

Approaches of Marine Design in relation to Marine Industries

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Abstract: Since marine culture started with birth of civilization, it has flourished in various parts of tourism, leisure, retreat, and recreation, as well as industry of fishery, logistics, and trade. To follow up with social changes and developments of other marine industries, marine design also needs sustained growth in the future, as marine industries including marine tourism, leisure/sports, and other eco-business industries have become more diversified due to social and economic changes. To enhance these factors, new contents should be updated consistently. Marine industries should be evaluated in relation to human life and interdependency of various subparts. Therefore, to make marine resources useful to people, marine design is an important part to implement other related marine industries. To research and analyze factors on marine design, this paper analyzes interdependency of marine industries and marine design through domestic and international case studies, and with a road-map on relevance of related parts, it suggests future implication and direction on human resources development.

Key words: *Marine Design, Maritime Industries, Design related Areas, Total solution*

1. Introduction

The value of the maritime industries increases in proportion to the enhanced competitiveness of marine cities, the communities' participation in development activities and the citizens' satisfaction and this requires measures for continuous development. The maritime environment is considered a crucial space for the development of human civilizations and cultures and the maritime industries involve all elements, ranging from social and economic factors to historical, cultural and public factors, thus requiring the development of contents that can be connected with the maritime industries. The continued growth of the maritime industries calls for the development of technologies relating to maritime resources. Design is one of the content development factors that can keep up the development of the maritime industries. This study aims to link design with maritime-development areas and industries so as to devise measures and strategies designed to boost the competitiveness of maritime industries vis-a-vis that of other countries. This will create unique brands of maritime industries, will bolster the country's international competitive edge, will upgrade the country's maritime profile, and will create high value along with the revival of cultures and arts.

2. DISCUSSION

2-1. Concept of Marine Design

Design is a creative activity where necessary formative elements are intentionally selected and are closely combined and unified to achieve certain objectives. With the limited development of the maritime industries in the 20th century, marine design was not fully defined but instead involved the concept of the mere use of the sea. In the 21st century, however, the maritime industries developed into a composite industry involving living, production, leisure and tourism, leading to the conceptualization of the true meaning of marine design. Marine design aims to apply design elements to the whole range of maritime industries from the marine, social, economic and cultural perspectives, so as to create new values and cultures and to enhance the quality of human life. This adds aesthetic elements and a human- and nature-oriented meaning to the existing marine activities, which only seek to enhance functions, profits, and uses.

2-2. Classification System of the Maritime Industries

The maritime industries were classified into the 1st to 6th industries based on the 1st, 2nd, and 3rd industries under C. G. Clark's *The Condition of Economic Progress*, as well as on the updated Korean industry standard classification system. Due to social, economic, cultural and other factors, the basic three industrial categories were expanded into a fourth industry (knowledge-based industry), a fifth industry (tourism, leisure/public industries) and a sixth public industry, which covers the first to the fifth industries. A detailed classification of the maritime industries was surveyed, then some cases where design was applied were examined on the basis of the six marine-design factors of MDVP: aesthetics, high value, eco-friendly features, identity, functionality, commercialization and popularity. (Table 1)

Table1. Marine-Design Classification by Maritime Industry

Industry Classification		Application Targets of Design
C. G. Clark	Marine design	
1 st	1 st	Small fish-catching tools / Large fish-catching tools
2 nd	2 nd	Ships and interiors of general and special ships / Facilities and equipment relating to the development of structures of lifeboat resources / Architectural packaging designs, with regard to undersea exploration equipment, marine plants, and artificial reefs / Bridge and road repair and maintenance, fences, and terra ports
3 rd	3 rd	Buildings and structures / Passenger and cargo ships
	4 th	Communication infrastructure facilities / Outdoor and mass media advertisements
	5 th	Equipment and facilities relating to marine sports / Facilities and products relating to tourism Marine-leisure equipment and amusement facilities / Clothes for use in marine activities
	6 th	Infrastructure facilities relating to transport / Marine welfare facilities and amenities Medical facilities and life-saving equipment / Meeting and performing sites and facilities Environmental conservation structures, equipment, and facilities

The relationship between the marine-design areas of each industry and the value degree of the six key factors were examined through a five-stage graph to identify the factors that are necessary for the

completion of marine-design plans by industry. (Table 2)

Table2. 6 MDVP Factors by Maritime Industry

FACTORS	Aesthetics	Aesthetics satisfaction obtained through purchase and use in harmony with the marine environment
	High value	Factors that, through the observation of the characteristics of marine resources, can be developed into cultural contents and can become premium and unique
	Eco-friendly feature	Factors that make it possible to both conserve and develop marine resources
	Identity	Factors that are related to the essence and specificity of marine resources
	Functionality	Functional factors that are suitable for marine environments in consideration of marine specificity
	Product value popularity	Factors that can be evaluated based on the users' responses and impact regional economic activation

2-3.Linkage with Marine Design

With technologies relating to the maritime industries making a great advance but with insufficient design-related companies and institutes, the situation calls for the establishment of clusters of maritime-related institutes aimed at fostering the marine-design business and the introduction of specialized and segmented infrastructure. In a bid to survey the design areas by purpose and type according to the 1st to 6th marine industries and to develop a marine design, the linkage not only of the industries but also of the economy, culture, nature, technology and humans with marine design was examined. Each industry generally encompasses design areas, which can be accessed through diverse methods. To incorporate design into marine contents, it is necessary to gather diversified horizons, to link with diverse programs and to connect design with diverse fields. Diverse areas should be integrated, and holistic solutions should be explored, thus fostering the role and areas of marine design in producing harmonious outputs and in enhancing the national competitiveness. (Table 3)

Table 3. Classification of Design Areas by Maritime Industry

Maritime Industry	1st	2nd	3rd	4th	5th	6th
Purpose	Food	Processing	Harbor transport	Education, research, minerals energy	Tourism leisure	Purification conservation of environments residence
Type	Fishing farming	Fisheries processing	Shipbuilding, storage warehousing land transport marine transport	Marine survey marine biotechnology petroleum natural gas and crude salt	Swimming beaches sea fishing sites regional festivals leisure spaces	Sewage treatment, waste purification work seashore coastal residence
Design areas						

Visual design
 Product design
 Environmental design
 Fashion design

3.CONCLUSION

The role of design is essential in linking the development of diverse marine products with marine images, thus upgrading the value of products. It is necessary to devise measures designed to develop region-specific products and marine-design contents and to establish brands of marine cities, thus activating regional economies. Through an appropriate convergence with design, efforts should be made to expand markets from logistics-oriented ships to passenger ships and cruise industries. It is also important to link design with the redevelopment of dilapidated harbors in domestic marine cities or with eco-friendly residential-development projects.

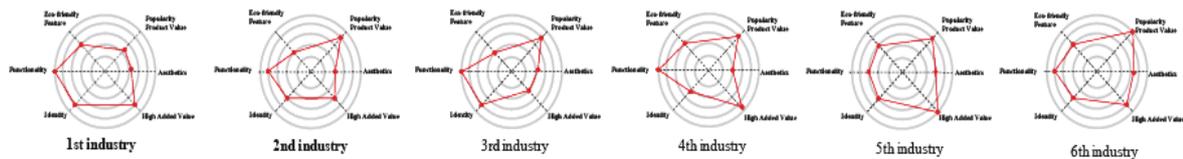


Figure 1. Key MDVP Factors According to Maritime Industries

As such, marine design must devise holistic design solutions by networking with diverse areas and must strive to look for harmonious sustainable marine-design contents by applying an industry connection system to design planning.

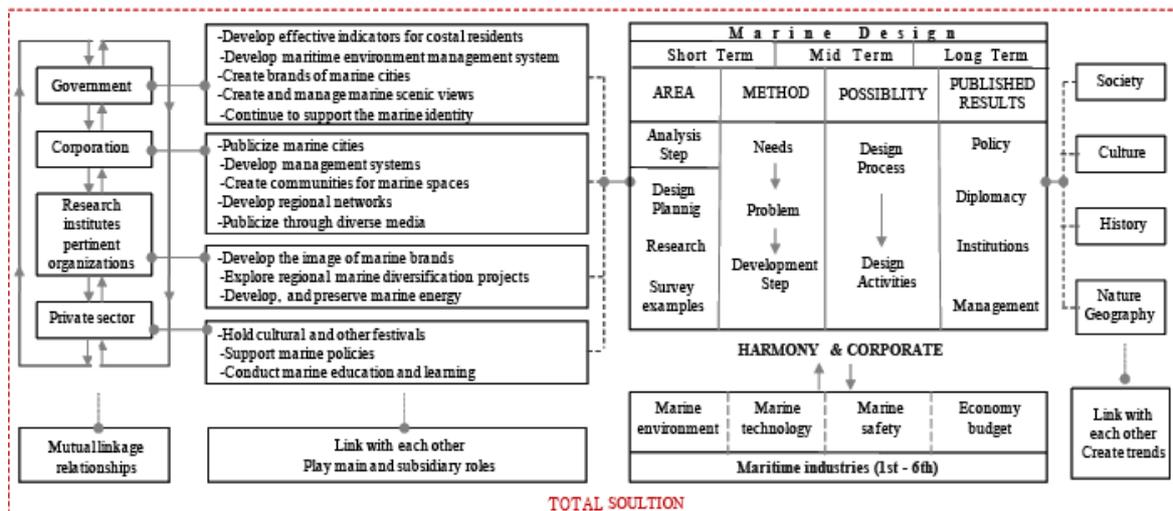


Figure 2. Linkage with marine design and Planning on marine design

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