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A Competitive Intensification Plan for Marine Leisure Equipment Industry in the Southeast Region

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Abstract : *Since 2000, S. Korea is building yachts through government supported localization, cooperation between industry and educational organizations, or partnerships with foreign firms but the yacht building has yet only accomplished trial manufactured ships and one-time production. Because of a lack of mass production, the industry assesses the domestic technical skills to an average 50~60% of developed countries and its market share is less than 1% in the world. In addition, domestic marine equipment is heavily depending on imports and the industry is experiencing shortage of technology and experts, small-sized companies, insufficient industry and educational organizations' cooperation networks, inadequate legislation and policies, deficient domestic market vitalization, and scarce international information. Thus, this study focuses on the alternative plans to strengthen competitiveness and to cope with problems in the southeast marine leisure equipment industry.*

Key words : *marine leisure sports, strengthen competitiveness, southeast marine leisure equipment industry, marine leisure equipment*

1. Introduction

1.1 Necessity and Purpose of the Study

Interest in marine leisure sports is rising along with national income improvement and increasing demand for various leisure sports. Unfortunately, ordinary people can barely experience the marine leisure sports because many people still cognize them as 'high cost sports' and there are limited educational opportunities and infrastructures.

However, the marine leisure sports can and will be the national sports in the near future because the government, municipalities, and related associations are developing and operating a variety of programs in order to allow everyone to enjoy the leisure sports. The aggregate number of beach vacationers in South Korea was 100 million in 2007. Moreover, sea fishing population is now over 2 million and the sea fishing society clubs have approximately 4~5million members. A total number of scuba diving certificates is approximately 0.3 million and about 50,000 people among this group regularly dive. More than 36 thousand people acquired the motor boat driving licenses. Furthermore, a total number of leisure vessel is merely one thousand today but the number is projected to increase by ten times in 2019 (SEA&News, 2011).

Vitalization of the marine leisure sports can build an extremely large market. The Americas Cup Race which is one of the most prestigious marine sport games in the world has the economic ripple-effect of 10 trillion won and this is the third largest market in the world (The Olympic Games 16 trillion won, The FIFA World Cup 13 trillion won; The Jeju Daily News, 2008). Thus, the market breadth would be tremendous.

The marine leisure equipment industry is globally taking center stage of a higher value-added business. For example, the shipbuilding industry experiences about 1 million new orders ($47 billion) for yachts and motor boats each year (Ahjoo Economy, 2009). The equipment industry also has high correlations with marine sports, the wartime industry, and the insurance-financial industries. In order to efficiently carry forward the marine leisure equipment industry, it is necessary to achieve 1) a port of call operation and maintenance facilities, 2) marine leisure tourism awareness, and 3) integration of the equipment industry. These achievements will eventually lead to 'consumer(tourist)-specific marine leisure facilities and infrastructure establishment' and hence it is required to enhance the brand power of the marine leisure equipment industry.

The marine leisure industry can be classified into hardware and software parts. The hardware parts are consisted of the equipment industry that produces apparatus and logs and the facility industry that utilizes ocean space.

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The software part is the service industry. Because of social and economic changes, the marine leisure has already become a prospective market and its development is directly related to job creation.

Industrially advanced countries such as U.S. and Europe have developed their marine leisure industries in the order of the yacht industry → leisure & tourism → infrastructure → equipment industry. What kind of alternative plan should the relatively newcomer, South Korea, employ to strengthen the differentiated competitiveness of the marine leisure equipment industry? In order to develop the marine leisure industry, industrialization of the yacht-boat and equipment manufacturing industry has to be done first. But experts warn "an agendaless expansion without marine leisure production infrastructure may result growth of alien corporations which have advanced technologies along with collapse of domestic companies in the marine leisure equipment industry."

So-called Blue Ocean, the marine leisure equipment industry has scattered problems to solve ahead. Along with the industry development, its conflict and coexistence with fishery and capacity to accommodate natural and social environments should be thoroughly considered. Prompt localization of marine leisure equipments, ocean station and marina facility establishment, and specialization and enhancement of leisure service industry are areas to develop and take care as well. In company with proliferation of leisure population based on the income rise, the government is required to practice marine leisure infrastructure establishment, equipment industry localization, and service industry enhancement in order to expand the marine leisure industry.

Although the global marine leisure industry is the highly value-added industry which is seven times larger than the shipbuilding industry ($733.7 billion in 2009), the size of domestic industry still remains in the entry stage which is even less than 1% of the total. The yacht-boat market, especially, is a $48 trillion-global market (the shipbuilding market is $57 trillion) and U.S, Italy, Netherland, and German are possessing over 90% of the yacht market. Taiwan which has a less developed shipbuilding technology is obtaining the 5th largest orders in the world in the 80ft(24m)and over large-sized yacht market which its market share is 6%(SEA&NEWS, 2011).

Compared to the top number one shipbuilding country title, South Korea has relatively low prestige in the yacht-boat market. Furthermore, its marina facility is just a fledgling. To detach from the reality, it is necessary to develop strategies for marine leisure industry promotion on the preferential basis. In detail, infra establishment, law-regulation modification, contents and program development, promotion and marketing strategies should be premised. The government is promoting the marine industry by announcing the marine leisure equipment industry vitalization plan (Ministry of Knowledge Economy, 2009; E-Today, 2009), the marine tourism-leisure vitalization plan (Ministry of Land, Transport and Maritime Affairs, 2009), and the first marina port general plan (Ministry of Land, Transport and Maritime Affairs, 2009) but there is a lack of specific action plan. Moreover, there are similar precedent studies and reports but there are severely insufficient alternatives to publicly enhance competitiveness of domestic marine leisure equipment industry. Therefore, this study analyzes actual states of developed countries and S. Korea in relation to growth of the marine leisure equipment industry and identifies the problems. Hence, this is an empirical study to strengthen competitiveness of southeast marine leisure equipment industry which is essential to the academia and the industrial world. Since 2000, S. Korea is building yachts through government supported localization, cooperation between industry and educational organizations, or partnerships with foreign firms but the yacht building has only accomplished trial manufactured ships and one-time production. Because of a lack of mass production, the industry assesses the domestic technical skills to an average 50~60% of developed countries and its market share is less than 1% in the world. In addition, domestic marine equipment is heavily depending on imports and the industry is experiencing shortage of technology and experts, small-sized companies, insufficient industry and educational organizations' cooperation networks, inadequate legislation and policies, deficient domestic market vitalization, and scarce international information(Kim, et al., 2008).

Thus, this study focuses on the alternative plans to strengthen competitiveness and to cope with problems in the southeast marine leisure equipment industry.

1.2 Study Area and Method

To analyze problems in the southeast marine leisure equipment industry and competitiveness strengthening plans, this study subjected 28 enterprises in the southeast and a few other regions based on the 15 items (marine leisure equipments) of Korea Coast Guard. The 28 enterprises were consisted of 17 yacht-related companies, 4 leisure equipment import and repair shops, 1 engine development company, 1 submerged scooter company, 1 hover craft company, 1

rowing boat and kayak company, 1 surf boat company, 1 watercycle company, and 1 sail manufacture company. The study method was utilized a survey.

2. Analyses of Actual States of Domestic Foreign Marine Leisure Equipment Industries

2.1 The Actual States of Marine Leisure Equipment Industries in the Developed

Table 1 Marine leisure equipment industry status in the developed Countries

Nation	Vessel Building	Employ -ment	Number of vessel per capita	Marina/Port	Mooring/ slip way
Argentina	153	7,000	287	251	80
Australia	396	26,000	28	490	66,500
Czech	5	450	691	12	1,270
Finland	62	N/K	7	1,770	80,900
France	162	45,000	130	404	233,843
Germany	410	21,800	186	2,667	N/K
Italy	N/K	28,000	97	105	128,000
Japan	72	N/K	517	N/K	N/K
Netherlands	1,000	17,100	31	1,137	186,000
New Zealand	150	10,000	8	205	22,000
Norway	70	16,000	6	305	N/K
Spain	45	12,000	228	372	122,949
Sweden	50	5,000	12	1,500	200,000
Turkey	380	40,000	1,608	50	26,500
UK	550	32,500	113	545	236,300
USA	1,100	126,000	19	11,000	800,000

Data: ICOMIA, 2008 Statistical Data.

Table 1 indicates the marine leisure equipment industry status in the developed countries. The number of vessel-building related manufacture company was 1,100 in U.S., 1,000 in Netherland, 410 in Germany, and 396 in Australia in order. The number of vessel per capita was 6 in Norway, 19 in U.S., 28 in Australia, and 31 in Netherlands.

The number of marina/ports was 11,000 in U.S., 2,667 in Germany, 1,770 in Finland, and 1,500 in Sweden and the employment was 126,000 in U.S., 45,000 in France, and 40,000 in Turkey. As shown in Table 2, the number of marine leisure equipment (motor boat, sailing boat, rubber boat) declined slightly from 16,074,000 in 2003 to 15,747,000 in 2008 in U.S. Similarly, it also declined from 1,335,000 in 2003 to 804,000 in 2008 in Sweden and from 456,000 in 2003 to 247,000 in 2008 in Japan. Conversely, the number of equipment increased from 685,000 in 2003 to 850,000 in 2008 in Norway. The number of vessel in the major developed countries decreased by 10~30% as well. This was because the manufacturer did not rapidly increased due to the financial crises in Europe and U.S. but only a few countries experienced partial increment in recent days.

Table 2 Number of marine leisure equipment acquisition in the developed countries (unit: thousand)

Year	U.S.	Sweden	France	Finland	Norway	Japan
2003	16,074	1,335	750	743	685	456
2008	15,747	804	491	730	850	247

Data: ICOMIA, 2008 Statistical Data. Subjects: Motor boats, sailing boats, and rubber boats.

Table 3 indicates the actual output of marine leisure equipment vessel in the developed countries. In 2003, 754,000 vessels were produced in U.S., 38,000 in Australia, and 37,000 in France but in 2008, the numbers were 642,000 in U.S., 40,000 in France, and 32,000 in Australia. The table shows that the vessel output of Australia had declined implying that large corporations produced to order and many of small companies closed down or went bankrupt because of domestic demand recession and European financial crises.

Table 3 Marine Leisure Equipment Production Output of Developed Countries

year	U.S	Australi a	France	Finland	Italy	Portugal	Japan
2003	754	38	37	23	20	19	18
2008	642	32	40	23	26	4	10

Data: ICOMIA, 2008 Statistical Data. Subjects: Motor boats, sailing boats, and rubber boats.

In Asia, the front runner, Japan, and the newcomer, China, are driving a thriving trade. Moreover, Taiwan is making profits of approximately $100 million per year. Late starters such as Taiwan and Croatia are devoting all their strengths in the yacht production as a strategic industry. To enhance global competitiveness, Taiwan has created 'Shinda yacht industrial estate' in the southern port city Kaohsiung over the 450,000m² areas. Thailand invested $25 million in the 'Royal Phuket Marina Project' in order to promote Phuket to the representative yacht port in Asia and is preparing various events such as the Phuket King's Cup. In addition, since the independence in 1991, Croatia has been invested support funds from the World Bank in marina facilities of Dubrovnik. As a result, the city achieved 60,000 annual yacht populations along with job creation and source of foreign

exchange and has expanded the yacht industry into New Zealand, Netherland, and India.

2.2 The Actual States of Marine Leisure Equipment Industry in the southeast Korea

According to the status of domestic marine leisure equipment industry, the motor boat manufacturers are mostly consisted of small and medium-sized shipyards and there were 65 shipyards in 2001 based on the members of Korea Shipbuilding Industry Cooperative. Associated parts and components productive ship-automobile apparatus manufacturers are 195 companies based on Research Institute of Medium & Small Shipbuilding, 2010.

Table 4 indicates the regional distribution of marine leisure equipment manufacturers. According to the distribution, Busan possesses 47.3%, Gyeongnam possesses 24.2%, and Chungnam/Gunsan (Jeonnam) possesses 13.5% indicating the concentration of marine leisure equipment manufacturers in the southeast region.

Table 4 Regional Distribution of Marine Leisure Equipment Manufacturers

Region Type	Busan	Gyeong -nam	Incheon Gyeonggi	Chung -nam Gunsan	Ulsan Gyeong -buk	Gangwon Jeju	Total
Small shipyard	15	20	5	7(14)	2	2	65
Material & equipment production	108	43	19	14	9	2	195
Sum	123	63	24	35	11	4	260
Percentage (%)	47.3	24.2	9.3	13.5	4.2	1.5	100

Data: 2010 Research Institute of Medium & Small Shipbuilding.

Table 5 Regional Marine Leisure Equipment Registration Status

Seoul	Bu san	Dae gu	In cheon	Gwang ju	Dae jeon	Ul san	Gyeong gi	Total
700	445	195	490	105	140	180	1,450	
Gangwon	Chungbuk	Chungnam	Jeon buk	Jeon nam	Gyeongbuk	Gyeongnam	Jeju	7,597
655	140	750	180	380	530	977	280	

Data: Korea Coast Guard, 2009. Registration Subjects: Motor boats, rubber boats, and personal water crafts.

Table 5 indicates the region-specific registered marine leisure equipment status including motor and rubber boats, and watercycles. The number of leisure equipment was 1,450 in Gyeonggi, 977 in Gyeongnam, 750 in Chungnam, and 700 in Seoul. The capital and surrounding areas possess 36.9% of the total which is majorly consisted of river-base (Han River) lifting, motor, and rowing boats, and water sleds.

Table 6 indicates the annual water leisure equipment ownership status (vessel type). In the case of a motor boat, there were 1,153 boats in 2004 and the number slightly increased to 1,280. In particular, the number of boats was increased again to 1,419 in 2009 but decreased to 1,280 in 2009. The reasons behind were the subprime mortgage crisis in U.S. in 2009 and financial crises in Europe. The crises resulted global and domestic economy recession and consequently the number of water leisure equipment registration has declined. In the case of yachts, there were 4 in 2004 and the number had increased to 42 in 2009 whereas the number of canoes in 2004 has almost remained the same in the year of 2009 from 26 to 23. There were 154 kayaks in 2004 and this number rose to 284 in 2009. The number of rowing boats was 865 in 2004 and it increased to 1,881 in 2009. The commercial water leisure equipment has been increasing by 5~10% annually and a the craft type possesses 61%. The 98% of vessel type equipments are composed of rowing boats (54%), motor boats, and kayaks implying that the water and marine leisure of Korea is recreational and experience-based using non-powered crafts. This is antithetical to developed countries. The recreational and experience-based programs cannot efficiently attract public to utilize the ocean and it delays localization and dissemination of marine leisure equipment.

Table 6 Annual Water Leisure Equipment Ownership Status (vessel type)

Type	2004	2006	2009
Motor boat	1,153	1,174	1,280
Yacht	4	30	42
Canoe	26	13	23
Kayak	154	86	284
Rowing boat	865	905	1,881
Total	2,202	2,208	3,510

Data: Korea Coast Guard, 2009.

Table 7 indicates the annual water leisure equipment ownership status (craft type). In the case of a personal water craft, there were 311 crafts in 2004 and the number has somewhat unchanged to 308 in 2009. In the case of a rubber boat, there were 2,256 boats in 2004 and it increased to 2,888 in 2009. The number of watercycles was 273 in 2004 and it increased to 400 in 2009. Furthermore, there were 1,039 water sleds in 2004 and its number slightly increased to 1,312 in 2009. The total number of crafts was 6,662 in 2004 and it

increased to 9,083 in 2009 implying that the number of marine leisure equipment has ratcheted up. The craft-type water leisure equipment was mostly consisted of 75% of lifting/fishing rubber boats and recreational water sleds. This represents that the water leisure equipment is related with the domestic economy status. In other words, according to the domestic law in force, transport, storage, repair, and maintenance are not easy. As a result, individuals dither the purchase of marine leisure equipments.

Table 7 Annual Water Leisure Equipment Ownership Status (craft type)

Type	2004	2006	2009
Personal water craft	311	253	308
Rubber boat	2,256	3,791	2,888
Scooter	.	31	.
Water-skiing	543	281	599
Parasail	18	16	18
Water sled	1,039	796	1,312
Watercycle	273	137	400
Surfboard	20	5	34
Etc.	.	.	14
Subtotal	4,460	5,310	5,573
Total	6,662	7,518	9,083

Data: Korea Coast Guard, 2009.

In the view of the global and domestic economies in accordance with the statistical data, the marine leisure equipment industry has no single problem only to solve but there is a complex set of problems which requires a comprehensive plan in education, culture, facility infrastructure establishment, law/legislation, contents program development, and promotion/marketing. For instance, some domestic ventures have developed large number of marine leisure equipments but they are having difficulties because of a lack of the territorial cultivation, publicity, and capital. In order to strengthen competitiveness of the industry, continuous policy support from the government is essential. In the case of developed countries such as Australia, New Zealand, U.S., and Europe, the governments have made incessant investments politically to secure national competitiveness. Thus, the same process can be employed in Korea as well.

Kwang Dong FRP Industrial, Co., a marine leisure equipment development company in the southeast region which is located in Noksan Industrial Complex, succeeded to manufacture a 1584.96cm (52ft) bilateral yacht with domestic technology and started a mass production. Kwang Dong FRP made a contract with Seawind Catamaran from Australia which assures a joint development of 973.36cm (32ft) bilateral sailing yacht and minimum annual exports of 20 yachts. Furthermore, a yacht specialized company in Ulsan, Hyundai Yachts aggressively made inroads into foreign markets. The company invested ₩2.5 billion over one and half year and developed 'Asan 42.' The price of 'Asan 42' is ₩1 billion. 12 yachts are going to be manufactured and 7~8 will be exported to U.S. and Singapore. Moreover, Pureun Heavy Industries, a marine equipment manufacturer in Daebul Industrial Complex, Mokpo, Jeonnam, exported 'Blue Steel' to Singapore which is a 1828.88cm (62ft) ocean-going steel yacht produced with domestic technology. Unlike a reinforced plastic domestic yacht, the exported yacht was a luxurious model which was made of steel. Its export price was $1.3 million (approximately ₩15 billion) (Financial News, 2009). Pureun Heavy Industries, especially, retained orders from a U.S. yacht company for 2 premier 3596.64cm (118ft) yachts which price is $10 million per yacht. In sum, imports of popular brands ~~of~~ from developed countries are increasing for cost reduction and hence the domestic marine leisure equipment industry is entering the big moment. Along with the global market trend, the government is planning to promote the marine leisure equipment industry to the new growth's dynamic force and municipalities are also increasing investments into the marina industry. Therefore, the domestic demand and export are expected to achieve a rapid growth.

3. Problems in the Southeast Marine Leisure Equipment Industry

The southeast region has been a concentration ~~areas~~ area of world-class shipbuilding industry-related organizations and experts. There are large-sized shipyards such as Hanjin Heavy Industries & Construction Co., Ltd., Hyundai Heavy Industries Co. Ltd., Samsung Heavy Industries Co. Ltd., Daewoo Heavy Industries & Machinery Ltd., STX Co., Ltd., and 21st Century Ship building Co.,Ltd. Except for the listed firms, others were small-and mid-sized shipyards and small ship design engineering firms that manufacture and repair primarily fishing vessels unti l10years ago. However, business type diversification and change to knowledge-based industry are processing because of the rapid growth of local ship design engineering firms, classification and research institutes. Also, small and medium ship yards in the southeast region are changing their primary production from

fishing vessels to yachts or motor boats and marine equipment firms are experiencing a boosting economy along with large and medium ship yards.

Table 8 indicates the enterprise status in Busan by the type of marine leisure equipment. There are 20 marine leisure equipment finished goods manufacturing small shipyards (nationwide 124 shipyards, 17%) and 120 marine leisure equipment parts and components manufacturers (nationwide 200 manufacturers, 60%) in the region and there are about 9,000 employees in the industry (Woo, et al., 2009).

There are 10 top-class shipbuilding based vessel examination organizations and 35 ship engineering firms in the region. As the highest concentration area in the country, there are about 1,000 employees in the marine leisure boat production service industry. Moreover, there are total five supportive organizations such as two national institutes including Research Institute of Medium & Small Shipbuilding and Korea Marine Equipment Research Institute and three university research centers.

Table 8 Enterprise Status in Busan Region by Marine Leisure Equipment Industry type

Type of business		Number of firms	Number of employees
Ship yard	Large	1	2,800
	Small & medium	20	1,700
Ship equipment		120	4,500
Shipbuilding information s/w		27	340
Classification		10	346
Design engineering		35	608
Examination and inspection		12	328
National research center		11	250
Total		305	10,872

Data: Seokbong Woo et al., 2009. Promotion Plan for Marine Leisure Equipment Industry in Busan Region. Busan Development Institute.

Table 9 indicates the enterprise status in the southeast region by marine leisure equipment industry type based on the marine leisure equipment manufacturer list of Korea Coast Guard.

There are 15 firms producing yachts and motor boats in the southeast region. Among the firms, Hyandai Yachts (23), Hannam (18), Woonam Marine (20), Bando Marine (10),

Kwang Dong FRP Industrial (10), and Daewon Marine Tech (10) employed more than 10 experts. The firms have been accumulated know-how and expertise in developing recreational yacht and boat compared to other firms in the southeast region.

Table 9 Enterprise Status in the Southeast Region by Marine Leisure Equipment Industry type

#	Name	Type	Main items	Employment	Supply to Domestic
1	Hyundai Yachts	Yacht	FRP Yacht, AL Yacht, cruise ship	23	Individual/institution, public institution
2	Shin Hwa Marine	Yacht	Yacht mooring facility, Yacht	5	Corporation, Municipalities
3	BS Marine	Motor boat, Yacht	Outboard motor	6	Educational organizations, public office
4	Art Hands design solution	Yacht	Marine leisure equipment design	6	Domestic small businesses
5	HAN NAM high speed power boat	Motor boat, Yacht	Power boat, Yacht, AL Yacht	18	Navy and coast guard
6	Eastar Marine	Motor boat, Yacht	Yacht, Fishing boat	10	Resort development, rental
7	KEUMHA Naval Technology Co. Ltd.	Motor boat	Water jet	25	STX, Hanjin, Hyundai, Daewoo
8	Dongnam Tank Boat	Motor boat Rubber boat	Rubber boat, Outboard motor	6	General sales
9	Woori Marine Tech	Motor boat	Sailing yacht		Anglers' club
10	Woo Nam Marine	Motor boat Yacht	FRP boat, sailing yacht, high-speed boat	20	Public office Individuals
11	I Yacht	Yacht	Catamaran sailing yacht	6	Individuals
12	Blue Marine Tech	Motor boat	Boat, Components	4	Public office
13	Se Yang Marinorks	Motor boat	FRP boat, governmental special service ship	2	Individuals, Municipalities
14	Ban Do Marine	Rubber boat	RIB	10	Coast Guard, Navy, Marine firefighting
15	Kwang Dong FRP Industrial	Motor boat, Yacht	Sailing Yacht, Power boat, Motor boat		Public office
16	Daewon Marine Tech	Motor boat	Power boat, governmental ship	10	Government organizations, trinity house
17	Ocean Korea	Motor boat, Yacht	Yacht, boat, Personal water craft	4	Individuals/institution
18	Bada Marine	Yacht, Personal water craft	Yacht sales, repair, maintenance Jet ski	2	Individuals/institution
19	D-TECH	Yacht	Dinghy Yacht, Kayak	2	Educational Organizations
20	Dueal Boat	rubberboat	Rubber boat	5	Individuals/institution
21	Jin il World Maine	rubberboat	RIB, Outboard motor	5	Marina, the fire department
22	I Marine	rubberboat	Outboard motor, rubber boat	1	National federation of fisheries, Individuals
23	APEX	Scooter	Submerged scooter		Individuals
24	Korea Turbine	Hover craft	Hover craft	5	Master Marine
25	Korea Wood Shipping	Rowing boat	Rowing boat, Kayak	3	Educational Organizations
26	Minos Surf	Surfboard	Surfboard	2	Individuals
27	G·K SAIL	Yacht	Yacht sail	3	Educational Organizations
28	NTIMA Next Technology Information Motive Aces co., Ltd.	Watercycle	Watercycle	5	Individuals
Total		Marine Leisure Equipment Manufacturers (28firms)		188	-

Most companies outsourced or cooperated with foreign companies whereas only a few companies hired experts in the marine leisure equipment development design. In the case of developed countries, design experts are commonly work together with field workers but the southeast regional small firms feel too much pressure to hire design experts because of their high salaries.

There are 5 RIB and rubber boat development companies: Bando Marine, Dongnam Tank Boat, Dueal Boat, Jinil World Marine, and I Marine. Each firm was hiring about 5 experts.

An engine-related water jet development company, KEUMHA Naval Tech Co., Ltd., employed about 20 experts and the firm is supplying to foreign and domestic major companies. Furthermore, the financial health of the company was high implying that the company is an outstanding enterprise. D-TECH (dinghy yacht development, design), ArtHands (design, dinghy yacht development), Korea Turbine (hover craft), APEX (submerged scooter), and NTIMA (watercycle) are relatively small-sized companies but they have a high level of technologies and hence they have international competitiveness. Some companies have agreed MOU with foreign companies and their technical perfection is noticeably high.

D-TECH has developed a diffusion model of a one-seater dinghy yacht for domestic market and they are ready to place it on the market by mass production. On the other hand, the hover crafts of Korea Turbine have been supplied to several municipalities and they are operating today. The qualities of these products are able to compete with products from developed countries.

The submerged scooter of APEX was originally developed by the owner of the company. The product has not been released in the market yet but its quality and technology are outstanding and excellent even in a comparison with foreign products. Thus, the company already obtained orders from foreign companies but they are having difficulties to mass produce the product because of capital shortage.

The marine leisure equipment is a complex industry that needs not only one technology but also interior, design, materials, parts, shipbuilding, mechanic, automobile components. For example, a product would be neglected in the market if its design is awful in spite of its exceptional marine engineering. Conversely, a product with attractive design would cause serious problems if it does not carry a proper marine engineering. Thus, the marine leisure equipment industry essentially requires an enthusiastic movement of the government.

To analyze problems in the southeast marine leisure equipment industry, we interviewed and surveyed 28 regional enterprises based on the 15 items of Korea Coast Guard: 17 yacht-related enterprises, 4 imported equipment sales and repair enterprises, 1 engine development enterprise, 1 submerged scooter enterprise, 1 rowing boat and kayak enterprise, 1surfboat enterprise, 1 watercycle enterprise, and 1sail production enterprise.

We asked what the biggest problem in the marine leisure equipment industry is and the result is shown in Figure 1 (multiple answers).

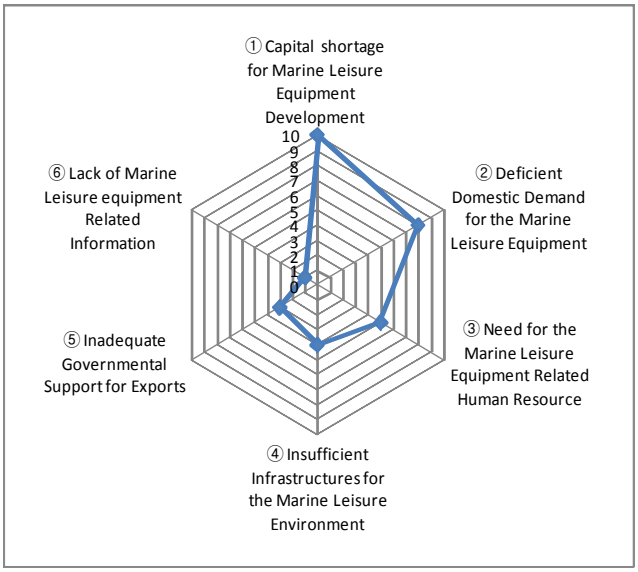

Fig. 1 Problems in the Marine Leisure Equipment Industry

The first problem was the capital shortage. 10 enterprises selected it as the biggest problem of the marine leisure equipment development. The industry was experiencing the capital shortage because of cash-flow problems, excessive costs of initial product development, limited sales and reasonable profits because of the narrow market, and high prices of oil and raw materials. The second problem was the deficient domestic demand for the marine leisure equipment (8 enterprises). There was a problem in expanding demand because of high taxes (special consumption tax, etc.) and license-required products (all boats over 5HP). The third problem was the need for the marine leisure equipment-related talent cultivation (5 enterprises). The problem indicates scarce human resource for technology development and expertise, inability to develop products that meet end users' want, and incapability to develop own technology. The fourth problem was the lack of infrastructures for the marine leisure environment (4 enterprises). The problem denotes the lack of product inspection and certificate authorities, scarce information for

foreign markets, and the lack of communication. As a result, domestic enterprises have to depend on foreign certificate authorities (unnecessary and excessive cost and time consumption). The fifth problem was the inadequate governmental support for exports (3 enterprises). The problem refers to the improper supportive system in the region (administrative support) and scarce locations for business. The last problem was the lack of marine leisure equipment related information (1 enterprise). The problem indicates the insufficient analysis for project feasibility, unsatisfactory professionalism of technical information providing organizations, and difficulties to get important information.

Today, S. Korea has the most advanced shipbuilding technology in the world and thus it has a 50~60% and higher level of a large vessel related design, linear analysis, fluid analysis, and FRP resin lamination technology compared to developed countries. In the case of yachts and motor boats, however, the level of core technology, parts, and engine propellers is remaining at 30~35% compared to developed countries because there are different attributes with the large vessel technology. Moreover, the more exigent problems are the insufficient initial capital for marine leisure equipment development, limited domestic demand, and scarce human resources. In order to solve these problems, the government must take the lead in protecting small shipbuilding firms and strengthening competitiveness of the marine leisure equipment industry(Van, et al., 2002). The government has to designate core areas to preponderantly promote the marine leisure equipment industry and develop financial instruments and insurance products to provide financial support to incompetent small enterprises. In addition, cultivation of the marine leisure equipment related talents will remedy the scarce human resources and production of diffusion models will induce popularization of the marine leisure.

4. Competitive Strengthening Plan for the Southeast Marine Leisure Equipment Industry

Unlike its high reputation for shipbuilding technology, S. Korea has only 30~35% level of the marine leisure equipment technology compared to developed countries such as U.S., England, or Australia. In particular, there is still a large technology gap between Korea and developed countries except for the FRP processing technology. Meanwhile, Japanese technologies such as high-speed boat engine, water jet engine, fluid analysis, yacht mast production, marina design, cabin design and interior have reached the global level. Italy, Sweden, France, Finland, Australia, and Germany are the leading countries in the marine leisure equipment industry and they are dominant in the global market. China is producing large number of marine leisure equipments using the OEM method (Woo, et al., 2009).

Comparably, domestic marine leisure equipments are heavily depending on imports and the industry is not emerging from backwardness because of the lack of infrastructure, technology, capital, experts, law/legislation, policies, domestic demand, and international information. Figure 2 represents a survey result which was conducted to find future plans for Korean marine leisure equipment industry. The survey subjected 28 enterprises based on 15 items listed by Korea Coast Guard.

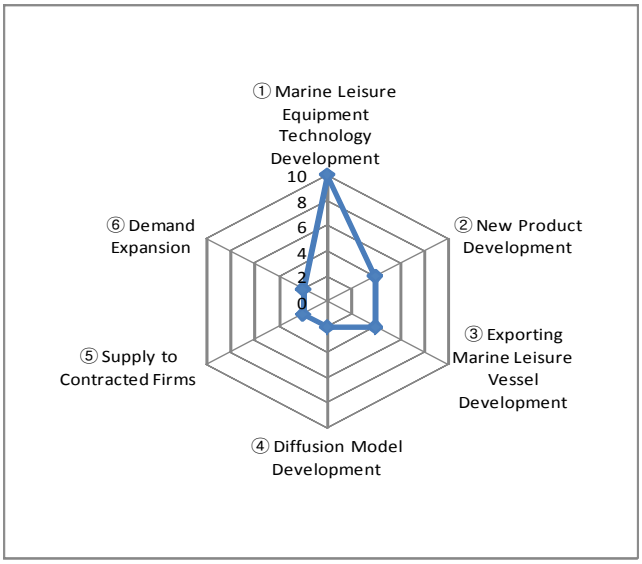

Fig. 2 Future Plans of the Marine Leisure Equipment Enterprises

The 28 enterprises had multiple answers on the survey. The future plans were the marine leisure equipment technology development (10), new product development (4), exporting marine leisure vessel development (4), diffusion model development (2), increase supply to contracted firms (2), and demand expansion (2).

The marine leisure equipment industry is a fast growing industry that can replace the shipbuilding industry after 10 years. Therefore, it is necessary to establish self-standing foundation of the marine leisure equipment industry by supporting affiliation of the industry and educational organizations and systematization of regional innovation system. Currently, Changwon City and Hwaseong City are holding the boat shows but a marinopolis, Busan, should hold

an international boat show in order to acquire core technologies of developed countries and to seek new market channels through marketing and business meetings with potential buyers. In proportion to new annual demand of one million vessels ($10 billion), the global marine leisure equipment market is in the limelight. Furthermore, the market has been concentrated in western high income countries such as North America and Europe but there is a possibility to expand the market into Asia-Oceania through rapid economic growths of China and Russia and cultural changes of Korea, Japan, and India. In Asia region, Taiwan has participated in the yacht production since 30~40 years ago and Japan has cut a conspicuous figure. Moreover, China and Singapore already established super yachts and marina facilities but they have not made earnest activities to dominate the market in advance. Thus, demand and supply specific short- and long-term strategy establishments are necessary to achieve prior occupation of the Asian yacht market.

5. Conclusion

This empirical study analyzed the marine leisure equipment industries in developed countries and Korea and then drew problems in the industry in order to strengthen its competitiveness. After that, the surveys targeting 28 enterprises in the southeast and other regions were conducted based on the 15 items (the marine leisure equipments) of Korea Coast Guard to find a way to strengthen the industrial competitiveness. The results are as following.

First, the biggest problems in the marine leisure equipment industry were insufficient capital for equipment development (10 enterprises), limited domestic demand (8 enterprises), need for human resources (4 enterprises), lacking infrastructure (4 enterprises), and inadequate governmental supports for export (3 enterprises). Second, the competitive strengthening plans are the marine leisure equipment technology development (10), new product development (4), exporting marine leisure vessel development (4), diffusion model development (2), demand expansion (2), and supply increase to contracted firms (2).

The domestic marine leisure equipment industry which has advantages of abundance marine leisure space and a source application technology based on the world's top shipbuilding industry is experiencing a highly elated atmosphere and upsurge of interest because of the 5 Workdays policy, abrogation of the special consumption tax, and national income growth. Moreover, according to the investigation of Korea Institute for Industrial Economics and Trade, Basic Strategy Establishment for the Marine Leisure Equipment Industry Vitalization, the domestic market size is expected to be 25,700 yachts and motor boats(₩100 billion) in 2012. Therefore, policies should classify the industry growth into three stages to support its phase development. In detail, the production infrastructure should be established in the southeast region and promising pioneer enterprises should be promoted in the first stage (the entry phase). The promotion of the promising pioneer enterprises will lead to development of important core technologies and consequently, the development will result in expansion of domestic supply which induces popularization of the marine leisure. The flow will lead to infrastructure establishment and then the government can change the existing restrictions to legal supports for the industry.

Consolidation of financial and political supports should be made in order to strengthen global competitiveness of the industry in the southeast region and promote enterprises to global companies in the second stage (the growth phase). The supports will initiate creation of innovative brand products. Then the brand products should target low price markets such as the home market and Southeast Asia.

In the third stage (the maturity phase), the industry has to target North America and Europe by establishing world class marine leisure equipment and parts supply station and brand high value addition to expand exports.

Epilogue

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