

# A Study on Increase of Consumption of Seaweeds of Marine Product Distributors: Focused on Increase of Consumption of Seaweeds

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## Abstract

**Purpose** – The purpose of the study was to investigate restaurants increasing seaweed of marine products and to let consumers live healthy and happy lives and to discuss increase of seaweeds consumption.

The purpose of the study was to give consumers good food and to live healthy and happy life and to elevate life quality and to produce added value by increase of consumption of seaweeds such as laver, brown seaweed, tangle and gracilaria and others and to give economic advantage. The seaweed could be produced in large quantity without spending of much money in accordance with demand to make use of it at restaurants.

**Research design, data, and Methodology** – The author visited restaurant businessmen at Suwon, Anyang, Hwaseong and Yongin to investigate low sales by in-depth interview. The study investigated Kodari-jorim restaurants that made use of laver ssam for side dish. The subject was HS distributors to let restaurant keepers think of seaweeds and replacement of vegetable by seaweed.

**Results** – Women customers who thought of health and diet usually selected menu at the restaurants not to appeal.

**Conclusions** – Menu with high quality seaweeds (low calory, satiety and health) can satisfy women customers thinking much of health and diet to increase consumption of seaweeds. The study was exploratory to investigate in qualitative and quantitative way in the future.

**Keywords:** Restaurants, Seaweeds, High Quality, Health, Happiness.

## 1. Purpose

The purpose of the study was to give consumers good food and to live healthy and happy life and to elevate life quality and to produce added value by increase of consumption of seaweeds such as laver, brown seaweed, tangle and gracilaria and others and to give economic advantage. The seaweed could be produced in large quantity without spending of much money in accordance with demand to make use of it at restaurants. The laver has become popular to take snack and side dish for wine and other purposes. And, brown seaweed can be used for the purpose of soup, cold soup, seaweed dressed with vinegar and flakes of fried tangle to help fishing men. Consumption of the laver can be limited.

Tangle and gracilaria had limited use with low variety of cooking. The author visited seafood restaurants at Yongin, Suwon, Anyang and Hwaseong from March 2016, C Nakji made use of brown seaweed for cold soup, and J Kodari made us of laver for cooked rice wrapped and did not make use of various kinds of seaweeds. Both restaurants with hot taste were likely to make use of seaweeds. The study investigated Kodari-jorim restaurants that made use of laver ssam for side dish. The subject was HS distributors to let restaurant keepers think of seaweeds and replacement of vegetable by seaweed. Chapter 1 includes purpose of the study, chapter 2 does features of seaweed and increase of consumption of seaweed, and chapter 4 does outcome and forecast.

## 2. Status of Seafood Market and Food Service Industry

### 2.1. Consumer's Desire

Consumers are interested in physical and mental health, happiness and welfare and environment friendly product in accordance with increase of the environment and environmental change to produce LOHAS (Park So-jin and Yoo So-i 2007, Kim Mi-song, 2013). Consumer's demand on seafood has increased constantly. Citizens health have been given attention at increase of the elderly and adult disease by fat to increase seafood consumption and to expand seafood market. Seafood consumption per person in the world was 17.4 kg in 2007 to be 20 kg in 2030, and that in Korea was 55.0 kg in 2007 to be likely to increase (analysis of Enterprise value growth research center (2016), Arium business plan).

Consumers wanted safe and environment friendly food as well as seafood to pay attention to birds flu, mad cow disease and damages by agricultural chemicals and fertilizer (Kim Seong-suk, 2007) to live better lives. Consumers like to live healthy life and to make change of life styles, behavior and thought and to ask for food safety, quality and environment friendly food. (Ahn Seong-cheol, Park Seeon-yeong, 1999). Consumers' eat out culture have become high quality at single household, women's economic activity, more leisure time and smart phone, and consumers take food at restaurant one time or more a day, for instance, 19.6% in 2008 and 29.8% in 2016 (Ministry of Health and Welfare, 2008 to 2016, A survey on citizens's health and nutrition). Food service industry shall develop menu using high quality food material in accordance with consumption trend.

## 2.2. Marine Product Market

Seafood market had recorded sales: Turnover of sea food production, processing, distribution and associated service in 2015 was 48,590,028 million KRW and that in 2016 was 50,839,600 million KRW.

**Table 1:** Turnover of seafood industry

Description(1)	Industry (1)	2015	2016
		Seafood industry (million KRW)	Seafood industry(million KRW)
Total	Total	64,607,541	65,896,332
Large group	Fishery	48,590,028	50,839,600
	Fishery related	16,017,513	15,056,731
	Fishery production	9,755,358	10,942,141
	Fishery processing	10,338,711	10,802,367
	Fishery distribution	28,405,399	29,002,784
	Middle group	Fishery and leisure service	90,560
Fishing boat building		4,366,768	4,216,151
Fishing parts and equipment production and installation		1,511,661	1,569,502
Fishing boat and equipment distribution		376,101	436,037

	Fishing service	9,762,983	8,835,041
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Source: Ministry of Ocean and Fisheries (2015 ~ 2016), Statistics of ocean and fisheries: Turnover and operating cost of the fisheries

Export value index of processed fishery product increased from 62.43% in 2007 to 190.38% in 2017.

**Table 2:** Export value index

Year and product	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agricultural and fishery	70.98	79.44	85.62	100.00	120.02	125.18	119.00	104.63	89.20	95.15	92.60
Fishery	72.93	82.85	86.46	100.00	120.79	121.65	104.31	90.99	79.77	86.39	86.66
Fresh fishery	55.01	69.22	81.13	100.00	107.16	124.13	100.43	90.91	96.30	107.80	112.75
Fresh fish	65.21	76.65	86.64	100.00	94.90	101.44	86.72	74.33	73.86	83.44	80.34
Frozen and dry fishery	78.97	87.43	88.26	100.00	125.38	120.81	105.62	91.02	74.21	79.19	77.88
Frozen fishery	80.26	89.04	89.72	100.00	125.87	122.55	106.22	92.75	75.62	80.25	73.92
Processed fishery	62.43	82.03	86.26	100.00	122.98	138.24	136.94	141.79	143.90	165.21	190.38
Processed fishery	62.44	82.22	85.82	100.00	123.91	134.01	134.01	139.91	145.58	163.47	202.37

Source: Bank of Korea(2018), Statistics of international balance of payment: export value index

Processed fishery product had increased constantly from 68.28% in 2007 to 164.96% in 2017.

**Table 3:** Export index

Year and product	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agricultural and fishery product	8363	8515	10274	10000	9902	10624	11265	10133	9258	9844	8208
Fishery product	10272	9680	10839	10000	9970	11082	11495	10374	9739	9738	8586
Fresh fishery product	6074	6592	8657	10000	9864	13401	12426	12855	15517	15904	16002
Fresh fish	7201	7301	9244	10000	8735	10951	10730	10510	11901	12310	11402
Frozen and dry fishery product	11627	10573	11394	10000	10213	10764	11488	10050	8735	8622	7346
Frozen fishery product	11817	10768	11583	10000	10253	10919	11553	10241	8901	8737	6973

Processed fishery product	6828	8101	8731	10000	11104	12629	13811	14053	15476	16235	16496
Processed fishery product	6829	8120	8686	10000	11188	12243	13516	13866	15657	16064	17535

Source: Bank of Korea(2018), Statistics of international balance of payment: export value index

### 2.3. Food service industry

Rate of eat out more than one time a day from 19.6% in 2008 to 29.8% in 2016 to require development of eat out menu with high quality according to consumption trend.

**Table 4:** Export index

Year and product	Interviewee (2)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)
Age	1-2	65	54	81	59	87	119	143	159	117
	3-5	150	107	164	128	152	251	413	366	318
	6-11	164	151	131	154	149	211	318	322	325
	12-18	334	332	384	402	367	464	477	504	530
	19-29	403	404	420	470	330	433	383	408	430
	30-49	270	291	292	320	303	372	363	366	372
	50-64	143	141	176	190	193	220	237	239	243
	65 or more	35	25	34	33	33	50	40	48	48
	Mean	196	188	210	220	202	265	297	302	298

Source: Ministry of Health and Welfare,(2008~2016), Survey on citizen health and nutrition: Rate of eat out one time or more a day: gender, 1 year old or more

Food supply industry constantly increased from 2008 to 2016.

**Table 5:** Export index

Industry	2008 number of restaurant	2009 number of restaurant	2010 number of restaurant	2011 number of restaurant	2012 number of restaurant	2013 number of restaurant	2014 number of restaurant	2015 number of restaurant	2016 number of restaurant
Restaurant & bar	576,990	580,505	586,297	607,180	624,831	635,740	650,890	657,086	675,199
Restaurant	420,708	421,856	425,856	439,794	451,338	459,252	467,229	473,614	483,091
Common restaurant	317,077	316,183	317,908	327,093	334,917	339,988	343,415	348,071	353,075
Korean food restaurant	279,702	278,978	281,551	289,218	295,348	299,477	301,939	304,005	305,766

Chinese food restaurant	21,771	21,466	21,071	21,458	21,680	21,503	21,550	22,041	23,263
Japanese food restaurant	6,022	6,268	6,259	6,707	7,211	7,466	7,740	8,657	10,039
Western food restaurant	8,856	8,610	7,997	8,533	9,175	9,954	10,397	11,204	11,301
Other foreign food restaurant	726	861	1,030	1,177	1,503	1,588	1,789	2,164	2,706
In house restaurant	4,309	4,566	4,647	5,578	6,955	7,830	9,709	11,252	11,103
Traveling and movable restaurant	473	469	449	459	496	511	560	593	572
Other restaurant	98,849	100,638	102,852	106,664	108,970	110,923	113,545	113,698	118,341
Total	1,735,483	1,740,400	1,755,917	1,813,861	1,862,424	1,894,232	1,928,763	1,952,385	1,994,456

Source: Statistics of Korea(2016), Survey on nationwide restaurant: Number of restaurant in city and province

Rate of closure of restaurants was 10.17% in 2010 in other words, 178,549 of 1,755,917, and that in 2016 was 8.48%, in other words, 169,164 of 1,994,456. In 2010, rate of closure at bad business was 57.07%, in other words, 101,888 of 178,549, and in 2016, the rate was 47.60%, in other words, 80,529 of 169,164.

**Table 6:** Closure of food service industry

Year, business type	2010		2011		2012		2013		2014		2015		2016	
	total	slump	total	slump	total	slump	total	slump	total	slump	total	slump	total	slump
Corporate business	2,484	550	2,127	584	2,050	636	3,207	706	2,651	919	2,619	967	3,440	1,128
Common business	79,429	44,872	84,278	43,952	84,052	41,552	84,473	42,219	83,091	41,085	86,931	41,271	97,508	45,813
Simple business	96,603	56,469	94,045	50,660	83,122	42,883	74,404	38,938	73,362	38,288	65,592	33,083	68,203	33,586
Taxfree business	33	7	29	9	23	7	15	2	17	8	30	3	13	2
Total	178,549	101,898	180,479	95,205	169,247	85,078	162,099	81,865	159,121	80,300	155,172	75,324	169,164	80,529
Rate of closure at slump	.	57.07	.	52.75	.	50.27	.	50.5	.	50.46	.	48.54	.	47.6

Source: National Tax Administration (2005~2016), national tax statistics: 9.8.13 business closure IV(reason of closure)

### **3. Seaweeds and Consumption Promotion**

#### **3.1. Features of Seaweeds**

Seaweeds have features: Gopchang laver can be produced at sea with plenty of minerals. Pole type of laver farming is influenced by high tide and low tide to differ from common type of laver farming. The traditional type of laver farming puts pole on mud flat to hang laver web in the air and to remove water and to do photosynthesis with sunlight at low tide. Seaweeds at high tide can take nutrition from mud flat to grow up at repeated process and to have spacious and thick leaves and to produce strong sea scent and sweet taste. Seaweeds having natural taste produce good taste without seasoning and baking to serve side dish. "Hwaip" process removes water 99% or more to produce rustle texture and to keep it conveniently and to supplement disadvantage of damp. Yeobchae looks like pig's small intestines to have limitation on production because of short growth time and to have different harvest time depending upon fishing ground. Small intestine is said to be the highest quality laver. Laver with plenty of protein and vitamin has a lot of nutrition. Protein of five sheets of dry laver is equivalent to that of one of the egg, and vitamin A of one sheet of laver is equivalent to that of two eggs. It contains vitamin, in particular, vitamin B2 to be stable than vegetable has (Korean racial and culture encyclopedia, 1991).

Second, they gathered brown-seaweed one week before lunar calendar New Year Day and about 50 days. And, they kept it dry under sunlight and sea wind to make us of it for recovery of health of women delivered a child, and took primary processing and boiled it slightly in sea water to take cooling process and to remove water and to keep it at refrigerator after putting salt. The seaweed at refrigerator can be used after salting and after washing off and keeping dry.

Brown seaweed's texture and quality may vary depending upon collecting time to produce soft and best quality seaweed fifteen days around lunar calendar New Year Day (Kim Kil-an, brown seaweed producer and processor). After delivery, women usually take brown seaweed owing to plenty of calcium content and good absorption. Amino acid of laminine can lessen cholesterol in the blood (Koreans culture encyclopedia, 1991). Brown seaweed with cold nature and salty taste and no toxic can remove body heat to control heat and to promote urination (Dongeuibogam).

Third, they gather tangle from early March to end of May in lunar calendar and keep it dry by sunlight and sea wind to make use of it for meat stock and to boil it by seawater slightly at primary process and to keep it at refrigerator after salting. Frozen seaweed shall be supplied as it is depending upon use, and after getting rid of salt. Quality of brown seaweed can be rated not by time of gathering but by difference of the texture. They gather brown seaweed about 20 days early March in lunar calendar, and supply it in salt after first processing, and its texture is soft to take. And, naturally dried brown seaweed is used for meat stock and fried tangle.

Brown seaweed can control pangs of childbirth to cure swelling and quick temper and to make soft. Tangle contains laminine, hypotensive.(Korean people culture encyclopedia, 1991). They gather gracilaria from March 15 to end of March in lunar calendar. After that time, gracilaria has poor quality. Put gracilaria into warm seawater and remove water and put salt to keep it in refrigerator. Frozen seaweed can be supplied either in salt or after removing water. They keep seaweed in dry condition and in primary processing. Gracilaria with cold nature can lower body heat to be suitable to summer food to call noodle in the sea and to discharge heavy metal of the body and to prevent hypertension and diabetes. It contains Calcium, vitamin A and phosphate to be low calory diet food with small content of fat and carbohydrate. (Ministry of Agriculture, livestock food, Agricultural and Fishery Food Supply Corporation, Rediscovery of Food Material). Seaweed has different processing, keeping texture and use depending upon gathering time. Seaweed after primary processing can replace vegetable. Seaweed is easy to keep and to lower waste at corruption and to save food material cost.They put seaweed into cold water to swell and wash salt with cold water and to put in on the table without cooking.

#### **3.2. In-depth Interview**

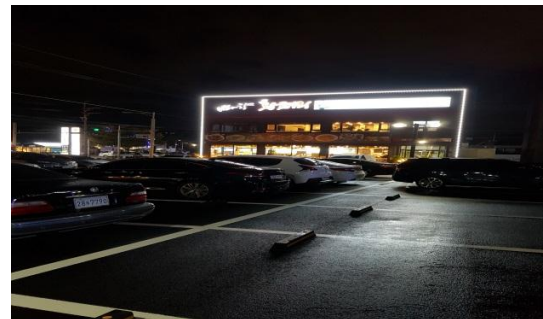
The author visited seafood restaurant at Yongin, Suwon, Anyang and Hwaseong from March 2016. C Octopus made use of brown seaweed to make cold soup of brown seaweed, and J Kodari made use of laver for cooked rice wrapping. Not only C Octopus but also J Kodari was much likely to make use of seaweed and to produce hot taste food. Kodari Restaurant making use of laver of rice wrapping was thought to make use of side dish of seaweed. Access to owner of J Kodari jorim restaurant was not easy because he may have burden of interview with distributor. The author made effort to get information enough at the first meeting. The author told role of not supplier but cooperator. Consumers liked to take environment friendly food at high consciousness and to ask for seafood and to think of food safety at bird flu, mad cow disease and agricultural product contaminated by agricultural chemicals. Consumers thought of healthy life, behavioral styles and change of thought to take safe, good quality and environment friendly food. Menu with seaweed can satisfy consumers' desire to increase sales. Indoor environment of shop shall be in good harmony with menu to have parking lot and to increase customer satisfaction and to increase seaweed consumption.

### 3.3. Development of Seaweed: Menu for Table Setting

Seaweed with low calory is said to have low calory, plenty of protein, vitamin and calcium and to absorb and to lessen cholesterol and to keep blood clean. Women like to take it and it is not used for food material. We think of something in different way at daily lives. Menu for table setting can be differentiated a little to have good quality. Preparation for seaweed for table setting was: Divide laver into six to put it at day and dark place. Swell not only brown seaweed but also tangle in cool water to cut it off in size of eating and put it into refrigerator. Remove salt from gracilaria by running water and cut it off and put it into refrigerator. Preparation and use are very much simple. Boil seaweed in perilla oil and put perilla seeds powder to make seasoning by soy sauce and salt. Put red pepper sauce with vinegar to be in good harmony with seaweeds. After first service, produce high quality food by using self bar to let consumer take enough food. Container of the food can elevate dignity. Table setting may vary depending upon container shape, color, material and putting method. Container of food is thought to be much important. Consumers are satisfied when getting value more than paying. Customers are satisfied with taking of high quality food as much as they want, and good quality table setting, and taking of home food like dish. Restaurant's atmosphere shall be in good harmony with food, and parking lot with enough space is required.



Advertising of the exterior of restaurant



Spacious parking lot

Figure 1: Panoramic view of exterior of the restaurant



Interior like inner side of ship

Inner place that looks like seashore

**Figure 2:** Inner place of restaurant



Seaweed and Kodari jorim



Seaweed and fried mackerel

**Figure 3:** Table setting



Abalone porridge with fusiformis



Abalone bibimbap with brown seaweed soup

**Figure 4:** Table setting

## 4. Conclusion

Consumers shall take good quality food to live healthy and beautiful life and to improve life quality. They often eat out at busy lives and increase of single family to take fast food and take food easily at convenience store and to bring unbalance of nutrition and to suffer from adult disease and to look for homemade food. The findings would help solve the problems. Second, seaweeds shall be used among public citizens to increase consumption. Number of eat out restaurant increased to create dull sales: High quality seaweed menu can solve the problem to satisfy women customers and to increase family customer (Kim Jae-hyun, 2012). High quality seafood would satisfy consumers to increase sales and to be used among public citizens. Marketing of seaweed shall be done to sell at seafood restaurant. In-depth interview with restaurant owners was done. The findings give implications and limitation to be difficult to generalize. And, the place was limited to Metropolitan area. The study was exploratory to investigate in qualitative and quantitative way in the future.

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