A Comparative Analysis on the Competitiveness of Korean and Japanese Fashion Industry by Applying Generalized Double Diamond Model

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The purpose of this paper is to seek ways to improve the competitiveness of Korea's fashion industry by utilizing the source of competitiveness of Japan's fashion industry, which represents the world's leading countries in terms of fashion, so that Korea can better enter the global fashion market. The study shall first compare the competitiveness of the Japanese and Korean fashion industries by utilizing the generalized double diamond model; second, provide an understanding of what the Japanese fashion industry can offer to Korean fashion industry and companies - that is, understand what the Japanese fashion industry's competitive edge is; and third, study the kind of global competitiveness that Korea's fashion industry must achieve.

To adopt a generalized double diamond model to compare the competitiveness of the Korean and Japanese fashion industries, we selected 31 sub-variables to act as determinants of the model. That is, we extracted 31sub-variables by doing research of literature to analyze national competitiveness of the fashion industries. To measure these 31 sub-variables, secondary data was gathered. We collected data related to each sub-variable from various sources of Korea and Japan. And to calculate the competitiveness index, we took three steps with reference to previous studies.

We found that status of the fashion industry of the two countries as it stands. That is, Japan is an advanced country of which fashion industry is domestic market-oriented while Korea is a small open economy that mainly focuses on the foreign market. Out of 31 proxy variables, Korea's fashion industry shows higher measurements relating to production and export than Japan, but Japan's fashion industry reports higher measurements than Korea in the fields of R&D, design and brand power, the rate of value added, the efficiency of companies and globalization.

In order for Korea's fashion industry to achieve competitiveness in the global market, it should pursue the following development direction. First, it is very difficult for Korea to follow the footsteps of

the U.S. and Japanese fashion industries that are able to take advantage of economies of scale, because Korea is smaller than those countries. Therefore, in the case of small economies such as Singapore, strengthening of international activities will practically improve domestic determinants that Korea should improve its domestic diamond by enhancing the current competitiveness of its international diamond. In other words, Korea needs to further endeavor to develop and expand global resources and markets as well as improve its competitiveness in terms of R&D, design and brand power, the rate of value-added, and the efficiency of companies. As the Korean fashion industry shows relatively advanced level of information technology and the fashion education system, it has considerable potential to grow. Korea is expected to have a huge growth potential since it has relatively higher level of information technology, fashion education system and activities than those of Japan in both the domestic diamond and international diamond. In particular, a better environment is laid out before Korea to gain competitiveness in the fashion industry due to the recently growing influence of the Korean Wave that Korea is expected to grow as a leader in the Asian market as well as in the global market.

Key words: Korean Fashion Industry, Japanese Fashion Industry, Generalized Double Diamond Model. Competitiveness.

I. Introduction

Changes in consumption patterns, introduction of diverse market opportunities, globalization of production and sale, intensifying global competition, complex trade mechanism such as the World Trade Organization (WTO), and free trade agreements (FTAs) in the current domestic and overseas fashion market are encouraging continuous innovation and change among domestic and overseas fashion companies. Fashion companies are seeking ways to modify themselves in order to survive possible reorganization of the domestic and overseas fashion market following the rise of developing nations that has been occurring since the introduction of Agreement on Textiles and Clothing of the WTO (former UR Agreement on Textiles and Clothing) in the fashion industry. Countries that lead the fashion industry, such as the U.S., E.U. member countries, and Japan, as well as newly industrialized countries in terms of fashion, such as Korea, are seeking various ways to foster their own fashion industry under such circumstances. As a consequence, domestic and overseas fashion companies have moved their overseas production bases and turned to global sourcing, outward processing, manufacturing and sales networks, global supply chain management (SCM), and global pipelines (Dickerson 1999: 4-5 Jin 2004: 240-242 Son et al. 2007: 508). Since the domestic fashion market is saturated with global and

domestic fashion companies and brands, it is crucial for Korea's fashion industry to participate in the global fashion market.

The purpose of this paper is to seek ways to improve the competitiveness of Korea's fashion industry by utilizing the source of competitiveness of Japan's fashion industry, which represents the world's leading countries in terms of fashion, so that Korea can better enter the global fashion market. The study shall first compare the competitiveness of the Japanese and Korean fashion industries by utilizing the generalized double diamond model; second, provide an understanding of what the Japanese fashion industry can offer to Korean fashion industry and companies – that is, understand what the Japanese fashion industry's competitive edge is; and third, study the kind of global competitiveness that Korea's fashion industry must achieve.

II. Theoretical Background and Research Proposition

2.1 Korean Fashion Industry and Japanese Fashion Industry

2.1.1 The Historical Perspective of the Fashion Industry

According to many mainstream economists'

views such as the Flying Geese model (Akamatsu 1962) and the neo-classical view (the World Bank 1993), it has historically been argued that the modern textile industry including garment manufacturing, is suited to early economies and plays a key role in the initial industrialization process, because it is labor intensive but requires a low level of technology (Kelegama 2009; 580). In the eighteenth century, the modern textile industry began with the manufacture of spinning and weaving machines during the industrial revolution in England. In the beginning of the nineteenth century, textile production extended to the rest of Europe and North America along with the mechanization of industries, and in the twentieth century expanded sequentially to East Asian countries such as Japan and the Big Three (Korea, Hong Kong, and Taiwan) (Leseure, Hurreeram, & Bennett 2009; 618).

Furthermore, the textile complex in major developed countries (the United States, Canada, nations in Western Europe, Japan, and Australia) typically led the industrialization process within each nation. In each country, the sector became quite advanced and competitive as a producer for textile and apparel markets and eventually evolved into full maturity stage. Japan was clearly the early leader in developing its industry and exporting products to other parts of the world. Many East Asian countries followed in Japan's footsteps to become some of the major suppliers in today's international

textile and apparel markets. Many of these countries (e.g., Hong Kong, South Korea, and Taiwan) have well-developed production and marketing structures and exert a powerful influence on global markets in the sector. Now, however, the Japanese textile industry had changed its focus to capital- intensive synthetic fiber; its fabric producers are still competitive in the international market, although Korea has also tried to move into capital-intensive, high tech, and value-added industries as a result of developing countries such as China, India, and Vietnam rapidly increasing the competitiveness of their fashion industries (Park and Anderson 1991; 545-546 Dickerson 1999; 51-53).

In the twentieth century, the development and expansion of IT and globalization led to the globalization of the long commodity chain, including a number of economic agents- upstream and downstream, which are spread all over the world in the textile industry. In the global commodity chain, collaborative relationships between advanced countries and developing countries have been developed based on a vertical hierarchy; trademark owners and large retailers from developed countries possess the power in the relationships (Hassler 2003; 515-517).

2.1.2 Similarities and Differences Between Two Countries

Many scholars (Lee (a) 2003; 359-361 Lee

(b) 2003; 433-435) have pointed out that the Korean fashion industry has some similarity with the Japanese fashion industry. This is due to its similarity to the Japanese fashion industry in terms of political, economic, society and cultural background. In addition, the two countries have much in common in terms of consumers' fashion awareness and their purchase behaviors, as well as business practices of fashion companies, due to two countries' similarity in their acceptance process of western style dress and geographic proximity.

In particular, even though there has been a difference in time, Korea and Japan have shown a similar fashion industry development process: both countries first accepted western-style dresses and suits; then adopted tailor-made suits; and most recently both countries have developed a practical apparel market, mass fashion market, high-sense fashion market and global market. Korea and Japan show similarity in terms of their fashion structure; that is, the textile industry still accounts for a large portion in the entire fashion industry in both countries (Lee (a) 2003; 359-360).

Of course, there are some differences between two countries. First of all, Korea and Japan chose different strategies, because the Japanese fashion industry was based on domestic consumption (like the USA) while the Korean fashion industry was export-driven. Secondly, Korea has been strong in the technical aspects of dyeing and processing as well as

consumer's sensitivity aspects, which are an important factor to the national image and fashion market while Japan far excelled Korea in technical and design capability (Lee(b) 2003; 433-434). Japan's fashion industry has exercised great influence on the global market. Japan is still positioned as a supplier of high-tech textiles, although it is highly dependent on apparel imports. About 82% of garments consumed in Japan are imported from China, and the rest are imported from Southeast Asian countries and Bangladesh (Samsung design net 2011). Textile production of Korea, which was once one of the mainstays of the Korean fashion industry, decreased after the mid- 1990's due to the improvement of production capability among developing countries and the decrease in import demand. Finally, there is a time gap between the two countries. When the Korean fashion industry was established, it was 15 years behind Japan's. However, as time went by, the time gap between the two countries' fashion industries has narrowed (Lee (a) 2003; 359).

This study aims to seek ways for the Korean fashion market to enter the global fashion market by comparing the global competiveness between Korean and Japanese fashion industry, one of the leading and advanced fashion industries of the world, as the two industries share geological and cultural similarities. By comparing global competitiveness between the two fashion industries, this study seeks to learn what kind of global competitiveness is needed for the Korean fashion industry to become one of the leading fashion industries of the world as well as analyze in detail the global competitiveness of the Korean fashion industry in order to search the essential factors of competiveness needed for Korea to foray into the global fashion market. To make such study possible, Porter's diamond model and the generalized double diamond method that integrates multinational activities were used to compare and analyze the global competitiveness of the two fashion industries.

2.2 Double Diamond Theory

2.2.1 Porter's Diamond Model

On the basis of a 4-year study of 10 countries, Porter (1990) introduced the diamond model as a new approach to the analysis of national competitiveness. Porter's diamond model systematically incorporates many important variables into a single model, together with the production factor conditions that most traditional theorists employ to explain national competitiveness. Porter's diamond model is composed of endogenous variables and exogenous variables and provides four determinants which act as valuable terms of reference when evaluating national competitiveness: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry. These four components are endogenous variables and

interrelated. Additionally, here are two exogenous parameters: government and chance events (Moon, Rugman and Verbeke 1998; 136-137 Rugman and D'Cruz 1993; 19-20).

The first category of determinants, factor conditions, includes human, capital and physical resources (basic conditions) as well as the physical and knowledge infrastructure of a country (advanced factor conditions). The second category, demand conditions includes structures of demand in the home market, the size and growth of home demand and the processes through which domestic demand is internationalized. The third category is the role of related and supporting industries in promoting competitiveness through coordination and sharing activities in the value chain. The fourth category comprises firms' strategy, structure, and rivalry, such as the ways in which they are managed and choose to compete (Liu and Hsu 2009; 161 Wyk 2010; 58).

Although Porter's diamond model had contributed to the revolutionary development of an explanation on national competitiveness and many studies have been conducted by applying the model, many other studies have pointed out the limitations of Porter's model. The critical weakness of the model originates from Porter's exclusive focus on the construct of a "home-base". In other words, the single diamond does not provide sufficient explanation for the activities of multinational corporations. In addition, Porter's home-based diamond model does not

fit in well with small open economies. From the view point of a small nation, which depends to a large extent on foreign markets and also on foreign policy, Porter's view is mainly fixed on a large home base country, and therefore a single diamond needs to integrate and link with the diamonds of other economically stronger countries. As globalization proceeded apace in the 20th century, global multinational enterprises especially have had an important role as an integrating force in the global economy. Thus many studies hold that Porter's diamond model needs to be substantially modified to take into account the current nature of the MNEs by considering not only domestic but also foreign resources. Subsequently, a modification of Porter's model was proposed and is referred to as the double diamond model (DDM) (Moon and Kim 2010; 77 Moon, Rugman and Verbeke 1998; 148 Rugman and D'Cruz 1993; 24-26 Sardy & Fetscherin 2009; 7).

2.2.2 Generalized Double Diamond Model

Rugman and D'Cruz (1993) introduced the double diamond model linking the domestic diamond of each country to that of a relevant 'triad', thus incorporating the international context of national competitiveness. Furthermore they proposed that global managers consider both domestic and foreign diamonds to survive and grow in an increasingly globalized market (Rugman and D'Cruz 1993; 29-31 Moon and

Kim 2010: 77).

Although D'Cruz's North American diamond framework fits Canada and New Zealand well, it may not fit other small nations such as Korea and Singapore. Firms from small countries or operations of MNEs, which are engaged in both domestic and global competition for resources and markets, are likely to be concerned more with global than domestic industrial structure. The linkage with other countries' diamonds can impact the domestic diamond. Thus, Moon et al (1995: 1998) generalized the double diamond model (generalized double diamond model, GDDM) to fit all small open economies by formally integrating the multinational activities demonstrated as the difference between the domestic diamond and the international diamond (Liu and Hsu 2009: 162 Moon, Rugman and Verbeke 1998: 148).

In the generalized double diamond model, Moon et al. (1998) define national competitiveness as the capability of enterprises engaged in value-added activities in a specific industry in a particular country to sustain this added-value over long periods of time in spite of international competition. Therefore, sustained value-added activities in specific industries in a particular country may result from both domestically and foreign-owned enterprises. The international diamond represents the national competitiveness determined by domestic and international parameters. These multinational activities are composed of outbound and in-

bound foreign direct investment (Liu and Hsu 2009: 162-163 Moon, Rugman and Verbeke 1998: 138-139).

The DDM has proven to be more useful for making global comparisons. It has three important extensions to Porter's single diamond model: (1) the model clearly incorporates multinational activities: (2) the model is able to operationalize the competitiveness paradigm and a comparison of the size and shapes of the domestic and international diamonds shows major strategic differences: (3) it includes government as an important variable that influences the four determinants of the Diamond Model. In order to assess global competitiveness, both domestic and international determinants have to be taken into account (Sardy and Fetscherin 2009: 7).

2.2.3 Application of Double Diamond Model

The double diamond model and the generalized double diamond model have been mainly applied to comparative analyses of the competitiveness of the two industries.

Birdwell and Kuo (2006), in discussing the computer industry in China and Taiwan, outlined a single "Diamond" for each country, but also a "Double Diamond" for the greater China, i.e. two countries or one nation with two interconnected regions. Moon et al (1998) proves the validity of the GDDM through the empiri-

cal study of Korea and Singapore. Originally, the two economies were chosen due to Porter's inappropriate prediction about these two economies based on the single diamond. After the ten-year of the Asian Financial Crisis in 1997, Kim and Moon (2010) compared and contrasted the competitiveness of Korea and Singapore over the preceding ten years. Liu and Hsu (2009) compared the competitiveness of the economies of Taiwan and Korea. The comparisons between each pair of countries were based on the average values of the data over five years (2000-2004). They applied a generalized double diamond model approach to analyze the overall competitiveness of these small open economies. Wyk (2010) did not compare two industries or economies, but instead investigated the national competitiveness of Botswana in the global diamond industry. A double diamond framework was developed to explore Botswana's competitiveness, and to initiate change in the country's national competitiveness strategy.

Moon and Lee (2004) tried to clarify the issue of the competitiveness of Samsung Electronics and Sony using the generalized double diamond model and also suggested the main factor determining the competitiveness of multinational firms in the global market. Kim et al. (2006) and Son et al. (2007) had different methods and procedures for collecting data, but both applied the generalized double-diamond theory to compare the competitiveness of the Chinese and Korean fashion industries in order

to investigate the competitive advantage of the Korean fashion industry and build an entry strategy for the Chinese fashion market. Sardy and Fetscherin (2009) compared industry competitiveness of emerging automotive manufacturing industries in China, India, and South Korea by using the double diamond model.

III. The Analysis of Generalized Double Diamond Model

3.1 Determination of Variables and Descriptive Data

To adopt a generalized double diamond model to compare the competitiveness of the Korean and Japanese fashion industries, we selected 31 sub-variables to act as determinants of the model. That is, we extracted 31 sub-variables by doing research of literature (Jin 2004 Jin and Moon 2006 Kim et al. 2006 Liu and Hsu 2009 Moon and Kim 2010 Moon and Lee 2004 Shafaei 2009 Son et al. 2007) to analyze national competitiveness of the fashion industries. To measure these 31 sub-variables, secondary data was gathered. We collected data related to each sub-variable from various sources of Korea and Japan.

As shown in ⟨Table 1⟩, according to the model, the four determinants are: factor conditions, demand conditions, related and sup-

<Table 1> Four Factor Conditions of Diamond Model and Proxy-Variables, Measurements

Variables	Proxy	Data Source
Factor Conditions		
Domestic		
Basic	Number of workers and laborers in the clothing and textile industry, 2007	KOFOTI (http://www.kofoti.or.kr); Chemical Fibers Association (http://www.jcfa.gr.jp)
	Increase in rate of production (%), 2010/2009	KOFOTI (http://www.kofoti.or.kr); Statistics Bureau (http://www.stat.go.jp)
Advanced	Researchers in R&D (per million people), 2007	World Bank (http://data.worldbank.org)
	R&D expenditure (% of GDP), 2007	World Bank (http://data.worldbank.org)
	Royalty and license fees, receipts (Bop, current US$), 2010	World Bank (http://data.worldbank.org)
	Productivity of professionals, 2007	KIET (http://www.kiet.re.kr)
	Design power in clothing & textiles (Italy, France = 100), 2011	KIET (http://www.kiet.re.kr)
International		
Basic	Increase in rate of exports (%), 2009/2010	UNCTAD (http://unctadstat.unctad.org)
Advanced	Total amount of outgoing FDI from Korean clothing and textile enterprises (outward FDI)(millions$), 2010	OECD (http://stats.oecd.org)
	total amount of incoming FDI to Korean clothing and textile industry (inward FDI), (millions$), 2010	OECD (http://stats.oecd.org)
Demand Conditions		
Domestic		
Size	Total population (thousand people), 2010	OECD (http://stats.oecd.org)
	Gross domestic product (GDP)(million$), 2010	International Monetary Fund(http://www.imf.org)
	Employment rate (100- employment rate)(%), 2011	OECD (http://stats.oecd.org)
Sophistication	Rate of expenditure on clothing & textiles out of gross income (%), 2011	Statistics Korea(http://kostat.go.kr); Statistics Bureau (http://www.stat.go.jp)
	Demanding needs of consumers, 2007	KIET (http://www.kiet.re.kr)
International		
Size	Oversea market share (%), 2010	KOFOTI (http://www.kofoti.or.kr)
Sophistication	Preference for local brands in oversea market (Italy, France=100), 2011	KIET (http://www.kiet.re.kr)
Related and Supporting Industries Conditions		
Domestic		
Infrastructure	Secure internet servers (per 1 million people), 2010	World Bank (http://data.worldbank.org)
	Fixed broadband internet subscribers (per 100 people), 2010	World Bank (http://data.worldbank.org)
	Gross output of textiles(thousand tons), 2009	Fiber organon (http://www.fibersource.com)
Related Industry	Educational facility related to clothing & textile (per 1 million people), 2012	Ministry of Education, Science and Technology (http://std.kedi.re.kr) National specialized training center (「全國專修學校各種學校總連合會」)
International		
Infrastructure	Airplane, registered carrier departures worldwide, 2009	World Bank (http://data.worldbank.org)
	Container port traffic (TEU: 20 foot equivalent units), 2009	World Bank (http://data.worldbank.org)
	Internet users (per 100 people), 2010	World Bank (http://data.worldbank.org)
Related Industry	Amount of clothing & textile exports ($), 2010	UNcomtrade (http://comtrade.un.org)
	Number of publications related to clothing and textiles among oversea journals, 2008-2011	Journal of Fashion Marketing and Management, International Journal of Clothing Science and Technology
Firm strategy, Structure, and Rivalry		
Domestic		
Rivalry	Competition intensity among domestic companies, 2007	KIET (http://www.kiet.re.kr)
Management	QR system (Italy, USA=100), 2011	KIET (http://www.kiet.re.kr)
Efficiency	The rate of added value in textile industry (%), 2008	KIET (http://www.kiet.re.kr)
International		
Rivalry	Market share of major global markets (country/world, %), 2010	WTO (http://www.wto.org/statistics)
Global	Internationalization of enterprises, 2007	KIET (http://www.kiet.re.kr)
Business	Global business leadership of CEOs, 2007	KIET (http://www.kiet.re.kr)

porting industries, and firm strategy, structure and rivalry. Each condition is divided into domestic and international variables.

Each sub-variable of each determinant selected for following grounds.

3.2 Factor Conditions

Factor conditions, which refer to the nation's position in factors of production that was necessary to compete in a given industry, are classified into basic factors and advanced factors. The former refer to natural resources, location, unskilled labor, debt capital, while the latter indicates modern social infrastructure and highly educated professionals (Porter 1990: 71 Moon and Kim 2010: 80-81).

Porter(1990: 77) argues that advanced factors are now the most significant factors for competitive advantage, and the institutions required to create truly advanced factors(such as educational programs) themselves require sophisticated human resources and/or technology. Liu & Hsu (2009: 165) also conclude that the scale and the results of R&D investment are the most fundamental elements for determining innovation.

Advanced or specialized factors are necessary for more sophisticated forms of competitive advantage in fashion industry. New competitive factor conditions in apparel industry lie in advanced or specialized factors, such as skilled human resources (e.g. creative designers) and

production and process technology. These new sources of competitive factors can be easily observed in the most advanced fashion countries such as France, Italy and the US (Jin and Moon 2006: 197).

For international factor conditions, Korea already relocated most of their labor-intensive production operation to Southeast Asian countries and China because wages had rapidly increased in Korea. However Korea still needs to attract investment from multinational firms from advanced countries, obtain modern technologies from them and ultimately improve domestic factor conditions through R&D collaboration with those firms. Therefore FDI inflow/outflow are important international strategies for improving national competitive advantage (Liu and Hsu 2009: 165 Moon and Kim 2010: 81).

3.3 Demand Conditions

Demand conditions, which refer to the nature of the home-market demand for an industry's product or service (Porter 1990: 71), distinguish the size and the sophistication of demand. The size of domestic demand in fashion industry may be important to national advantage from the perspective of economic scale and learning speed, but the presence of sophisticated, demanding buyers is more important in the fashion industry, as domestic consumers demand for creative designs, services, or brands strengthens national competitiveness. Those consumers' so-

<Table 2> Descriptive Data for Factor Conditions

Variables		Proxy	Korea	Japan
Domestic				
Basic	Scale	Number of workers and laborers in the clothing and textile industry, 2007	87,778	258,600
		Increase in rate of production (%), 2010/2009	108.9	102.4
Advanced	R&D	Researchers in R&D (per million people), 2007	4627	5573
		R&D expenditure (% of GDP), 2007	3.2	3.4
		Royalty and license fees, receipts (Bop, current US$), 2010	3,145,800,000	26,680,317,334
	Technical Power	Productivity of professionals, 2007	10.9	12.6
		Design power in clothing & textiles (Italy, France = 100), 2011	60	80
International				
Basic	Oversea Sale	Increase in rate of exports (%), 2009/2010	144	133
Advanced	Oversea Investment	Total amount of outgoing FDI from Korean clothing and textile enterprises (outward FDI) (millions $), 2010	362.8	380.6
		Total amount of incoming FDI to Korean clothing and textile industry (inward FDI), (millions $), 2010	354.9	683.9

Sources: KOFOTI (http://www.kofoti.or.kr); Japan Chemical Fibers Association (http://www.jcfa.gr.jp); Statistics Bureau (http://www.stat.go.jp); World Bank (http://data.worldbank.org); KIET (http://www.kiet.re.kr), "Globalization Divers of Industry and Analysis of Nation's Competitiveness"; KIET (http://www.kiet.re.kr), "Fundamental analysis of the textile industry"; UNCTAD (http://unctadstat.org); OECD (http://stats.oecd.org), FDI outflows/FDI inflows in textile and wearing apparel industry

phistication and needs are also related to fashion buying behavior such as expenditures and frequency of purchase. Branding in the apparel industry is even more critical, since differentiation and evaluation of items often depends on the brand of the items (Jin and Moon 2006; 198 Kim et al. 2006; 1357 Son et al. 2007; 512).

Small open economies such as Korea have relatively small domestic markets, and it is necessary to search for foreign markets to secure economies of scale. Firms from these kinds of economies cannot limit their business scope to the domestic markets; they must try to export their goods abroad. Hence, overseas market scale as well as preference for local brands in overseas market scan be critical proxies for the complexity of international demand (Liu and Hsu 2009; 166).

3.4 The Related and Supporting Industry

Related and supporting industries refer to the presence or absence in the nation of supplier

<Table 3> Descriptive Data for Demand Conditions

Variables		Proxy	Korea	Japan
Domestic				
Size	Market Scale	Total population (thousand people), 2010	50,516	127,510
		Gross domestic product (GDP)(million $), 2010	986	5,391
		Employment rate (100-employment rate)(%), 2011	96.9	95.4
Sophistication	Consumer Sophistication	Rate of expenditure on clothing & textile out of gross income (%), 2011	4	2
		Demanding needs of consumers	11.2	9.9
International				
Size	Oversea market Scale	Oversea market share (%), 2010	2	1.2
Sophistication	Consumer Sophistication	Preference for local brands in oversea market (Italy, France=100), 2011	50	90

Sources: OECD (http://stats.oecd.org); International Monetary Fund (http://www.imf.org); Statistics Korea (http://kostat.go.kr); Statistics Bureau (http://www.stat.go.jp); KIET (http://www.kiet.re.kr), "Globalization Divers of Industry and Analysis of Nation's Competitiveness"; KOFOTI (http://www.kofoti.or.kr); KIET (http://www.kiet.re.kr), "Fundamental analysis of the textile industry"

industries and related industries that are internationally competitive (porter 1990; 71). These industries consist of firms on the upstream and downstream, related industries and other supporting industries. Additionally, these industries should include not only infrastructure such as transportation and communication (Moon and Kim 2010; 82), but also industries which help and expedite other industries within the economy, by providing benefits such as innovation, upgrading, information flow, and shared technology development which create advantages in downstream industries (Shafaei 2009; 23 Ozgen 2011; 68).

In today's global apparel environment, which requires global market, global sourcing and global supply chain, efficient strategies of transportation and communication are necessary. That is, global chain management and information technology are more important than supplies such as raw materials. For example, Liz Claiborne Inc. sources from as many as 31 different countries using 240 factories. Therefore, coordinating production and efficient communication with suppliers have become critical (Jin and Moon, 2006; 198-199). Also, industries related to fashion, including textile industries and education and knowledge industry are also important for building a competitive advantage (Kim et al. 2006; 1357 Son et al. 2007; 513).

For small open economies facing severe competition, such as Korea, backup from domestic related and supporting industries is simply not enough; more synergy with and expansion into related and supporting international industries are very necessary (Liu and Hsu 2009; 167).

〈Table 4〉 Descriptive Data for the Related and Supporting Industry Conditions

	Variables	Proxy	Korea	Japan
Domestic				
Infrastructure	Transportation	Roads, paved (% of total roads), 2007	78.3	79.6
	Communication	Secure internet servers (per 1 million people), 2010	1,140	650
		Fixed broadband internet subscribers (per 100 people), 2010	36	27
Related Industry	Related Industry	Gross output of textiles (thousand tons), 2009	1,410	720
		Educational facilities related to clothing & textiles(per 1 million people), 2012	1.70	1.98
International				
Infrastructure	Transportation	Airplanes, registered carrier departures worldwide, 2009	256,160	641,913
	Communication	Container port traffic (TEU: 20 foot equivalent units), 2009	16,053,629	16,285,918
		Internet users (per 100 people), 2010	83	79
Related Industry	Related Industry	Amount of clothing & textile exports ($)	13,984,209,799	9,034,793,883
		Number of publications related to clothing and textiles among oversea journals, 2008-2011	20	9

Sources: World Bank (http://data.worldbank.org); Fiber Organon (http://www.fibersource.com); Ministry of Education, Science and Technology (http://std.kedi.re.kr); National Specialized Training Center (「全國專修學校各種學校總連合會」); UNcomtrade (http://comtrade.un.org); http://search.proquest.com/publication (Journal of fashion marketing and management / International journal of clothing science and technology)

In today's global environment infrastructure for international transportation and communication for international business is important (Moon et al. 1998; 143) and actually it is necessary for those countries to enter the global market (Yeu et al. 2013: 263 Lee et al 2010; 96)

3.5 Firm Strategy, Structure, and Rivalry

Firm strategy, structure, and rivalry refer to the conditions in the nation governing how companies are created, organized, and managed, and the nature of domestic rivalry (Porter 1990: 71). That is, the establishment, organization and management of firms and the condition of the competitors are all important parts of national competitiveness, and vary with the strategy, structure, and rivalry of each country (Liu and Hsu 2009: 167).

One important source of competitive advantage in the apparel industry has been high quality design. In context of global competition, agility, which is a new and different source of

〈Table 5〉 Descriptive Data for Firm Strategy, Structure, and Rivalry Conditions

	Variables	Proxy	Korea	Japan
Domestic				
Rivalry	Market Competition	Competition intensity among domestic companies, 2007	10.5	8.7
Management Efficiency	Agility	QR system(Italy, USA=100), 2011	60	90
	High design Quality	The rate of added value in textile industry(%), 2008	24.2	36.3
International				
Rivalry	Market Competition	Market share of major global markets(country/world, %), 2010	2.1	1.3
Global Business	Global Networking	Internationalization of enterprises	10.4	12.3
	Global Challenge	Global business leadership of CEOs, 2007	10.9	12.9

Sources: KIET (http://www.kiet.re.kr). "Globalization divers of Industry and analysis of nation's competitiveness" ; KIET(http://www.kiet.re.kr). "Fundamental analysis of the textile industry" ; WTO(http://www.wto.org/statistics)

competitive advantage, should be added along with high quality design. The fashion industry is characterized by extensive and diverse sources of uncertainty due to fluctuating demands, seasonal changes, and variation in style preferences. In response to market instability, apparel firms must react rapidly; thus 'agility' has become a means of achieving competitive advantage. In the case of Zara, it takes less than two weeks for seasonal items to get from the design room to a store. Design-to-delivery is as much as 12 times faster for Zara than for its competitors (Jin 2004; 240 Jin and Moon 2006; 199).

The fashion industry has certain defining features, such as the long global commodity chain, which involves many global economic agents such as fiber, textile, fabric and raw material suppliers; cutting, sewing and finishing process; design, buying, marketing brands, retailers and traders; transportation; and warehouses.

These economic agents are generally spread all over the world. Therefore, maintaining efficient global network of both local and oversea sources and continuously upgrading internal capabilities are critical to succeed in the global fashion industry (Jin 2004; 241 Kim et al. 2006; 1358 Shafaei 2009; 27).

IV. Empirical Results of the Diamond Test

4.1 Calculating Scores and Drawing the Diamond

To calculate the competitiveness index, we took three steps with reference to previous studies (Moon et al. 1998 Moon and Lee 2004 Liu and Hsu 2009 Sardy and Fetscherin 2009 Moon and

Kim 2010). Before describing the steps, the structure of the competitiveness index must to be outlined. The competitiveness index is the result of the calculation of the data for domestic and international variables, consisting of four conditions. Each condition is measured by several sub-variables (proxy variables). First, for each proxy variable, the maximum score "100" is given to the country with the higher value, and a relative ratio in terms of a percentage is given to the country that has the lower value. That is, the score of the country with the higher value is "100", and the score of the country with the lower value was calculated by dividing the lower value by the higher value. For example, with respect to 'increase in rate of exports', which is one of proxy variables of international factor conditions, the values of Korea and Japan are 144 and 133. The maximum score (100) is given to Korea, Japan's score is $92.36(=133/144*100)$.

Second, for each domestic (or international) variable of a condition, which contains more than one sub-variable, impartial weights are given to each sub-variable. For example, for the international variable of factor conditions, which contains three sub-variables (increase in rate of exports, outward FDI, inward FDI), the Korea's score of international factor condition is $82.41(=100/3 + 95.32/3 + 51.90/3)$.

Third, a global diamond is constructed by adding the international competitiveness index to the domestic competitiveness index for each

condition. For instance, Korean domestic factor condition is 69.08. By adding the international competitiveness index 82.41 to this score, and then simply averaging the sum, the Korean global diamond for factor condition is determined to be 75.74.

Competitiveness indices in 〈Table 6〉 are the result of the calculation of descriptive data for factor conditions 〈Table 2〉, demand conditions 〈Table 3〉, RSI conditions 〈Table 4〉, and SSR conditions 〈Table 5〉, using the steps of calculation above.

4.2 Domestic Variables of the Diamond Model

〈Figure 1〉 shows the empirical results of the domestic diamond. According to the domestic diamond, the Japanese fashion industry surpasses the Korean fashion industry in all factors except for related and supporting industries conditions. This means that except for the RSI determinant, the Japanese fashion industry is more competitive in all domestic determinants.

We can find several important implications when the measurements of the proxy variables are closely examined together. First of all, the domestic diamonds of Japan and Korea demonstrate that Japan has saturated fashion industry characteristics of developed countries while Korea shows fashion industry characteristics displayed by NICs. Moreover, when examining the results of the comparative research of the

<Table 6> Competitiveness Index of the Diamond Model

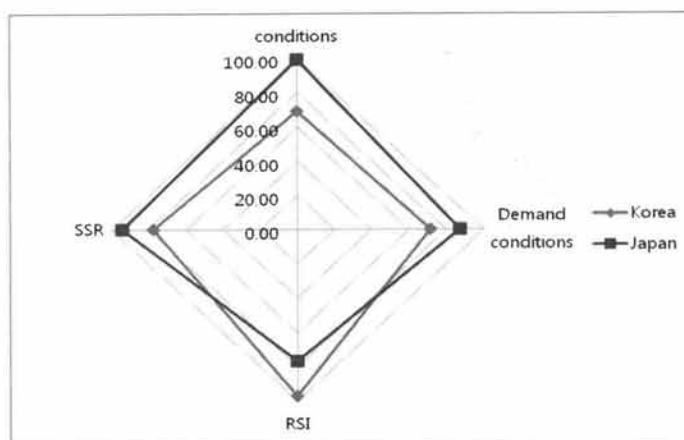|	Korea	Japan
Factor Conditions		
Domestic Value	69.08	99.15
International Value	82.41	97.45
International Diamond (Domestic + International)	75.74	98.30
Demand Conditions		
Domestic Value	71.58	87.37
International Value	77.78	80.00
International Diamond (Domestic + International)	74.68	83.68
Related and Supporting Industries Conditions		
Domestic Value	96.85	76.41
International Value	87.70	81.17
International Diamond (Domestic + International)	92.27	78.79
Firm Strategy, Structure, and Rivalry Conditions		
Domestic Value	77.78	94.29
International Value	89.68	87.30
International Diamond (Domestic + International)	83.73	90.79

competitiveness of Korea and China's fashion industries pursuant to the same method (Kim et al 2006; 29 Son et al 2007; 20), Korea produced more competitive determinants than China except for factor conditions. In other words, the domestic diamond results of Japan-Korea and Korea-China clearly show the fundamental differences between advanced nations and NICS, that is, the differences in the degree of industrialization of the fashion industry.

Secondly, Korea reports higher measurements relating to production and exporting, but Japan excels Korea in R&D, technology and design ability, the rate of value added and the efficiency of companies. That is, Japan's fashion industry has already changed its focus to capi-tal-intensive and technology-intensive industry while Korea's fashion industry is trying to follow the advanced countries' fashion industry.

Lastly, however, something remarkable appeared regarding Korea's information technology infrastructure: Japan shows a lower measurement than Korea in terms of information technology infrastructure. As information technology has become the foundation of the development for almost every field of industry in the 21st century, the prospect of the Korean fashion industry seems bright. Just as mentioned by Jin (2006; 202), with the growing power of design and the power of culture with the recent Korean Wave, we believe Korea will grow to become a leader that may even sur-

〈Figure 1〉 Domestic Diamond of the Korean Fashion Industry and Japanese Fashion Industry

pass Japan in the fashion industry.

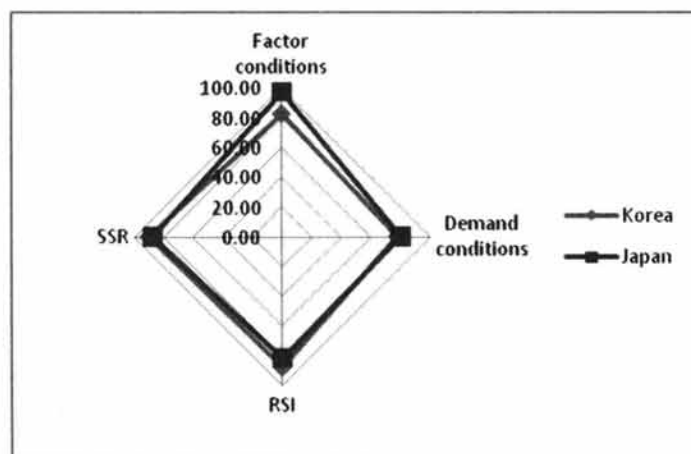## 4.3 International Variables of the Diamond Model

〈Figure 2〉 shows the empirical results of the international diamond. According to the international diamond, the Japanese fashion industry is more competitive in all determinants of the international diamond except for related and supporting industries conditions, identically to the domestic diamond. When comparing the Korean and Japanese international diamond shapes to the domestic diamond shapes, the international diamonds are more similar than the domestic one. That means the Korea fashion industry is almost as competitive as the Japan fashion industry.

We can find several important implications when the measurements of the proxy variables are closely examined together. First of all, as shown by the result of the domestic diamond, Korea shows fashion industry characteristics of NICs so Korea reports higher measurements relating to production than Japan. However, Japan shows fashion industry characteristics of an advanced country and reports higher measurements than Korea in the fields of inward and outward FDI, brand power in the foreign market, and corporate globalization. As found from the result of the domestic diamond, however, Japan shows lower measurements than Korea in the fields of information technology and education.

International diamond can be understood as the globalization index of fashion industry for each nation (Son et al 2007; 17), and in the case of Korea, it is important for the Korean fashion industry to focus on global resources and markets as well as the level of globalization of companies as well as the nation itself to develop its competitiveness since the scale of

<Figure 2> International Diamond of Korea Fashion Industry and Japan Fashion Industry

Korea's economy is relatively small (Moon 1998: 7). It is encouraging that the international diamond of Korea is similar to that of Japan, and Korea's higher competitiveness in information technology and education shows it is possible for Korea to improve the competitiveness of its fashion industry.
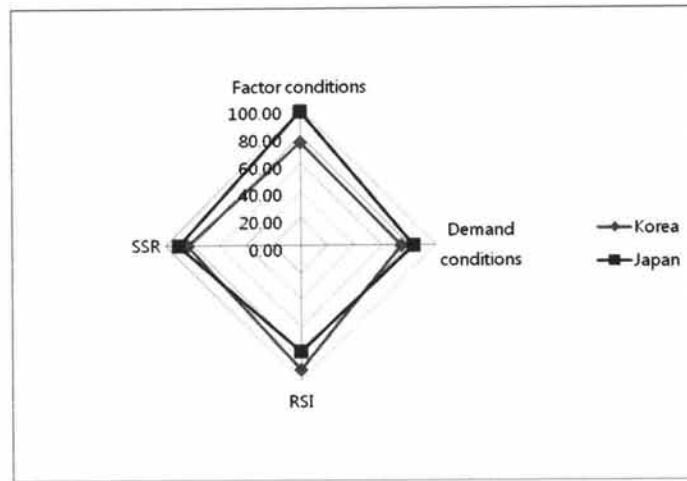
4.4 Competitiveness Index of the Diamond Model

<Figure 3> shows the empirical results of the global diamond. All scores for the global diamond are calculated as the average sum of the scores from the domestic and international diamonds. Looking into the domestic and international diamonds separately and regarding determinants of each country's competitiveness, competitiveness can be more clearly shown and explained through the global diamond, which synthesizes domestic and international diamonds.

The Japanese fashion industry is more competitive in all determinant of global diamond except for related and supporting industries conditions, just as it was with the domestic and international diamonds.

Comparison of the national competitiveness of Korea and Singapore by Moon and Kim (2010: 85) shows similar results to this study. That is, Korea has achieved remarkable growth in related and supporting conditions and this achievement is mainly attributable to the development of its world-class IT infrastructure and transportation sector. However, Korea needs to be more concerned about the improvement of factor condition as well as demand conditions. Therefore, Korea needs to focus on improving factor conditions as well as demand conditions, firm strategy, structure and rivalry conditions in order to gain global competitiveness in the fashion industry.

<Figure 3> Global Diamond of Korea Fashion Industry and Japan Fashion Industry

V. Conclusion and Limitations

5.1 Implications

This study compares the Korean fashion industry with the Japanese fashion industry, which is one of the leading fashion industries in the world and at the same time shares many geological and cultural similarities with Korea, by using the generalized double diamond model and aims to find out what kind of global competitiveness is needed for Korea to become one of the leaders in the world fashion industry as well as analyze Korean fashion industry's current global competitiveness.

That is, the Japanese fashion industry is that of an advanced country which led the export of textiles and apparel products in the mid1960s following the U.S. and Europe. On the other

hand, Korea's fashion industry is that of NICs which led the global export of textiles and apparel products in the 1980s among East Asian countries following Japan. In addition, Japan is an advanced country in which the fashion industry is domestic market-oriented while Korea is a small open economy that focuses more on the foreign market. The result of this study shows the status of the fashion industry of the two countries as it stands. Out of 31 proxy variables, Korea's fashion industry shows higher measurements relating to production and export than Japan, but Japan's fashion industry reports higher measurements than Korea in the fields of R&D, design and brand power, the rate of value added, and the efficiency of companies and globalization.

In order for Korea's fashion industry to achieve competitiveness in the global market, it should pursue the following development direction.

First, it is very difficult for Korea to follow the footsteps of the U.S. and Japanese fashion industries that are able to take advantage of economies of scale, because Korea is smaller than those countries. Therefore, just as pointed out by Moon and Kim (2010; 86), in the case of small economies such as Singapore, strengthening of international activities will practically improve domestic determinants that Korea should improve its domestic diamond by enhancing the current competitiveness of its international diamond. In other words, Korea needs to further endeavor to develop and expand global resources and markets as well as improve its competitiveness in terms of R&D, design and brand power, the rate of value-added, and the efficiency of companies.

As the Korean fashion industry shows relatively advanced level of information technology and the fashion education system, it has considerable potential to grow. Korea is expected to have a huge growth potential since it has relatively higher level of information technology, fashion education system and activities than those of Japan in both the domestic diamond and international diamond. In particular, a better environment is laid out before Korea to gain competitiveness in the fashion industry due to the recently growing influence of the Korean Wave that Korea is expected to grow as a leader in the Asian market as well as in the global market just as Lee (2003; 362) mentioned.

5.2 Limitations of the Study and Suggestions for Further Studies

This study is meaningful in that it uses the generalized double diamond model to visualize a comparison of the Korean fashion industry (based on small, open economy) with the Japanese fashion industry (based on an advanced, developed country). The study, however, can be supplemented and improved in several ways. Above all, it uses secondary data to obtain the measurements of variables. However, when it comes to the measurement of firm strategy, structure and rivalry conditions, obtaining in-depth data through corporate surveys is critical. In addition, given that this study uses secondary data from the years between 2007 and 2011, the scope of the data is somewhat broad, although previous studies (Liu and Hsu 2009 Moon and Kim 2010 Moon and Lee 2004) used data stretching over four to five years. In particular, as the fashion industry changes faster than any other industry in the global commodity chain, the scope of secondary data should be narrowed to less than three years.

Second, this study uses the generalized double diamond model as a framework. The generalized double diamond model is a model suggested by Moon et al. (1998) to compare competitiveness of small open economies. Therefore, considering that this study is to compare the fashion industry of an advanced country (i.e., Japan) and a small open economy (i.e., Korea),

generalizing the results of the global diamond by utilizing the generalized double diamond model would be impracticable. Thus, it is necessary to develop a model to be used to compare the competitiveness of countries with different sizes and in different stages of development.

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