

CHAPTER IV

RESEARCH RESULTS AND DISCUSSION

In this chapter the results and discussion are presented in accordance with the following order.

4.1 Growth performance of Indian marine products export

4.1.1 Growth performance in major Item wise export.

4.1.2 Growth performance in major port wise export.

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4.3 Export Trend Analysis in Pre and Post Liberalization Period.

4.3.1 Export trend analysis in Pre Liberalization Period.

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4.7 Trade Constraints to the Exports of Marine Products

4.1 Growth performance of Indian marine products export

The growth performance of Indian marine products export to study major item wise, port wise and market wise in detailed about quantity basis and value basis.

4.1.1 Growth Performance in Major Item wise Export

The growth performance in major items wise export to study about quantity basis and value basis.

4.1.1.1 Growth Performance in Major Item wise Quantity of Export

The growth performances in major Item wise quantity of export have been presented in Table 4.1.

TABLE 4.1
GROWTH PERFORMANCE IN MAJOR ITEM WISE EXPORTS OF
INDIAN MARINE PRODUCTS (QTY. IN TONNES)

Year	Frozen Shrimp	Frozen Fish	Frozen Cuttle fish	Frozen Squid	Dried Items	Live Items	Chilled Items	Other Items	Total
2000-01	111874	212903	33677	37628	7511	1844	3820	31216	440473
2001-02	127709	174976	30568	39790	7020	1628	3284	39495	424470
2000-03	134815	196322	41381	37838	8178	2115	3350	43298	467297
2003-04	129768	138023	39610	37832	12574	2341	3779	48090	412017
2004-05	138085	159689	44239	48124	9692	2262	3988	55250	461329
2005-06	145180	182344	49651	52352	14167	2568	5060	60841	512163
2006-07	137397	270751	55701	47252	24293	2478	7200	67571	612643
2007-08	136223	220200	45955	34172	22414	2498	6541	73698	541701
2008-09	126039	238544	50750	57125	31688	3434	21453	73801	602834
2009-10	130553	260979	53504	61445	47053	5492	28817	80592	668435

Source: MPEDA, Cochin, 2010.

The major quantity of export of the Frozen Shrimp from 111874 tonnes in 2000-2001 to 145180 tonnes in 2005-2006 and then it was gradually declining to 130553 tonnes in 2009-2010. The trend, growth and magnitude of variability of major item wise quantity of export have been computed in Table 4.2.

TABLE 4.2
TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF MAJOR
ITEM WISE QUANTITY OF EXPORT OF INDIAN MARINE
PRODUCTS DURING YEAR 2000-2001 TO 2009 – 2010

Particulars	Semi log		R ²	CGR (percent/annum)	CV (percent)
	Constant	Regression co-efficient			
Frozen Shrimp	11.734 (0.047)	0.010NS (0.008)	0.166	2.329	6.25
Frozen Fish	11.988 (0.129)	0.041NS (0.021)	0.326	9.901	21.09
Frozen Cuttle fish	10.374 (0.070)	0.057* (0.011)	0.763	14.025	18.64
Frozen Squid	10.464 (0.110)	0.044* (0.018)	0.428	10.662	20.61
Dried Items	8.472 (0.134)	0.209* * (0.022)	0.921	61.808	70.60
Live Items	7.290 (0.120)	0.098 * (0.019)	0.763	25.314	41.42
Chilled Items	7.515 (0.277)	0.223 * (0.045)	0.758	67.109	102.16
Other Items	10.360 (0.043)	0.101 * * (0.007)	0.963	26.183	28.95

Source: Computed from Table 4.1.

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

The compound growth rates of the chilled item and live item were 0.223 percent and 0.098 percent respectively and the compound growth rate of share value of export were 102.16 and 41.42 percent respectively. The compound growth rate of the chilled item was greater than the compound growth rate of the live item, whereas the compound growth rate of export was more or less similar in case of chilled item and live item.

4.1.1.2 Growth performance in major Item wise value of export.

The growth performances in major item wise value of export have been presented in Table 4.3.

TABLE 4.3
GROWTH PERFORMANCE IN MAJOR ITEM WISE EXPORTS OF
INDIAN MARINE PRODUCTS (VALUE IN CRORES)

Year	Frozen Shrimp	Frozen Fish	Frozen Cuttle fish	Frozen Squid	Dried Items	Live Items	Chilled Items	Other Items	Total
2000-01	4481.51	874.68	288.99	324.43	70.03	39.88	71.63	292.74	6443.89
2001-02	4139.92	713.11	280.07	329.67	60.19	40.57	63.66	329.86	5957.05
2000-03	4608.31	841.65	417.09	384.37	84.23	53.66	59.14	432.86	6881.31
2003-04	4013.07	620.73	435.18	372.92	145.68	51.1	64.04	389.23	6091.95
2004-05	4220.67	759.27	474.01	477.26	121.01	50.75	68	475.58	6646.55
2005-06	4271.51	998.7	549.15	575.52	132.56	61.71	82	574.58	7245.73
2006-07	4506.08	1452.88	797.37	568.32	183.16	64.06	117.3	674.35	8363.52
2007-08	3941.62	1303.41	744.13	408.42	258.88	69.07	118.11	777.29	7620.93
2008-09	3779.8	1722.34	761.05	632.35	420.75	99	217.34	975.33	8607.96
2009-10	4182.35	2032.33	923.83	622.63	981.11	139.14	264.49	902.84	10048.72

Source: MPEDA, Cochin, 2010.

The major value of export of the Frozen Shrimp from 4481.51crores in 2000-2001 to 4506.08 crores in 2006-2007 and then it was gradually declining to4182.35 crores in 2009-2010. The trend, growth and magnitude of variability of major item wise value of export have been computed in Table 4.4.

TABLE 4.4
TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF MAJOR
ITEM WISE VALUE OF EXPORT OF INDIAN MARINE PRODUCTS
DURING YEAR 2000-2001 TO 2009 – 2010

Particulars	Semi log		R ²	CGR (Percent/annum)	CV (Percent)
	Constant	Regression co-efficient			
Frozen Shrimp	8.401 (0.040)	-0.010 NS (0.006)	0.241	-2.329	6.25
Frozen Fish	6.331 (0.149)	0.114* (0.024)	0.737	30.017	42.02
Frozen Cuttle fish	5.520 (0.075)	0.135 ** (0.012)	0.940	36.438	39.77
Frozen Squid	5.715 (0.097)	0.074 * (0.016)	0.735	18.577	25.78
Dried Items	3.655 (0.220)	0.265 ** (0.035)	0.875	84.077	113.90
Live Items	3.474 (0.105)	0.119 ** (0.017)	0.860	31.522	45.66
Chilled Items	3.718 (0.180)	0.156 * (0.029)	0.785	43.219	63.72
Other Items	5.539 (0.058)	0.136 ** (0.009)	0.964	36.773	41.36

Source: Computed from Table 4.3.

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

The compound growth rates of the chilled item and frozen fish were 0.156 percent and 0.114 percent respectively and the compound growth rate of share value of export were 63.72 and 42.02 percent respectively. The compound growth rate of the chilled item was greater than the compound growth rate of the frozen fish, whereas the compound growth rate of export was more or less similar in case of chilled item and frozen fish.

4.1.2 Growth Performance in Major Port wise Export

The growth performance in major port wise export to study about quantity basis and value basis.

4.1.2.1 Growth performance in major port wise quantity of export.

The growth performances in major port wise quantity of export have been presented in Table 4.5.

TABLE 4.5
GROWTH PERFORMANCE IN MAJOR PORT WISE EXPORT OF
INDIAN MARINE PRODUCTS (QTY. IN TONNES)

Year	Chennai	Tuti-corin	Cochin	Mumbai	Cal-cutta	Man-galore	JN Port	Pipavav	Vizag	Others	Total
2003-04	46894	21568	75761	1873	17473	8474	95584	89628	24284	4	381543
2004-05	42649	28160	86691	2744	18492	10349	109430	109597	32028	2760	442900
2005-06	45246	27172	95737	3224	18291	15965	120492	115101	37121	18423	496772
2006-07	42272	30611	106454	2893	23238	26723	137153	178751	36594	9113	593802
2007-08	42947	29697	98520	2383	27666	26155	104670	149734	35535	3230	520537
2008-09	39043	29354	98537	2319	33625	33083	126853	163866	32277	43878	602835
2009-10	45991	27782	104281	2349	46901	59000	129318	182052	31863	48899	678436

Source: MPEDA, Cochin, 2010.

The major quantity of export of the Chennai from 46894 tonnes in 2003-2004 to 42272 tonnes in 2006-2007 and then it was gradually declining to 45991 tonnes in 2009-2010. The trend, growth and magnitude of variability of major port wise quantity of export have been computed in Table.4.6.

TABLE 4.6
TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF MAJOR
PORT WISE QUANTITY OF EXPORT OF INDIAN MARINE
PRODUCTS DURING YEAR 2003-2004 TO 2009-2010

Particulars	Semi log		R ²	CGR (percent/annum)	CV (percent)
	Constant	Regression co-efficient			
Chennai	10.722 (0.054)	-0.010NS (0.012)	0.126	-2.329	6.15
Tuticorin	10.093 (0.085)	0.033 NS (0.019)	0.381	7.895	10.73
Cochin	11.280 (0.064)	0.044 * (0.014)	0.659	10.662	11.20
Mumbai	7.821 (0.165)	0.001 NS (0.037)	0	0.231	17.51
Calcutta	3.359 (0.302)	0.326 * (0.067)	0.824	111.836	40.48
Mangalore	8.726 (0.127)	0.309 * * (0.028)	0.959	103.704	67.30
JN Port	11.517 (0.093)	0.038 NS (0.02)	0.401	9.144	12.67
Pipavav	11.371 (0.112)	0.114 * (0.025)	0.806	30.017	25.86
Vizag	10.278 (0.121)	0.028NS (0.027)	0.176	6.66	13.33
Others	3.684 (1.938)	1.144* (0.433)	0.582	1293.156	112.62

Source: Computed from Table 4.5.

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

The compound growth rates of the Calcutta and Pipavav were 0.326 percent and 0.114 percent respectively and the compound growth rate of share value of export were 40.48 and 25.86 percent respectively. The compound growth rate of the Calcutta was greater than the compound growth rate of the Pipavav, whereas the compound growth rate of export was more or less similar in case of Calcutta and Pipavav.

4.1.2.2 Growth Performance in Major Port wise Value of Export

The growth performances in major port wise value of export have been presented in Table 4.7.

TABLE 4.7
GROWTH PERFORMANCE IN MAJOR PORT WISE EXPORT OF
INDIAN MARINE PRODUCTS (VALUE IN CRORES)

Year	Chennai	Tuticorin	Cochin	Mumbai	Calcutta	Man-galore	JN Port	Pipavav	Vizag	Others	Total
2003-04	1505.51	565.65	1077.11	47.37	543.56	64.48	837.25	477.31	763.64	0.02	5881.9
2004-05	1432.87	635.19	1135.7	72.39	521.33	76.92	965.32	629.54	1029.06	16.65	6514.97
2005-06	1382.56	613.17	1218.97	69.17	537.95	103.27	1173.04	776.83	1115.3	130.87	7121.13
2006-07	1332.58	735.48	1476.51	67.54	655.65	149.49	1279.48	1162.05	1264.75	99.9	8223.43
2007-08	1158.5	654.64	1383.74	116.12	689.7	162.61	1120.86	1075.31	1018.6	80.91	7460.99
2008-09	1078.44	693.76	1504.98	176.56	720.36	238.44	1487.28	1408.35	897.93	401.84	8607.94
2009-10	1314.1	686.45	1576.19	462.67	892.48	400.33	1564.42	1673.74	943.29	534.86	10048.53

Source: MPEDA, Cochin, 2010

The major value of export of the Chennai from 1505.51 crores in 2003-2004 to 1332.58 crores in 2006-2007 and then it was gradually declining to 1314.10 crores in 2009-2010. The trend, growth and magnitude of variability of major port wise value of export have been computed in Table 4.8.

TABLE 4.8

**TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF MAJOR
PORT WISE VALUE OF EXPORT OF INDIAN MARINE PRODUCTS
DURING YEAR 2000-2001 TO 2009 – 2010**

Particulars	Semi log		R ²	CGR (Percent/annum)	CV (Percent)
	Constant	Regression co-efficient			
Chennai	7.340 (0.072)	-0.041* (0.016)	0.569	-9.901	11.43
Tuticorin	6.364 (0.055)	0.029NS (0.012)	0.529	6.905	8.61
Cochin	6.929 (0.044)	0.065* (0.010)	0.897	16.145	14.59
Mumbai	3.259 (0.302)	0.326* (0.067)	0.824	111.836	101.56
Calcutta	6.122 (0.062)	0.085 * (0.014)	0.883	21.619	20.38
Mangalore	3.788 (0.097)	0.293 * * (0.022)	0.973	96.336	68.64
JN Port	6.687 (0.077)	0.096 * (0.017)	0.863	24.738	21.85
Pipavav	6.040 (0.089)	0.204 * * (0.020)	0.955	59.956	41.74
Vizag	6.863 (0.148)	0.010 NS (0.033)	0.017	2.329	15.94
Others	-1.631 NS (1.918)	1.302 * (0.429)	0.649	1904.472	113.59

Source: Computed from Table 4.7.

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

The compound growth rates of the Mumbai and Cochin were 0.326 percent and 0.065 percent respectively and the compound growth rate of share value of export were 101.56 and 14.59 percent respectively. The compound growth rate of the Mumbai was greater than the compound growth rate of the Cochin, whereas the compound growth rate of export was more or less similar in case of Mumbai and Cochin.

4.1.3 Growth performance in major market wise export.

The growth performance in major market wise export to study about quantity basis and value basis.

4.1.3.1 Growth performance in major market wise quantity of export.

The growth performances in major market wise quantity of export have been presented in Table 4.9.

TABLE 4.9
GROWTH PERFORMANCE IN MAJOR MARKET WISE EXPORT OF
INDIAN MARINE PRODUCTS (QTY. IN TONNES)

Year	Japan	USA	European Union	South East Asia Including China	Middle East	Others	Total
2000-01	68983	41747	68827	223519	17236	20161	440473
2001-02	64905	49041	82895	187191	19159	21279	424470
2000-03	54916	61703	94541	214908	19668	21561	467297
2003-04	50020	53153	96284	174408	14711	23441	412017
2004-05	57832	50045	117742	188668	16624	30418	461329
2005-06	59775	55817	136846	197216	22270	40239	512163
2006-07	67437	43758	149773	271163	23585	56927	612643
2007-08	67373	36612	149381	203610	25752	58973	541701
2008-09	57271	36877	155161	236265	27177	90083	602834
2009-10	62690	33444	164800	293643	34907	78951	668435

Source: MPEDA, Cochin, 2010.

The major quantity of export of the Japan from 68983 tonnes in 2000-2001 to 67437 tonnes in 2006-2007 and then it was gradually declining to 62690 tonnes in 2009-2010. The trend, growth and magnitude of variability of major market wise quantity of export have been computed in Table 4.10.

TABLE 4.10
TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF MAJOR
MARKET WISE QUANTITY OF EXPORT OF INDIAN MARINE
PRODUCTS DURING YEAR 2000-2001 TO 2009 – 2010

Particulars	Semi log		R ²	CGR (Percent/annum)	CV (Percent)
	Constant	Regression co-efficient			
Japan	11.016 (0.085)	-0.001 NS (0.015)	0	0.231	10.16
USA	10.924 (0.122)	-0.034 NS (0.0822)	0.255	-8.143	20.03
European Union	11.107 (0.052)	0.105 * * (0.009)	0.948	27.350	26.03
South East Asia Including China	12.162 (0.099)	0.018NS (0.018)	0.127	4.232	17.62
Middle East	9.628 (0.105)	0.058* (0.013)	0.583	14.288	27.31
Others	9.504 (0.115)	0.192** (0.020)	0.927	55.597	60.50

Source: Computed from Table 4.9

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

The compound growth rates of the Middle East and European Union 0.058 percent and 0.105 percent respectively and the compound growth rate of share value of export were 27.31 and 26.03 percent respectively. The

compound growth rate of the Middle East was greater than the compound growth rate of the European Union, whereas the compound growth rate of export was more or less similar in case of Middle and European Union.

4.1.3.2 Growth Performance in Major Market wise Value of Export

The growth performances in major market wise value of export have been presented in Table 4.11.

TABLE 4.11
GROWTH PERFORMANCE IN MAJOR MARKET WISE EXPORT OF
INDIAN MARINE PRODUCTS (VALUE IN CRORES)

Year	Japan	USA	European Union	South East Asia Including China	Middle East	Others	Total
2000-01	2560.39	1164.4	1025.26	1290.39	188.32	215.13	6443.89
2001-02	1820.69	1421.38	1150.07	1135.98	181.06	247.87	5957.05
2000-03	1534.76	2051.12	1388.47	1404.86	204.7	297.4	6881.31
2003-04	1163.69	1682.06	1470.99	1222.23	201.52	351.46	6091.95
2004-05	1202.5	1556.1	1819.3	1322	244.4	502.25	6646.55
2005-06	1156	1669.2	21342	1435.3	307.7	572.9	26483.1
2006-07	1553.38	1347.8	276.32	1773.66	371.06	757.3	6079.52
2007-08	1227.59	1016.94	2664.24	1583.56	393.96	734.64	7620.93
2008-09	1234.04	1021.55	2854.07	2169.48	475.72	853.11	6438.49
2009-10	1289.58	1012.52	3013.33	3270.44	553.55	909.3	10048.72

Source: MPEDA, Cochin, 2010.

The major value of export of the Japan from 2560.39 crores in 2000-2001 to 1553.38 crores in 2006-2007 and then it was gradually declining to 1289.58 crores in 2009-2010. The trend, growth and magnitude of variability of major market wise value of export have been computed in Table 4.12.

TABLE 4.12
TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF MAJOR
MARKET WISE VALUE OF EXPORT OF INDIAN MARINE
PRODUCTS DURING YEAR 2000-2001 TO 2009 – 2010

Particulars	Semi log		R ²	CGR (Percent/an num)	CV (Percent)
	Constant	Regression co- efficient			
Japan	7.615 (0.149)	-.0068* (0.026)	0.487	-16.95	29.79
USA	7.443 (0.166)	-0.040NS (0.029)	0.205	-9.648	25.06
European Union	6.989 (0.869)	0.101NS (0.154)	0.058	26.183	169.18
South East Asia Including China	6.974 (0.084)	0.062* (0.015)	0.708	15.345	38.63
Middle East	4.957 (0.071)	0.128 * * (0.013)	0.935	34.276	42.18
Others	5.182 (0.067)	0.186 * * (0.012)	0.972	53.462	47.73

Source: Computed from Table 4.11

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

The compound growth rates of the Middle East and South East Asia including China were 0.128 percent and 0.062 percent respectively and the

compound growth rate of share value of export were 42.18 and 38.63 percent respectively. The compound growth rate of the Middle East was greater than the compound growth rate of the South East Asia including China, whereas the compound growth rate of export was more or less similar in case of Middle East and South East Asia including China.

4.2 Growth Performance of Tamil Nadu Fish and Fish Products Export

The growth performance of Tamil Nadu fish and fish products export to study on quantity and value basis. The above studies have been presented in Table 4.13.

TABLE 4.13

GROWTH PERFORMANCE IN EXPORT OF TAMIL NADU FISH AND FISH PRODUCTS DURING THE YEAR 2001-2002 - 2009 - 2010

Year	Quantity in Tonnes	Value in Rs. Lakhs
2001-2002	58482	201640
2002-2003	70147	250787
2003-2004	68462	207116
2004-2005	70809	206804
2005-2006	72418	199572
2006-2007	72883	206805
2007-2008	72644	181314
2008-2009	68397	177220
2009-2010	73327	198207.47
Total	627569	1829465.47

Source: Statistics Hand Book, Tamil Nadu Govt., 2010.

The quantity of export of the Tamil Nadu from 70147 tonnes in 2002-2003 to 68397 tonnes in 2008-2009 and then it was gradually increasing to 73327 tonnes in 2009-2010. The major value of export of the Tamil Nadu from

201640 lakhs in 2000-2001 to 181314 lakhs in 2007-2008 and then it was gradually declining to 198207.47 lakhs in 2009-2010. The trend, growth and magnitude of variability of quantity and value of export have been computed in Table 4.14.

TABLE 4.14
TREND, GROWTH AND MAGNITUDE OF VARIABILITY IN
QUANTITY AND VALUE OF EXPORT OF TAMIL NADU FISH AND
FISH PRODUCTS DURING YEAR 2001-2002 TO 2009– 2010

Particulars	Semi log		R ²	CGR (Percent/annum)	CV (Percent)
	Constant	Regression co-efficient			
Quantity	11.069 (0.042)	0.016 NS (0.007)	0.403	3.753	6.61
Value	12.333 (0.059)	-0.023 NS (0.010)	0.406	-5.439	10.29

Source: Computed from Table 4.13.

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

It is observed from Table 4.14 that trend in exports of fish and fish product in Tamil Nadu is negative and not significant. Tamil Nadu fish and fish products quantity of exports in increased at the rate of 3.75 percent. The value of export is decreased at the rate of -5.43.

4.3 Export Trend Analysis in Pre and Post Liberalisation Period

The Indian marine products export trend analysis in pre and post liberalisation period to study on quantity and value basis.

4.3.1 Export Trend Analysis in Pre liberalisation Period

The quantity and value of exports in pre liberalisation period have been presented in Table 4.15.

TABLE 4.15
INDIAN MARINE PRODUCTS EXPORT TREND
PRE LIBERALISATION PERIOD (1970-71 TO 1990-91)

Year	Quantity in Tonnes	Value in Rs. Crore
1970-71	35883	35.07
1971-72	35523	44.55
1972-73	38903	59.72
1973-74	52279	89.51
1974-75	45099	68.41
1975-76	54463	124.53
1976-77	66750	189.12
1977-78	56967	180.12
1978-79	86894	234.62
1979-80	86401	248.82
1980-81	75591	234.84
1981-82	70105	286.01
1982-83	78175	361.36
1983-84	92187	373.02
1984-85	86187	384.29
1985-86	83651	398
1986-87	85843	460.67
1987-88	97179	531.2
1988-89	99777	597.85
1989-90	110843	634.99
1990-91	139419	893.37
Total	1578119	6430.07

Source: MPEDA, Cochin, 2010.

The quantity of marine products exports in pre liberalisation period from 35883 tonnes in 1970-1971 to 70105 tonnes in 1980-1981 and then it was gradually increased to 139419 tonnes in 1990-1991. The value of marine products exports in pre liberalisation period from 35.7 crores in 1970-1971 to 234.84 in 1980-1981 and then it was gradually increased to 893.37 crores in 1990-1991. The trend, growth and magnitude of variability of quantity and value of export have been computed in Table 4.16.

TABLE 4.16

TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF PRE LIBERALISATION PERIOD QUANTITY AND VALUE OF EXPORT OF INDIAN MARINE PRODUCTS DURING YEAR 1970-1971 TO 1990-1991

Particulars	Semi log		R ²	CGR (Percent/annum)	CV (Percent)
	Constant	Regression co-efficient			
Quantity	10.538 (0.063)	0.057 * * (0.005)	0.870	14.025	35.30
Value	3.818 (0.105)	0.143 * * (0.008)	0.939	38.995	73.65

Source: Computed from Table 4.15.

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

It is observed from Table 4.16 that trend of Indian marine products exports in pre liberalisation period positive and significant at one percent level. The quantity of exports increased at the rate of 14.02 percent. The value of export is increased at the rate of 38.99.

4.3.2 Export Trend Analysis in Post Liberalisation Period

The quantity and value of exports in post liberalisation period have been presented in Table 4.17.

TABLE 4.17

INDIAN MARINE PRODUCTS EXPORTS TREND

POST LIBERALISATION PERIOD (1991-92 TO 2009-10)

Year	Quantity in Tonnes	Value in Rs. Crore
1991-92	171820	1375.89
1992-93	209025	1768.56
1993-94	243960	2503.62
1994-95	307337	3575.27
1995-96	296277	3501.11
1996-97	378199	4121.36
1997-98	385818	4697.48
1998-99	302934	4626.87
1999-00	343031	5116.67
2000-01	440473	6443.89
2001-02	424470	5957.05
2002-03	467297	6881.31
2003-04	412017	6091.95
2004-05	461329	6646.69
2005-06	512164	7245.3
2006-07	612641	8363.53
2007-08	541701	7620.92
2008-09	602835	8607.94
2009-10	678436	10048.53
Total	7791764	105193.94

Source: MPEDA, Cochin, 2010.

The quantity of marine products exports in post liberalisation period from 171820 tonnes in 1991-1992 to 440473 tonnes in 2000-2001 and then it was gradually increased to 678436 tonnes in 2009-2010. The value of marine products exports in post liberalisation period from 1375.89.crores in 1991-1992 to 6443.89 in 2000-2001 and then it was gradually increased to 10048.53 crores in 2009-2010. The trend, growth and magnitude of variability of quantity and value of export have been computed in Table 4.18.

TABLE 4.18

TREND, GROWTH AND MAGNITUDE OF VARIABILITY OF POST LIBERALISATION PERIOD QUANTITY AND VALUE OF EXPORT OF INDIAN MARINE PRODUCTS DURING YEAR 1991-1992 TO 2009-2010

Particulars	Semi log		R ²	CGR (Percent/annum)	CV (Percent)
	Constant	Regression co-efficient			
Quantity	12.005 (0.245)	0.096 * * (0.020)	0.556	24.738	33.83
Value	7.398 (0.232)	0.120 * * (0.19)	0.680	31.826	42.96

Source: Computed from Table 4.17

Figures in parentheses denote standard error

* Significant at five percent level

** Significant at one percent level

NS: Not Significant

CGR – Compound Growth Rate

It is observed from Table 4.18 that trend of Indian marine products exports in post liberalization period positive and significant at one percent level. The quantity of exports increased at the rate of 24.73 percent. The value of export is increased at the rate of 31.82.

4.4 Factors Motivating the Marine Products Exporters

A motive is a driving force that causes a person to take action to satisfy specific needs. By studying motivation, marine product trade can analyse the major forces influencing exporters to export or not to export marine products.

4.4.1 Factor Analysis of Marine Products Exports

Mathematically, factor analysis is somewhat similar to multiple regression analysis. Each variable is expressed as a linear combination of underlying factors. The amount of variance, a variable shares with all other variables included in the analysis is referred to communality. The Co-variation among the variables is described in terms of a small number of common factors plus a unique factor for each variable. These factors are not over observed. If the variables are standardized, the factor model may be represented as:

$$X_i = A_{i1}F_1 + A_{i2}F_2 + A_{i3}F_3 + \dots + A_{im}F_m + V_iU_i$$

Where,

X_i = i th standardized variable

A_{ij} = standardized multiple regression coefficient of variable i on
common factor j

F = Common factor.

V_i = standardized regression coefficient of variable i on unique factor i .

U_i = The unique factor for variable i .

m = Number of common factors.

The unique factors are uncorrelated with each other and with the common factors. The common factors themselves can be expressed as linear combinations of the observed variables.

$$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + \dots + W_{ik}X_k$$

Where,

F_i = Estimate of i th factor.

W_i = Weight or factor score coefficient.

K = Number of variables.

It is possible to select weight or factor score coefficient, so that the first factor explains the largest portion of the total variance. Then a second set of weight can be selected, so that the second factor accounts for most of the residual variance, subject to being uncorrelated with the first factor. This same principle could be applied for selecting additional weights for the additional factors. Thus, the factors can be estimated so that their factor scores, unlike the value of the original variable, are not correlated. Furthermore, the first factor accounts for the highest variance in the data, the second factor the second highest, and so on.

4.4.2 Rotated factor Matrix for the Export of Marine Products

The rotated factor matrix for the attributes relating to the exports of marine products is given in table 419.

TABLE 4.19
ROTATED FACTOR MATRIX FOR THE EXPORTS MARINE
PRODUCTS

SL No.	Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	Fisheries Subsidies Loan	0.8014	0.1446	0.1405	0.0728	-0.0405
2	Transit Duties	0.7868	0.1562	0.1554	0.0799	0.0483
3	Export Duties	0.7485	0.2714	0.2412	-0.0175	0.0031
4	Protective Tariff	0.7258	0.0932	0.2965	0.2060	-0.0031
5	Compound Duties	0.7160	0.0638	0.2148	0.0796	0.0150
6	Single-Column Tariff	0.7147	0.1953	0.0718	-0.0045	0.1236
7	Double-Column Tariff	0.5781	0.25.8	0.1040	0.0011	0.0360
8	Easy Loan	0.1570	0.8036	0.0460	0.0398	-0.0764
9	Less Formalities	0.1125	0.7762	0.0903	-0.1858	0.1274
10	Needed Amount	0.1622	0.7259	0.2354	0.1723	0.0309
11	Quick Process	0.1628	0.6909	0.0802	0.2192	0.1045
12	Future Oriented	0.2215	0.6611	0.2561	0.1063	-0.0935
13	Flexible Finance	0.2897	0.6523	0.0572	0.2485	0.0388
14	Opportunities of women	0.0884	0.1965	0.7392	-0.2369	0.2101
15	Usage for local area	0.2963	0.0686	0.7129	0.2464	0.0786
16	Coverage for poorer	0.3813	0.2262	0.6943	-0.0745	-0.0479
17	Mostly used fisherman	0.4591	0.2244	0.6768	0.0944	-0.0024
18	Worked Rural people	0.1889	0.0996	0.6020	0.0620	-0.2523
19	Future scope	0.2066	0.1220	-0.1759	0.7554	-0.0241
20	Growth Tendency	0.0081	0.3236	0.2858	0.7206	0.1165
21	Traditionalist	-0.0836	-0.0287	0.1974	0.2427	0.8208
22	Experienced one	-0.1881	0.1369	0.2746	0.1958	0.6008

Source: Primary Data.

The above table exhibits the rotated factor loadings for the twenty two statements (Attributes) of marine products exporters. It is clear from the table that all the twenty two statements have been extracted into five factors.

The Rotated Factor Matrix for the marine products export decision factors or attributes of marine products exporters export behaviour is given below:

TABLE 4.20
FACTOR 1 - GOVERNMENT INCENTIVES

Sl. No.	Variables	Factor Loading	Communality (H2)
1	Fisheries Subsidies Loan	0.80149	0.6900
2	Transit Duties	0.78689	0.6765
3	Export Duties	0.74853	0.6900
4	Protective Tariff	0.72588	0.6660
5	Compound Duties	0.71608	0.5695
6	Single-Column Tariff	0.71478	0.5555
7	Double-Column Tariff	0.5781	0.4232

Among above table 4.20 that the attributes of marine products exports, the attributes such as Fisheries Subsidies Loan, Transit Duties, Export Duties, Protective Tariff, Compound Duties, Single-Column Tariff and Double-Column Tariff constituted the Factor 1 with higher factor loadings. The above said seven attributes with higher factor loading on Factor 1 are characterized as Government Incentives. The ten attributes have high communality indicating that the attributes within the Factor 1, have very high association among them.

TABLE 4.21
FACTOR 2 - BETTER FINANCIAL FACILITIES

Sl. No.	Variables	Factor Loading	Communality (H2)
1	Easy Loan	0.8036	0.6800
2	Less Formalities	0.7762	0.6742
3	Needed Amount	0.7259	0.6540
4	Quick Process	0.6909	0.5687
5	Future Oriented	0.6611	0.5718
6	Flexible Finance	0.6523	0.5760

The above table 4.21 that the attributes such as Easy Loan, Less Formalities, Needed Amount, Quick Process, Future Oriented and Flexible Finance with high factor loading constituted Factor 2. The above said six attributes with high factor loading on factor 2 are characterized as Better Financial Facilities.

The higher factor loading on its attributes helps in identifying attributes associated with factor 2. All the attributes have high communality, indicating that the variables within factor 2 have very high association.

TABLE 4.22

FACTOR 3 - MORE EMPLOYMENT OPPORTUNITIES

Sl. No.	Variables	Factor Loading	Communality (H2)
1	Opportunities of women	0.7392	0.6932
2	Usage for local area	0.7129	0.6678
3	Coverage for poorer	0.6943	0.6866
4	Mostly used fisherman	0.6768	0.7281
5	Worked Rural people	0.6020	0.4756

It is observed from the above table 4.22 that the attributes of exporters such as Opportunities of women, Usage for local area, Coverage for poorer, Mostly used fisherman and Worked Rural people constituted factor 3 with higher factor loading. The above said five attributes with high factor loading on factor 3 are characterized as More Employment Opportunities.

The higher factor loading of the attributes indicate that the factor 3 underlines that variable. The higher value of communality for the five attributes indicates that higher amount of variance is explained by the extracted factors.

TABLE 4.23
WIDE SCOPE

Sl. No.	Variables	Factor Loading	Communality (H2)
1	Future scope	0.7554	0.6598
2	Growth Tendency	0.7206	0.7194

The above table 4.23 that the attribute Future Scope and Growth Tendency characterized as Wide Scope is constituted as factor 4 with high factor loading of 0.7554 and 0.7206. The communality value for this attribute is 0.6598 and 0.7194.

TABLE 4.24
FACTOR 5 - HEREDITARY

Sl. No.	Variables	Factor Loading	Communality (H2)
1	Traditionalist	0.8208	0.5555
2	Experienced	0.60008	-0.5289

Among the above table 4.24 that the attributes of exporters, the attributes, Traditionalist and Experienced constituted factor 5 with higher factor loading. The above said two attributes with higher factor loading on factor 5 are characterized as Hereditary. The higher factor loadings of the attributes indicate that the factor 5 underlines the above two variables. The high communality value of the attributes indicates that the attributes within the factor 5 have very high association among them.

4.4.3 Export Decision Factors for Marine Product

Factor analysis of twenty two attributes relating to the exporting behaviour of marine products exporters identified five export decision factors and the results are presented in table 4.25.

TABLE 4.25

EXPORT DECISION FACTORS FOR MARINE PRODUCT

Sl. No.	Factors	Eigen Value	Percentage of Variance	Cumulative Percentage of Variance
1	Government Incentives	7.4769	33.98	33.98
2	Better Financial Facilities	2.2181	10.08	44.08
3	More Employment Opportunities	1.6931	7.69	53.76
4	Wide Scope	1.3566	6.16	57.93
5	Hereditary	1.1930	5.42	63.35

❖ Kaiser-Meyer-Olikin measures sampling adequacy : 0.867

❖ Bastlett's Test of Sphericity: Chi-Sequence: 2613.43

Agrees of freedom: 231

Significance: 0.000

It is observed from table 4.25 that the five factors such as Government Incentives, Better Financial Facilities, More Employment Opportunities, Wide Scope and Hereditary were extracted out of twenty two attributes. These factors account for about 63.35 percent of variance in the data. Eigen value for the first factor 'Government Incentives' is 7.4769, which indicates that the factor contains very high information that the other factors. The

first factor, 'Government Incentives' provides the maximum insights of exports decision of marine products export in the study area. It is a very important factor, because the respondents prefer to export the marine products for Fisheries Subsidies Loan, Transit Duties, Export Duties, Protective Tariff, Compound Duties, Single-Column Tariff and Double-Column Tariff.

To improve this situation, exporters in the marine products industry shall give more importance to the attributes concerning Tariff of the marine products. The second important factor called 'Better Financial Facilities' account for 10.08 percent variance. The Eigen value of this factor is 2.2181. It explains that exporters choose to export marine products if they possess the attribute of exporters' 'Financial Facilities'.

The third and the fourth factors More Employment Opportunities and Wide Scope account for 7.6 percent and 6.16 percent variance with the Eigen value of 1.6931 and 1.3566 respectively. It shows that exporters are encouraged to export marine products if the attributes of employment opportunities and it must be available at a reasonable future scope. The fifth factor hereditary account for 5.42 percent variance with the Eigen values of 1.1930. This factor is also important in exports decision of marine products.

High value of Kaiser-Mayer-Olkin (KMO) test of sampling adequacy (0.867) indicates the correlation between the pairs of variables explained by other variables and thus factor analysis is considered to be appropriate in this model.

4.4.4 Relationship between – Export Decision Factors And The Overall Export Decision Behaviour of Marine Product Exporters

After finding out the factors involved in export decision of marine products, the next step is to find out the relationship between the export decision factors and the overall export decision behavior of marine product exporters in the study area. 'Multiple regressions Analysis 'has been done to identify the relationship between factors and the overall export behavior.

The function in log form is as follows:

$$\text{Log } y = \log b_0 + b_1 \log x_1 + b_2 \log x_2 + \dots + b_5 \log x_5 + eu$$

Where,

Y = Overall score on export decision behavior

X₁ = Government Incentives

X₂ = Better Financial Facilities

X₃ = More Employment Opportunities

X₄ = Wide Scope

X₅ = Hereditary

b₀, b₁, b₂, b₅ are the parameters of independent variable to be estimated.

b₀ = Regression constant

E = error term.

In order to test the significance of the estimated parameters

b₀, b₁, b₂, b₆, t – test of the following has been used.

$$t = \frac{b_1}{SEb_1}$$

Where,

SE b_1 = Standard error of b_1

The regression co-efficient of the independent variables has been estimated and the results are shown in table 4.26.

TABLE 4.26

THE IMPACT OF EXPORT DECISION FACTOR ON THE OVERALL EXPORT DECISION BEHAVIOUR

Sl. No.	Factor	Notation	Elasticity Co-efficient	Standard Error	't' Value
1	Over all score on export decision behavior	Y	-----	-----	---
2	Constant	b_0	5.153*	1.654	3.115
3	Government Incentives	X_1	0.735*	0.254	2.894
4	Financial Facilities	X_2	0.257*	0.049	5.192
5	More Employment Opportunities	X_3	0.0245 ^{NS}	0.165	0.148
6	Wide scope	X_4	0.315*	0.011	2.81
7	Hereditary	X_5	0.035 ^{NS}	0.098	0.3571

$$R^2 = 0.789$$

$$F - \text{Test} = 63.799^*$$

NS = Not Significant

❖ Significant at 5 percent level of probability

It is seen from the table 4.26 that co-efficient of determination (R^2) was 0.789 indicating that 78.9 percent of the variation in the export decision behavior of marine products be explained by all the five independent variables included in the model .The F-value indicates that the fitted log Linear Multiple Regression was significant at one percent level and it is valid to draw inference.

Among the five independent variables, Government Incentives, Better Financial Facilities, More Employment Opportunities, Wide Scope and Hereditary were found to be statistically significant.

It could be inferred that export decision behavior of marine products export was significantly influenced by the level of ‘Government Incentives’ in Tariff and loan subsidies. One percent increase in the level of efficiency in Government Incentives, keeping all other factors constant, will increase the export decision behavior by 0.735 percent from its mean level.

The elasticity co-efficient for the variable ‘Better Financial Facilities’ was 0.257 which indicates that by decreasing the value of this attributes. The export decision behavior was also influenced by ‘Wide Scope’ of the marine products exports. The co-efficient of cost was 0.0315 which was significant at one percent level. This shows that one percent increase in wide scope of the marine products would increase the export decision by 0.0315 percent from its mean level. The factors ‘More Employment Opportunities’ and ‘Hereditary’ were not considered as significant.

4.5 Expectations of the Marine Products Exporters

To analyses the expectations of the exporters in the marine products exports, the respondents were asked to rank the factor responsible for such act. The order of merit assigned by the respondents was converted into scores by using the Garrett Ranking Technique. Garrett suggested this method for converting ranks into scores when number of items raked differed from respondent to respondent. The percent position of each rank was found out using the formula,

$$\text{Per cent Position} = \frac{100(R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Rank given to i th factor by j th individual

N_j = Number of factors ranked by j th individual

By referring the table given by Garrett, the per cent position estimated was converted into scores. Then for each factor, the scores of various respondents were added and divided by the number of respondents. The scores thus obtained for each factors were arranged in descending order. The factor with the highest mean value was considered the most important.

An analysis of the expectations of the marine products exporters was carried out the results are presented in Table 4.27.

TABLE 4.27

EXPECTATIONS OF THE MARINE PRODUCTS EXPORTERS

Sl. No.	Factors	Garrett Mean Score	Rank
1	Removing Trade Constraints	53.78	I
2	Reducing Tariff	49.78	II
3	Government Support	45.54	III
4	Improving Modern Technology	39.33	IV
5	Quality Assurance Scheme	35.51	V
6	Market Promotion	33.97	VI

Source: Primary Data.

The analysis reveals that more trade constraints during the time of exports are attributed as major expectation of marine products exporters with a mean score of 53.78. Tariff was the second expectation of marine products exporters with a mean score of 49.78. Government support was the third expectation of marine products exporters with a mean score of 45.54. The fourth and fifth expectation was modern technology and quality assurance scheme.

Market Promotion was the least expectation of marine products exporters with a mean score of 33.97.

4.6 Perceptions of the Marine Products Exporters Facilities

An analysis of the Perceptions of the marine products exporters facilities was carried out the results are presented in Table 4.28.

TABLE 4.28
PERCEPTIONS OF THE MARINE PRODUCTS EXPORTERS
FACILITIES

Sl. No.	Exporters Facilities	Mean Score Rate			F Statistics
		Manufacturer Exporters	Merchant Exporters	Ornamental Fish Exporters	
1	Fishing Harbor	3.725	3.664	3.500	0.660 NS
2	Infrastructures	4.011	3.868	4.216	3.261*
3	Catching Area	2.889	3.557	2.843	12.039**
4	Landing Centres	3.066	3.430	3.320	2.959*
5	Auction Centres	3.582	3.963	3.519	3.044*
6	Cold Storage	3.297	4.150	3.500	12.865**
7	Quality Assurance	3.879	3.783	3.962	0.628 NS
8	Transport Service	2.593	3.514	2.827	15.895**
9	International Trade	3.444	3.406	3.409	0.909 NS
10	Financial	3.604	3.528	3.314	1.135 NS

* Significant at 5 percent level.

The perception on the variable in marine products exporters' facilities perceived more on know to satisfy all part of one self since its mean score is a maximum of 3.320. The men score of all ten variables in exporters

facilities among manufacturer exporters, merchant exporter and ornamental fish exporters are 3.58, 3.96 and 3.32 respectively. The significant difference among the three exporters identified in the perception on three variables in exporters facilities since the respective 'F' statistics are significant at five percent.

4.7 Trade Constraints to the Exports of Marine Products

An analysis of the Trade Constraints to the exports of marine products was carried out the results are presented in Table 4.29.

TABLE 4.29

TRADE CONSTRAINTS OF THE MARINE PRODUCTS EXPORTS

Sl. No.	Trade Constraints	Mean Score Rate			F Statistics
		Manufacturer Exporters	Merchant Exporters	Ornamental Fish Exporters	
1	Tariff Barriers (TB)	3.800	3.849	4.275	3.864*
2	Anti-Dumping Duties	3.367	3.094	3.627	2.923 ^{NS}
3	Duty Entry Pass Book (DEPB)	3.311	2.877	3.490	5.226*
4	Export Duties	3.933	3.453	3.941	4.975*
5	Non-Tariff Barriers (NTB)	3.000	3.623	3.824	9.376**
6	Foreign Exchange Regulations	3.478	2.877	2.843	6.729*
7	Lost International Competitiveness	4.056	3.189	3.373	14.002**
8	Politically sensitive for Governments	3.556	2.840	3.039	8.578*
9	Technical Barriers to Trade (TBT)	4.311	3.962	3.804	4.174*
10	Safety Restriction	3.802	3.726	4.294	3.737*
11	Health Restriction	4.407	4.330	4.333	0.317 ^{NS}
12	Product Standards	4.121	3.613	3.275	8.426*
13	Minimum Pricing Regulations	3.945	3.019	2.824	16.598**

* Significant at 5 percent level.

Trade Constraints on the variable in marine products exports perceived more on know to satisfy all part of one self since its mean score is a maximum of 4.311. The men score of all thirteen variables in trade constraints among manufacturer exporters, merchant exporter and ornamental fish exporters are 3.80, 2.84 and 2.82 respectively. The significant difference among the three exporters identified in the trade constraints on eight variables in exports since the respective 'F' statistics are significant at five percent.

Trade Constraints Index among the Exporters

The Trade Constraints index (TCI) are calculated by

$$TCI = \frac{\sum_{i=1}^n STCI_i}{\sum_{i=1}^n MSTCI_i} \times 100$$

Whereas,

STCI = Score on Trade Constraints variable.

MSTCI = Maximum Score on Trade Constraints variable.

$i = 1 \dots n$ = Number of variables in Trade Constraints.

The TCI of each exporter has been calculated to exhibit their levels of trade constraints. In the present study, the TCI have been confined to less than 25 percent, 25 to 50 percent, 50 to 75 percent, 75 to 100 percent. The distribution of exporters on the basis of their TCI summarized in Table 4.30.

TABLE 4.30**TRADE CONSTRAINTS INDEX AMONG THE EXPORTERS**

Sl. No.	TCI in Percentage	Number of Exporters			Total
		Manufacturer Exporters	Merchant Exporters	Ornamental Fish Exporters	
1	Less than 25	4	6	-	10
2	25-50	5	10	8	23
3	50-75	47	51	32	130
4	75-100	35	40	12	87
	Total	91	107	52	250

In total, a maximum of 82 percent of the exporters have a TCI of 50 to 100 percent. The analysis infers that the trade constraints among the exporter is very poor compared to others. So, the Government takes quick action regarding their trade constraints to the exports of marine products in Tamil Nadu – India.