

An Empirical Assessment of Seafood Export performance and Competitiveness in Gujarat, India

Abstract

Gujarat with 11 maritime districts owns the longest coastline (1640 Km) and has the widest shelf area. The coastline of about 1640 km consists of 173 landing centers. The shelf area covers about 1, 64,000 sq.km, of which 64,800 sq.km falls in the depth range 0-60 m, which can be exploited by traditional as well as mechanized craft. Marine fish export stands Multibillion dollar industry where fisheries sector supporting 1 per cent in nation's GDP. The present study analyses the growth, performance, trends, competitiveness of marine fish and fish product from Gujarat and India during 2001- 2014 using the parameters Viz., Exponential Growth Function, Export Competitiveness Index (XCI), Revealed Comparative Advantage (RCA), Revealed Trade Advantage (RTA). XCI expresses the changes in market share of different products for seafood export in Gujarat which was indicating improvement in XCI (>1) over the years, hence it founds competitive in the export of seafood from Gujarat. An Indian seafood export depicts XCI greater than one throughout the study period. RCA was estimated for the confining efficiency, performance and competitive ability for the Gujarat seafood export and India's seafood export. RCA value of India and Gujarat seafood export showed a fluctuating trend which may be due to the high dependency on wild capture rather than culture for the export. 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. With respect to current development trend of export from Gujarat and India, there is urgent need to focuses decline in marine catches and over- exploitation, conservation, diversity, and policy framing. There has still needed for further improvement which may encourage more trade, rural development and foreign exchange in near future.

Keywords: Seafood, Export Competitiveness, Revealed Comparative Advantage, Relative Trade Advantage

Introduction:

The fisheries sector plays a significant role in the Indian economy contributing nearly 1 percent to the nation's GDP ⁽¹⁾⁽⁸⁾. It provide livelihood to many poor households located in the coastal areas ⁽¹²⁾. India exported seafood worth of ₹. 33,441.61 Crore in year 2014-15 which had a growth of 11 percent compare to year 2013-14. ⁽⁶⁾. In dollar terms, the export value stood at \$5.51 billion, up by 10 per cent year-on-year ⁽²⁾. Fisheries is arising sector in Gujarat providing livelihood to nearly 3.2 lakh in marine fisheries. It also contributes a share of 12.11 per cent in value term of seafood export from India ⁽⁵⁾. Gujarat occupies 1.64 lakh sq. km and 2.14 lakh sq. km of continental shelf area and exclusive economic zone ⁽³⁾. Gujarat owns rich marine resources with 1600 km long coastline which make it major contributor in marine fish production (7.12 lakh M.T., 2014-2015) and export ⁽⁴⁾. It exported 242,000 tons in FY13 (worth ₹. 2929.61 crores), which grew to 251,000 tons in FY14 (worth ₹. 3658.57 crores). Thus from the point of view of employment and income generation, international trade has

considerable significance as well. Even though Gujarat seafood industry's good performance, its full potential is yet to tap when it came to marine products exports⁽¹³⁾. Gujarat seafood export industry needs to focus on several aspects with respect to supply demand scenario of seafood and its relative market strategies. The competitiveness and relative advantage of state in seafood export can provide an idea about the strength and weakness of industry and also aware the lacuna needs to upgrade in order to make industry more competitive and earn foreign exchange. Hence it is the trade advantage and competitiveness of seafood trade aspect of the sector that would be the focus of the current study. In this study, an attempt has been made to analyze the status, performance, relative trade advantage and competitiveness of Gujarat fish export.

The study is based on the data collected from the different sources like *MPEDA*, *SEAI*, *Indiastat.com*, *Gujratstat.com*, and DoF Gujarat etc. for the period 2001-2014. Gujarat exports seafood (worth ₹. 3658.57 crores) includes seven different forms with highest share to South East Asia (46.11), China (16.56) and the European Union (12.31) (Fisheries Statistics of Gujarat, 2013). The competitiveness was targeted to estimate due to the significant share and change of seafood export from Gujarat over the time period in total seafood export from India.

Data and Methodology:

The study was conducted during the period of May 2016 to November 2016. The study is based on secondary data collected from different sources like UN COM TRADE database, International Trade Statistics (ITC), World Trade Organization (WTO), Factfish.com, FAO, MPEDA, *Gujratstat.com* and *Indiastat.com* to analyse the growth, performance, competitiveness, comparative advantage and net trade effect through RTA.

Analytical framework:

Analysis of Growth and performance:

The growth was measured to estimate the performance of seafood export from the Gujarat. It was focused on analyzing trends in the export of major marine products during the years 2000-2014. The basic export performance, growth in quantity exported, export value and unit value realized from export were analyzed by using the exponential growth function⁽⁷⁾⁽¹⁸⁾⁽¹⁹⁾⁽²⁰⁾⁽¹⁵⁾.

Revealed comparative Advantage ratios:

Balassa (1964)⁽⁸⁾ has developed the first concept of revealed comparative Advantage (RCA). In this framework, RCA indices can be estimated by the relative export share of seafood from Gujarat in the total Indian seafood export⁽²¹⁾⁽²⁰⁾⁽¹⁹⁾. RCA basically measured the relative export share of Gujarat Finfish export with respect to the India⁽²⁰⁾⁽¹⁸⁾.

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

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

$RCA = 1$, Comparative neutrality.

$RCA = \frac{\text{Seafood export of Gujarat}}{\text{Total fish export of Gujarat}}$

85 Seafood export of India ÷ Total fish export of India
86

87 **Export Competitiveness Index (XCI):**

88 The export competitiveness of marine fish was also analyzed using the indices of
89 competitiveness formulated by Fertö and Hubbard ⁽⁹⁾⁽¹⁸⁾⁽¹⁹⁾⁽²¹⁾. The competitiveness pertains
90 the ability and performance of any product, firm, industry, or country to export in given
91 market comparative to ability and performance of other product, firm, industry, or country.
92 Export competitiveness of finfish in Gujarat is used to estimate the changes in the Indian
93 seafood market share. Changes in the finfish export share in Indian seafood market over
94 time can indicate the long-term comparative advantage of the product. It neutralizes cyclic
95 fluctuations to large extent show sustained trends in the shifting of market forces toward the
96 new center of gravity.

97 If the XCI is >1 then it can be said that the state has competitiveness in the export of this
98 product.

99 Changes in Indian market share

$$\begin{aligned} 100 &= \frac{\text{Gujarat's Export of product p at time t/India's export}}{\text{Gujarat's export of product p at time t-1/India's export of product at time t-1}} \\ 101 & \\ 102 & \end{aligned}$$

103 **Relative trade advantage (RTA):**

104 Besides using the exports as a factor, as in Balassa index, these indices have taken into
105 consideration imports also. As for the RCA, these indices were worked out with reference to
106 the total marine products export and import from India and the world. The first index was the
107 Relative Trade Advantage (RTA), which included both exports and imports and was the
108 difference between Relative Export Advantage (RXA) and Relative Import Advantage (RMA).
109 The RXA was the Revealed Comparative Advantage (RCA) using Balassa index, i.e. ^{(10) (11)}.

110

$$111 \text{ RTA} = \text{RXA} - \text{RMA}$$

112 Here, RXA = RCA (or Balassa index)

$$113 \text{ RMA} = (\text{mij}/\text{mwj}) / (\text{mit}/\text{mwt})$$

114 Where,

115 mij = Import of marine fish (India),

116 mit = Total import (India),

117 mwj = Import of marine fish (world), and

118 mwt = Total import (world).

119 Thus,

$$RTA = \{(xij/xwj) / (xit/xwt)\} - \{(mij/mwj) / (mit/mwt)\}$$

Result and Discussion:

Out of the total fish export of India (₹. 33,441.61 crores) for the year 2014-15; ₹. 4423.45 Crore were from Gujarat, accounting for 13.22% of total export. China is the main market for marine frozen fish, accounting for over half of the frozen fish exports, followed by South East Asia (14%) and the Middle East (7%)⁽¹⁷⁾. Gujarat seafood export focused to a destination like South East Asian country (46.11), China (16.56) and European Union (12.31) respectively during the year 2014-15.

Export performance of India and Gujarat marine fishery:

The Gujarat marine fish export showed an increasing trend and an exponential growth over the years (Fig.1). India's share in world fish exports very with respect to time and remained less than five per cent 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 per cent which noticed decline growth of 0.21 per cent (2014-15) compare to the previous year share in total seafood export. Declining in national seafood export scenario Gujarat's seafood export share was also noticed negative growth with 0.75 percent in quantity but found the positive growth of 1.11 per cent in value term during the year 2014-15 compare to previous year. The exponential growth was found significant in Gujarat seafood export with R^2 (96.5%) during the time of 2001 to 2015. The graph illustrated above explains that the Gujarat has witnessed 5326.7 crore export of seafood and remain the highest marine fish exporter in the country.

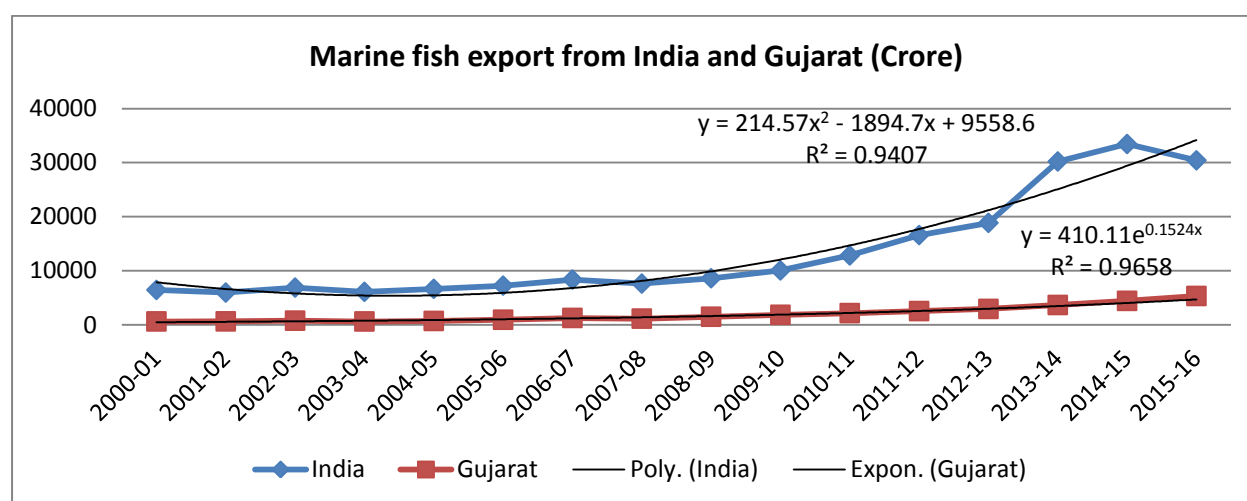
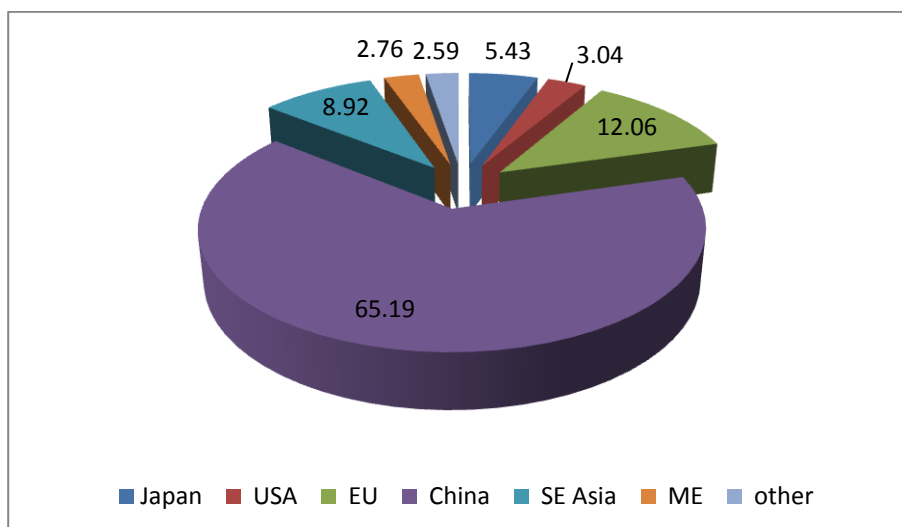


Fig.1: Marine fish Export of India and Gujarat, trend line during 2001-2015

Market share of major importers of seafood products from Gujarat during 2001 and 2014:

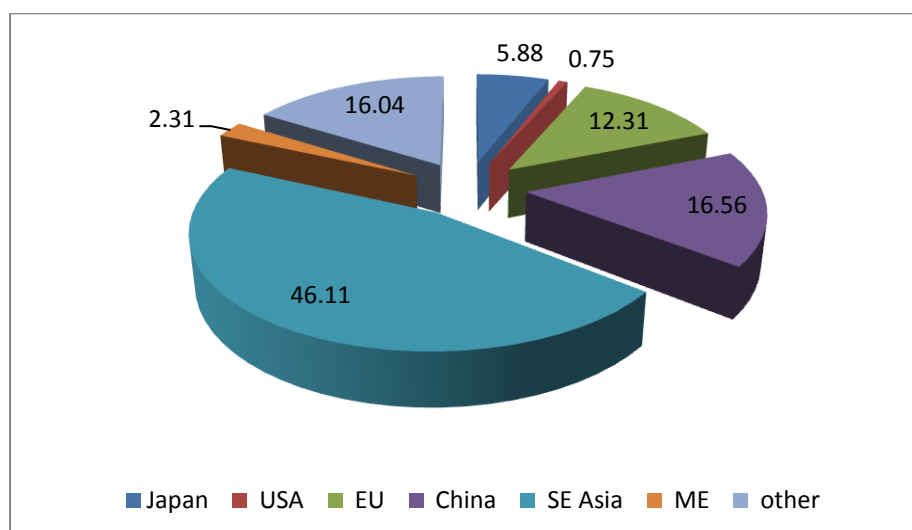
Market share of major importers of seafood products from Gujarat during 2001 and 2014 have been shown in fig. 2 and 3, respectively. China enjoyed the highest market share of 65.19 per cent followed by EU (12.06%), South East Asia (8.92%), Japan (5.43%), USA (3.04%), Middle East (2.76%) and others (2.59%). The major shift can be seen in seafood

150 export from Gujarat to different countries in 2014. South East Asia was highest with
 151 (46.11%) followed by China (16.56%), EU (12.13%) japan (5.88%), Middle East (2.31%),
 152 USA (0.75%) and others (16.04%). Gujarat's seafood export to china declined gradually from
 153 2001 to 2014 with 48.63 per cent and increased to South East Asia with 37.19 percent which
 154 illustrated the shift in the market for the export of seafood from Gujarat.



155

156 Fig.2: Market share of importing countries of seafood from Gujarat during 2001.



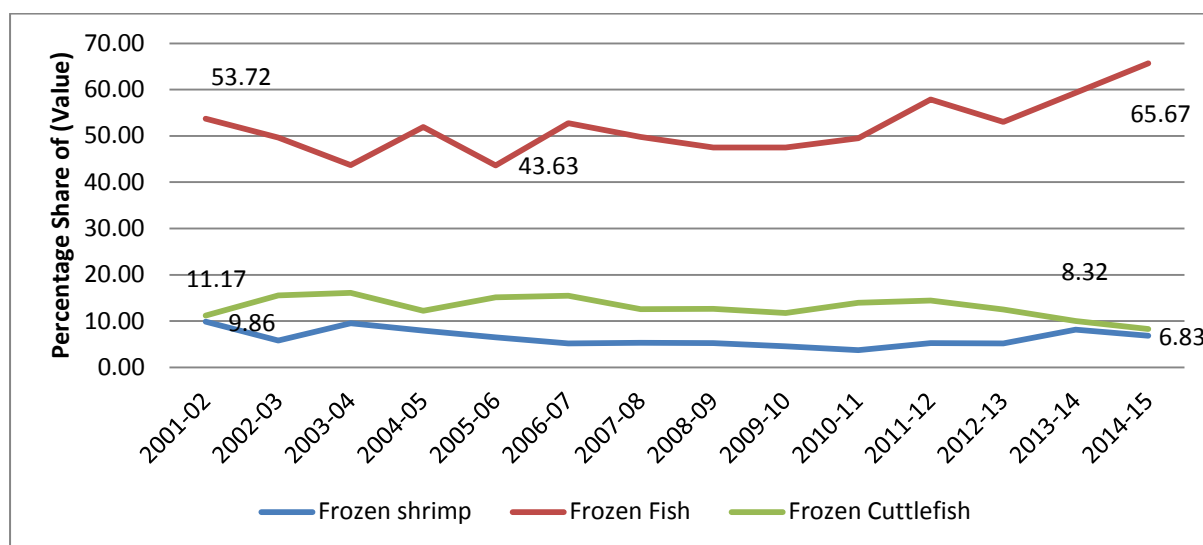
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158 Fig.3: Market share of importing countries of seafood from Gujarat during 2014.

159 **Changes in Species-wise Export of seafood in Gujarat:**

160 The percentage share of Gujarat seafood export of value term has been depicted in Fig.4.
 161 As it was illustrated in Fig.4 frozen fish export remain on top throughout the period. Frozen
 162 fish export share in value term was (53.72%) in 2001 which experienced fall in 2005 with
 163 (43.63%) but again it has reached the highest mark with (65.67%) in 2014 which strengthen
 164 the Gujarat seafood export. Frozen shrimp and frozen cuttlefish export stated with (9.86%)
 165 and (11.17%) in 2001 which reached to (6.83%) and (8.32%) respectively in the export. Out
 166 of the three species, frozen shrimp and frozen cuttlefish export noticed a decline in
 167 percentage share in value term of export where frozen fish experienced positive growth.

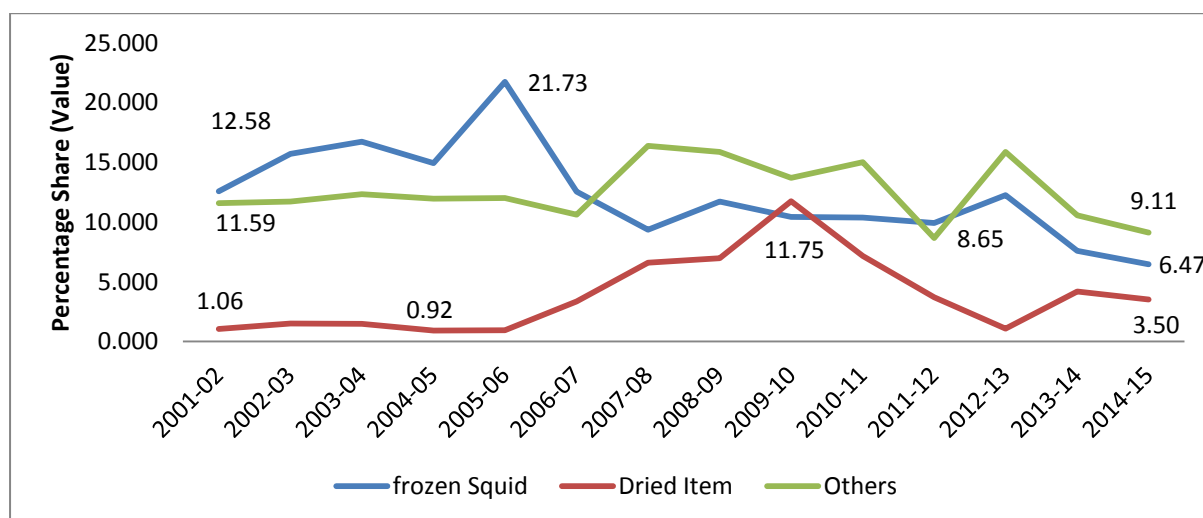
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170 Fig.4: Percentage share of Species wise Gujarat fish export

171 The percentage share of Gujarat seafood export of value term has been depicted in Fig.5. It
 172 was noticed that there were ups and down in a share of export and remain comparatively
 173 low. Frozen squid export share was 12.58 per cent in 2001 which reached at the pick of
 174 21.73 percent in 2005 and again experienced fall remain 6.47 percent in 2014.Dried item
 175 export from Gujarat experienced continuous progress starting with 1.06 percent in 2001
 176 reached pick of 11.75 percent in 2009 and again fall down in 2013. Frozen squid shared 3.5
 177 per cent of Gujarat seafood export in 2014-15. Thus Gujarat needs to take care of these
 178 emerging competitors in the export market.



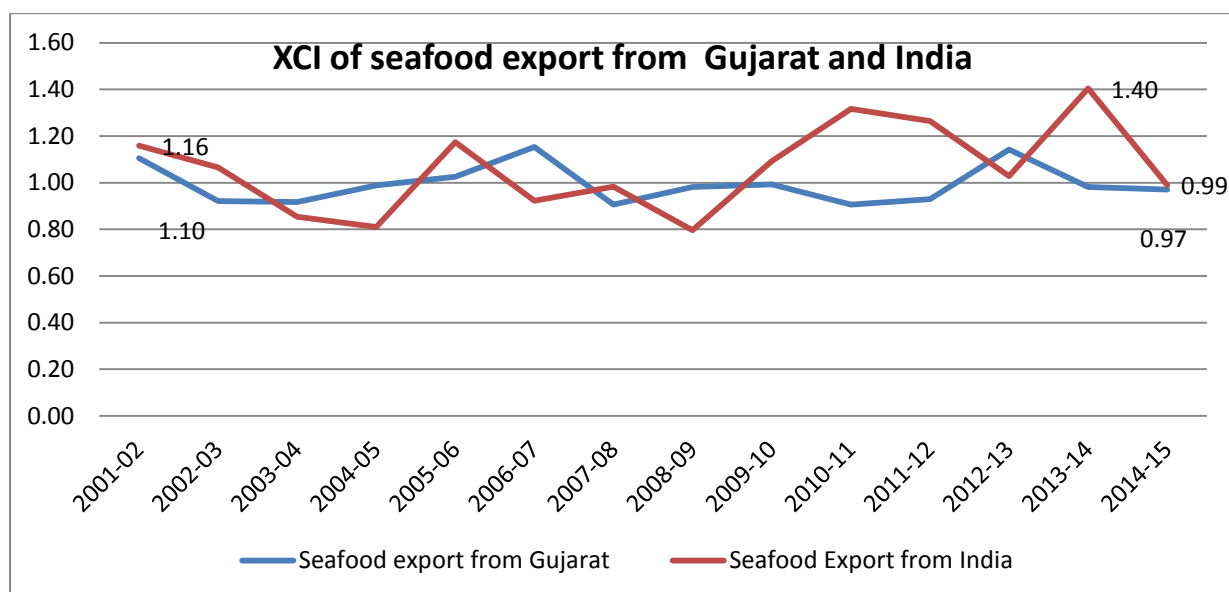
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180 Fig.5: Percentage share of Species wise Gujarat fish export

181 Export Competitiveness:

182 Export Competitiveness Index (XCI) for Gujarat seafood export was estimated for the study
 183 period 2001-2014 (Fig.6). The XCI for seafood export of India was greater than 1 for most of
 184 the years. The highest estimated XCI was 1.4 in 2013 and the lowest XCI was 0.8 in 2008.

185 The XCI of seafood export of India in the year 2015 was 0.99 which undoubtedly prove
 186 positive export competitiveness for fish export over the years. XCI of seafood export from
 187 Gujarat was competitive with 0.97 in 2014.



188
 189 Fig.6: Export Competitiveness Index (XCI) of Indian Seafood Export during 2001-2014.

190 **Revealed Comparative Advantage:**

191 The Revealed Comparative Advantage (RCA) for India and Gujarat in seafood export were
 192 estimated for the study period 2001-2014 (Fig.7).India registered RCA as >1 in all the years
 193 from 2001-2014. RCA was the highest for Gujarat with 2.11 in 2014 and it was found the
 194 lowest with 1.48 in 2009. RCA value of Gujarat seafood export depicts handsome
 195 comparative advantage in export of seafood from Gujarat and also reflects the greater
 196 scopes for the seafood export industry. RCA was found the lowest during 2009 in Indian
 197 seafood export and Gujarat Seafood export with RCA value 1.40 and 1.48, respectively
 198 which shows the comparative advantage of Gujarat seafood export was greater than India's
 199 RCA during its lowest performance. Even though India had throughout positive advantage,
 200 but the highest RCA was registered with 4.1 during 2001 which indicates the rapid
 201 movement of growth of India in this sector. India had greater RCA of 2.18 in 2007 which later
 202 on declined to 1.61 during 2008 and to 1.40 during 2009, because of decline in export.

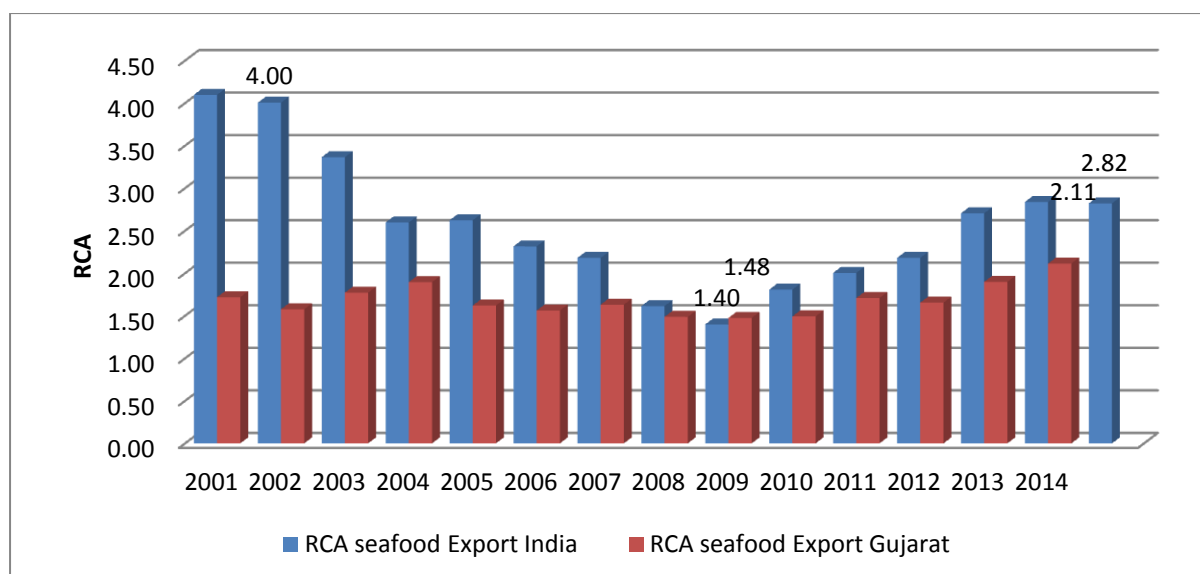


Fig. 7: Revealed Comparative Advantage for Gujarat and India 2001-2015

Relative Trade Advantage:

The relative trade advantage (RTA) in Table 1. reflects the real competitiveness and efficiency of trade of a country as it incorporates both exports and imports. India has positive trade advantage in export of fish and fish products but it was the highest (4.07) in 2001 and noticed lowest in 2009 with RTA (1.37). As can be seen from this table, for total fish and fish product the RCA was greater than unity and In (RXA) was positive for the fifteen-year period under study, indicating that India has a comparative advantage in export of fish and fish product. It was also indicating the positive competitiveness of the India's export through RC as it was >1 during the study period. India has down fall in RTA during 2009-10 which gradually increased then after and reached 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 the RTA 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 product.

According to the table presented below 2009 was the year when RXA (1.4), RCA (0.02), RTA (1.37) were found lowest due to the decline in export.

Conclusion:

The present study focuses on explaining the competitiveness of seafood trade of Gujarat state and its efficiency and relative advantage in Indian market. These results have clearly shown that Gujarat does have comparative advantage in exporting seafood products. 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. Gujarat is realising positive of XCI (>1), hence it founds competitive in the export of marine fish. Frozen fish is major item exported with 65.67 per cent of marine fish product exported from Gujarat. The countries namely South East Asia, China, EU, and Japan were Gujarat's top four export destinations which accounted for nearly 80 percent of the total export of marine fish and fish product from Gujarat. RCA value of India and Gujarat seafood export showed a fluctuating trend which may be due to the high dependency on wild capture rather than culture for the export. RCA value for Gujarat export was noticed >1 most of the study period which reached 2.11 in 2014 showed the state has the comparative advantage in export. 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.

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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