of India. The competitiveness and relative advantage were targeted to estimate due to the significant share and overcome resistance with perspective to enhance the seafood export performance.

MATERIAL AND METHODS

The study was conducted during the period of May 2016 to November 2016. The study was based on the secondary data collected from various published Governmental and non-governmental sources and it examine the (a) performance and magnitude of growth in export of fishery products from India and its determinants (b) comparative advantage of Indian seafood export in an International market, share of Indian seafood export in International seafood export, trade determinants and suitable suggestions(c) Competitiveness of Indian Commodity Trade Statistics database (UN COMTRADE) [(13)] produce by UN statistical office, Seafood export through XCI and RCA. (d) The composition of Export, growth trends in the export of fish product and its determinants. Data related to India and world's seafood export, total export were collected from United Nations.

It was focused on analysing trends in the export of major marine products during the years from 2000-2014. The export performance- growth in quantity exported, export value and unit value realized from export were analyzed by using the exponential growth function[8]. Indices were calculated for the period 2001–2015 to analyse the comparative advantage of Indian fish exports. Balassa has developed the first concept of revealed comparative Advantage (RCA). In this framework, RCA indices can be estimated by the relative export share of fish from India in the total world fish export. RCA basically measured the relative export share of India fish export with respect to the world[2,3,5]. Comparative advantage of fish export depicts the efficiency of the India in international market with respect to fish and fish product.

If RCA >1, then the Country has a revealed comparative advantage in the commodity.

If RCA <1, then the country has a revealed comparative disadvantage in the commodity.

RCA=1, Comparative neutrality.

$$RCA = \frac{\text{Fish export of India} \div \text{Fish export of world}}{\text{Total export of India} \div \text{Total export of world}}$$

The export competitiveness of fish was also analyzed using the indices of competitiveness as developed by by Vollrath[6,9,12]. The competitiveness pertains to the ability and performance of any product, firm, industry, or country to export in given market comparative to ability and performance of other product, firm, industry, or country. Export competitiveness of fish in India was used to estimate the changes in the world seafood market share. Changes in the fish export share in world seafood market over time can indicate the long-term comparative advantage of the product. It neutralizes cyclic fluctuations to large extent and show sustained trends in the shifting of market forces toward the new center of gravity. If the XCI is >1 then it can

be said that the country has competitiveness in the export of this product. Changes in Indian market share

= India's Export of product pat time t/world's export
India's export of product pat time t-1/world's export of product at time t-1

Besides using the exports as a factor, as in Balassa index, these indices have taken into consideration the imports also. As for the RCA, these indices were worked out with reference to the total marine product export and import from India and the world. The first index was the Relative Trade Advantage (RTA), which included both exports and imports and was the difference between Relative Export Advantage (RXA) and Relative Import Advantage (RMA). The RXA was the Revealed Comparative Advantage (RCA) using Balassa index, i.e.

RTA = RXA – RMA

Here, RXA = RCA (or Balassa index)

RMA = (mij/mwj) / (mit/mwt)

Where,

mij = Import of fish by India,

mit = Total import of India,

mwj = Total fish import of world, and

mwt = Total import of world.

Thus,

RTA = {(xij/xwj)/(xit/xwt)} – {(mij/mwj) / (mit/mwt)}

The factors influencing the export of fish from India were identified using Cobb-Douglas type of demand function [3] as used by Nalini and Mathura[6].

Unit values for the fish product and the Indian fish export and international prices of fishes have been represented by their respective unit values. Indian export data on quanity and value of fish export accumulated from FAO yearbook and UNCROMETRADE. The world fish prices were also estimated from the data available in the FAO trade yearbook and UNCROMETRADE.

Y = a Tb1 (PR) b2 (ER) b3 U

Where,

Y = India's export of fish (Mt)

T = Volume of international trade in fish (Mt)

PR = Ratio of Indian export price and non-Indian international Prices of fish

ER = Exchange rate (Rs/Euro)

a = Intercept

bi' s = Elasticity of respective variables, and

Ui = Random error terms, ui ~N (0, σ2 ui)

RESULTS

The Indian marine fish export showed an increasing trend and an exponential growth over the years (Fig.1). There were noticed some ups and down especially in 2007-08 which was starting phase of WSSV outbreak in Indian shrimp industry affect the export.

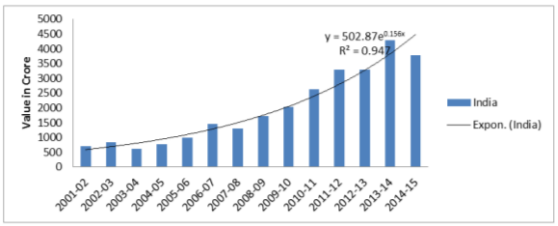

Fig. 1: Marine fish Export trend of India, trend line during 2001-2014

The result India's share in world fish exports vary with respect to time and remained less than five percent till 2015. It was noticed highest (4.82%) in 2013-14 and lowest (2.00%) during the 2009-10. India's share in world market during 2015-16 was 4.56 percent which noticed decline in growth to 0.21 percent (2014-15) compare to the previous year share in total seafood export. The exponential growth was found significant in Indian seafood export with R^2 (94.7%) during the time of 2001 to 2014-15. The graph illustrated above explains that India has witnessed highest seafood export share in year 2013-14 (4291.8 cr) and lowest in year 2003-04 (620 cr).

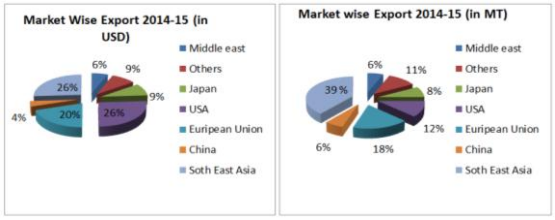

Fig. 2: and 3: Market share of importing countries of seafood from India during 2014-15

The major destination for export of fishes from India during 2014 was South East Asia while it was Japan earlier. Markets for Indian fish have never been consistent and there has been a regular fluctuation with respect to destinations since the geographical spread of the markets has exhibited an ever changing hue. South East Asia enjoyed the highest market share of 39

percent in quantity, followed by EU (18%), Japan (8%) and USA (12%) which jointly accounted for about 77 percent of total export of fishes from India. South East Asia and USA were the major market as far the value of fish export concern during 2014-15.

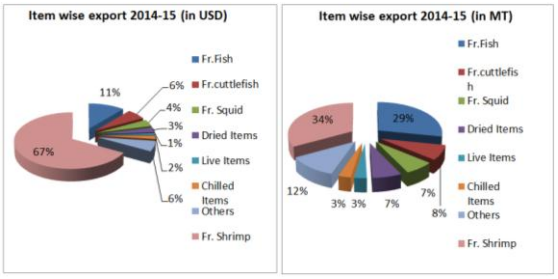

Fig. 4: Item wise export of marine products in value term from India during 2014-15

Fig. 5: Item wise export of marine products in quantity term from India during 2014-15

Shrimp emerged as prime export commodity leading in item wise export both value and quantity terms. Frozen fish was second contributor but sharing relatively very less than shrimp in value term export as shrimp became the major value commodity in fish and fishery export from India. There are major eight items India exporting from which frozen shrimp export accounting 67 percent in value term and 34 percent in quantity terms followed by frozen fish accounting 11 percent and 29 percent respectively.

Export Competitiveness Index (XCI) for Indian fish export and total Export from India were estimated for the study period 2001-2015 (Fig.6). It was noticed that the competitiveness of fish export from India was the lowest 0.80 in 2008 and the highest of 1.40 during 2013. It fluctuated throughout the study period. The XCI value declined to 0.96 in 2015 which affect the competitiveness. It denotes the negative impact on the growth and performance of India's fish export. India's fish export remains uncompetitive expect five times during the study period of 15 years which showing fluctuated pattern of the XCI graph presented below. Indian export desperately needs to study the competitiveness and their determinants so appropriate measures can be taken in consideration. The rise in the value of XCI denotes the Consistent higher growth or efficiency in fish export. The XCI for total export of India was the lowest (0.95) in 2012 and highest (1.26) in 2009. The XCI of total export of India in the year 2015 was 0.96 which undoubtedly prove fluctuation in export competitiveness for India over the years.

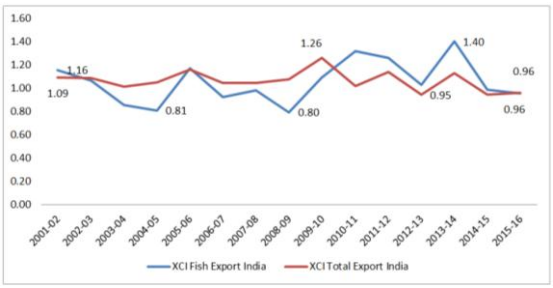

Fig. 6: Export Competitiveness Index (XCI) of Indian fish Export and Indian Total Export 2001-2015

The Revealed Comparative Advantage (RCA) for India in seafood export was estimated for the study period 2001-2015 (Fig.7). India registered RCA as >1 in all the years from 2001-2015. Even though India had positive advantage throughout the period, the highest RCA 4.1 was registered during 2001 which indicates the rapid movement of growth of India in this sector. The RCA of marine products export from India was 2.18 in 2007 which later on declined to 1.61 during 2008 and to 1.40 during 2009, because of decline in export.

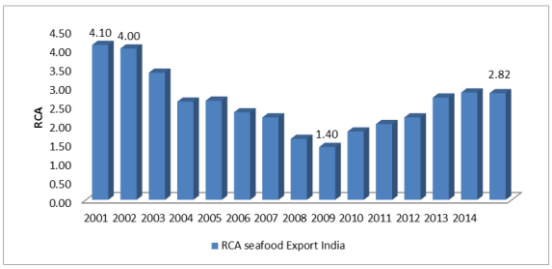

Fig. 7: Revealed Comparative Advantage for India 2001-2015

The relative trade advantage (RTA) reflects the real competitiveness and efficiency of trade of a country as it incorporates both exports and imports. India has positive relative trade advantage in export of fish and fish products which was the highest (4.07) in 2001 and lowest RTA (1.37) in 2009. As can be seen from the table-1, for fish and fish

products the RCA was greater than unity and (RXA) was positive for the fifteen-year period under study, indicating that India has a comparative advantage in export of fish and fish products. It also indicates the positive competitiveness of the India's export as RCA was >1 during the study period. India's RTA in export of fish and fish export declined to 1.37 during 2009-10 which gradually increased then after and reached to 2.82 during 2014. India has a very negligible import advantage revealing that it has been gaining competitiveness and the pace of growth was fast too. India has RTA of 2.79 in 2015 indicating the trade advantage and efficiency of India to compete with other nations of the world in the export of fish and fish products. The RXA (1.4), RCA (0.02), RTA (1.37) were lowest during 2009 due to the decline in export.

Table 1: RTA of India's total fish export during 2001-2015

year	RCA (>1)	RMA	RTA (>0)	ln RXA (>0)	ln RMA	RC (>0)
2001-02	4.10	0.02	4.07	1.41	-3.77	5.18
2002-03	4.00	0.02	3.99	1.39	-3.95	5.34
2003-04	3.36	0.02	3.34	1.21	-3.93	5.14
2004-05	2.60	0.02	2.57	0.95	-3.70	4.65
2005-06	2.62	0.02	2.60	0.96	-3.75	4.71
2006-07	2.32	0.02	2.29	0.84	-3.74	4.58
2007-08	2.18	0.02	2.16	0.78	-3.88	4.66
2008-09	1.61	0.04	1.58	0.48	-3.32	3.80
2009-10	1.40	0.02	1.37	0.34	-3.73	4.07
2010-11	1.81	0.03	1.78	0.59	-3.54	4.13
2011-12	2.00	0.04	1.96	0.69	-3.12	3.81
2012-13	2.18	0.03	2.15	0.78	-3.63	4.41
2013-14	2.70	0.02	2.69	0.99	-3.99	4.99
2014-15	2.84	0.02	2.82	1.04	-3.81	4.86
2015-16	2.82	0.03	2.79	1.04	-3.61	4.65

Determinants of Indian fish exports:

In order to identify the determinants of fish exports of India, regression analysis was carried out for time series data of 16 years, 2000-2015 (Table. 2). Major factors which determine fish trade from India were world volume of fish exports, world price of fish excluding India and also exchange rates (US$/Rs.) existing during the export. These factors jointly explained 91 percent of the total variation in fish exports from India. The P-value for all the variables except World fish exports (volume) was statistically significant. Thus a World fish export (volume) does not play any significant role in fish export from India. Export price of Indian fish was negative which reveals that as price of Indian fish increases the export decreases and vice versa. Therefore, in order to promote trade there is a need to promote efficient production of fishes at low cost, which can be achieved by adoption of improved technologies, better management practices, new techniques for mass production of fish species, increased quality assurance as well as more investment in the sector. As world fish exports price increased, Indian fish exports also increased. This again shows that world trade and price structure has significant impact on Indian fish trade.

Table 2: Determinants of Indian fish exports

ITEMS	Coefficient	t Stat	P-value
constant	3.359	0.446	0.665
World fish exports (volume)	0.466	1.021	0.329
Export price of Indian fish	-0.176	-2.696	0.021*
World price except Indian price	0.466	3.746	0.003*
Exchange rate	0.030	3.505	0.005*
Dependent Variable (Y): Indian fish exports (volume)			

*indicates level of significance at 5 percent. R^2 value was 0.91.

DISCUSSION

Out of the total export of the world (16.482 trillion USD) for the year 2015-16; 272.4 billion USD were from India, accounting for 1.61% of total world export [(11)]. Indian Fish export contributed 4579 million USD during 2015-16, which accounted for 4.56 percent of world's total fish export [(11)]. Even though the fish exported from India increased gradually from 1235 Mill.US$ in 2001 to 4579 Mill.US$ in 2015-16, its share in world fish export is very low. South East Asia is the main market for seafood export from India, accounting for 38.99 percent of total seafood exports from India, followed by the EU (17.99%)[10,14].

Indian seafood export focused to export items like frozen shrimps (34.00%), followed by frozen fish (29.43%) and cuttlefish (7.83%) respectively during the year 2014-15[4,17]. India has fewer imports and

increasing export leading to positive trade advantage and is progressing consistently. Though Indian seafood export increased in past few years its potential has not been tapped yet. The export growth estimates for the commodities indicated that there was significant growth in export quantity, value and unit value for the major marine products with the emergence of new commodities for export. The study was restricted for a period of 15 years starting from 2001 to 2015 with respect to seafood export, market dynamics, and competitiveness. The seafood export trend line showed exponential growth for the year 2001-02-2014-15 which is also depicted by Jayasekhar for the years 1996-2007 and Vinay A. It is illustrated here the major importing countries and their contribution in Qty. term as well value term. South East Asia and European Union were the major seafood importer. Frozen shrimp was leading seafood item exported from India in both value (67%) and Qty. (34%). It was also illustrated by the CMFRI report (2014). The competitiveness is measured for the efficiency of market for that product in particular time. The rise in the value of XCI denotes the Consistent higher growth or efficiency in fish export. The study shown the result that XCI was lowest (0.80) in 2008 which might be due to the disease outbreak in shrimp culture and the highest reported XCI for fish and fish products was 1.4 in 2013. It is described here by XCI that the India has the potential trade competitive power and can be tapped further focusing the specialisation and value addition in different fish and fish product. The present study indicates the further scope for the market dynamics, constant market sharing analysis and forecasting may provide the better picture for the Indian seafood market and fluctuations can be presumed. The study also providing the idea for the relative trade advantage and specialisation reported 2.82 in 2014 for seafood export from India. It is clear from the results that India depicted the positive growth and advantage in export of the seafood throughout the time period from 2001-2014-15.

The relative trade advantage (RTA) reflects the real competitiveness and efficiency of trade of a country as it incorporates both exports and imports. RTA was found positive throughout the Study period from 2001-2015. It was estimated lowest in 2009 due to the disease outbreak in shrimp culture industry which affected the export.

CONCLUSION

The present study focuses on explaining the competitiveness of seafood trade of India and its efficiency and relative advantage in Indian market. These results have clearly shown that India does have comparative advantage in exporting Fish and fish products. It is positive sign for fisheries as growing business and emphasised for the further development and study in order to make fisheries more profitable and competitive in international market. The primary market for these products is the developing countries having a preference for low-value fishes in contrast to the preference of developed countries for high-value products like shrimp and cephalopods. India is facing the decline of XCI (>1) since last two years and it was repeated in past too, but it founds competitive in the export of fish. If proper attention has been paid towards the export procedure and quality enhancement in export of seafood, India can incorporate this irregularity in competitiveness which lead fisheries a major foreign currency contributing sector. By focusing the fisheries and seafood export can result to enhance the international transactions which lead for further development in fisheries sector. Frozen shrimp is major item exported with 67 percent (Qty.) and 34% (Value) of marine fish product exported from India during 2014. It is considered as major product contributing highest in export.

The countries namely South East Asia, USA, EU, and Japan were India's top four export destinations which accounted for nearly 80 percent of the total export of marine fish and fish product from India. India performed splendid in marine fish and fish product export registered XCI >1 throughout the study period

2001-2014. RCA value of India seafood export showed a fluctuating trend which may be due to the high dependency on wild capture rather than culture for the export. RCA of fish export is proof that fisheries products have potential and can emerge as giant if proper focused has been made for their further development. India has less import and increasing export thus leading to positive trade advantage (RTA) and is progressing consistently. India reflects the strong competitive power in the export of seafood as it was greater than 1 to a large extent. RTA has estimated for Indian export experienced the value >1 during 2001-2015-16, which become possible due to the high RXA and fewer IMA from India made its trade advantage and growth positive and faster. There is still need for further improvement which may encourage more trade, rural development and foreign exchange in near future. The determinants impact the Indian fish export was tabled which showing the results that prices of international export market, Indian export and exchange for the same period have significance impact on the Indian fish export with 1% level of significance. If these major determinants can be incorporated in future export vision lead India stable export player in an international trade market. MPEDA envisages export of marine products worth USD 6.6 billion during the year 2015-16. Increased production of L. Vannamei shrimp, diversification of Aquaculture species particularly of Tilapia and Mangrove crab, Quality control measures and increase in infrastructure facilities for production of value added items are expected to help in achieving this target [4]. Exports of marine products have played a key role in developing the fishing and aquaculture sectors in India. Over 14 million people are employed in the fisheries and related activities, this makes the fishery sector a key player in poverty alleviation and employment. Keeping this in view, it is necessary to develop long term plans for the development of exports based on a long term strategy. It can be concluded here that India own the potential which should be emphasised and promoted as the same time major determinants like fluctuations of price in international market and exchange rate should be incorporated to achieve expected growth rate.

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