Fashion Competitive Strategies: Two-Fold NPD Wen-Ying, Claire Shih University of Manchester

Key words: the fashion industry, new product development (NPD), competitive strategies, newly developed countries, the integration of textile and apparel NPD/two-fold NPD

1. Introduction: competition in the fashion industry

The fashion industry embraces various activities creating services and products that are related to fashion, and every country has different categories to identify their fashion industry (Stone, 2004; Taiwan Industry and Economic Research Center, 2009). This study primarily refers to the fashion industry that is associated with textiles and apparels. Prior to industrialization, fashion was solely the commodity of the rich. Since the industrial revolution, new methods of textile and apparel production have been gradually evolving (Dickerson, 1995; Gale and Kaur, 2002), e.g. mass production and the development of technology have shaped the fashion industry. As a consequence, the changes and progress of the industry have been resulting in various effects to satisfy the increasing and uncertain demands of the fashion market.

In the light of the effects of globalization, economic development and the advance of transportation, trade has become predominantly international, which in turn encourages the competition of production in terms of supply. This creates the effect that textile and apparel manufacturing has been gradually declining in the developed countries and shifting from one country/region to another (Dickerson, 1995; Easey, 2009; Gale and Kaur, 2002; Jones, 2006). For example, commencing as a key apparel manufacturing nation, Japan turned into an outsourcing and manufacturing intermediary in the fashion industry and focused on fibre development. Followed by the four Asian Tigers in the late 60s and other developing countries in textile and apparel manufacturing, the Asian region in turn gave rise to clusters of textile and apparel production (Dickerson, 1995; Gale and Kaur, 2002; Singleton, 1997). This industrial development trajectory can be attributed to labour costs, advanced technology, government support and trade regulations. With the recent quota elimination and economic recession, the competition in manufacturing has become severe particularly in the Asia-Pacific regions (Datamonitor, 2009).

On the side of demands, outsourcing has been widely adopted by the leading fashion manufacturers and retailers in the developed nations. They are dominating the supply chain in the fashion industry and fortifying the manufacturing competition among developing countries by the selection of their business partners (Gereffi, 1999b). Since the beginning of the 21st century, the demand for fashion products has continued steadily increasing despite economic recession (Gereffi and Frederick, 2010). This has been facilitated by the fast fashion effects creating the compression of fashion NPD cycles, and in particular, significant liberalization of the textile trade in 2005 resulting in consequential competition of retailing in terms of cost, production and distribution (Bruce and Daly, 2006; Tokatli, 2008). Against this background, fashion new product development (NPD) becomes more important than ever in the industry. In playing the vital role between supply and demand, as a set of activities from research to product launching, NPD can strategically facilitate the activity planning and management to achieve the business objectives, and thus in turn enhance the advantages from the competitive environment.

Porter (1991) claims that competition can drive companies within their specific industries to gain competitive advantages by adopting strategies. That is, strategies regarding fashion manufacturing enable manufacturers to find the way to sustain their businesses. Singleton (1997) echoes this view and implies that company performance is affected by overall industrial conditions; when an industrial sector evolves, the NPD together with strategies of companies have to be adjusted accordingly. For example, a number of developing countries, such as China and India, have gained NPD capabilities from experience of serving the fashion retailers in the developed counties. They seem to follow the progressing movement of the fashion industry: from apparel assembly activities, textile production to fiber production or even further, into machinery production. These manufacturers have recently been inspired to focus on the NPD for their domestic markets because of the decreasing demands of the western markets (Gereffi and Frederick, 2010). However, not every developing country has such high level of domestic demand to enable it to adopt this industrial development pattern. The fashion manufacturers in newly developed countries ¹ (NDCs) in Asia are a case in point. Having had a deficiency of natural resources and a lack of sufficient market demand, the textile and apparel manufacturers in NDCs have to rely on created factors including knowledge and skills to succeed. With the significant industrial progress and production experience from the last half century, these manufacturers offer an indication of the association between NPD success and competitive strategies. In order to understand how their NPD has progressed and what strategies they have adopted to compete with rivals, there is a need to gain insights into their NPD process.

2. Case Study

An in-depth case study is employed in this study, the data for which was gained through interviewing the key personnel and examining both internal and external documentation. Based on the knowledge and background of the researcher, and the feasibility of company access, a successful textile and apparel manufacturer in Taiwan was selected as the subject of this longitudinal research, from 2009 to 2011. In the light of global competition, particularly in the developing countries with low-labour-cost production, this manufacturing company, The NW Group, with more than a three-and-half decade history, has strategically reinforced their textile NPD together with the integration of apparel NPD in order to survive in today's fashion industry. This two-fold NPD is regarded as the key strategy of The NW Group that obtains competitive advantages through their different stages of NPD.

2.1 The business background of The NW Group

The NW Group was founded in 1975 in Taiwan, commencing as a textile trader and then merging into manufacturing of circular knitted fabrics. With the steady growth of business from the early 1980s, The NW Group expanded their business into knitting, dyeing, apparel production, trading and sales in a number of overseas countries, leading to a drive to develop an integrated complete textile and apparel supply chain. By 2010, this group comprised three main business operating divisions: knitted fabrics and trade division, apparel and trade division and business alliances. Despite the business expansion, they remained privately owned in order to retain control of business development.

Target Markets

The NW Group mainly caters for the markets of international leading textile importing countries (see appendix i). Initiating the textile business with the American followed by the European markets, they expanded their business into China due to its increasing demand and the potential trading benefits stemming from new trading regulations. In terms of the apparel business, the USA market was their main business focus because of the relationships built by their textiles business. The European market was also their target with 30% of their total apparel sales business against 70% in the USA market.

Competitors

The NW Group's major competitors were those who specialized in textile or apparel production and sustained their businesses in the industry. Their rivals, together with The NW Group, had mainly established their manufacturing businesses since the

golden period of the four so-called Asian tigers in the 70s. Additionally, their competitors were the manufacturers in the world leading textile and apparel export countries, China in particular, with their abundant natural and human resources.

Product offerings

Fabrics and apparels were The NW Group's two main products. Their fabrics were provided for the equal uses of fashion and sport; however, the sport section was overtaking the fashion fabrics due to the advantages and value of functional fabric application. The NW Group focused on fabric NPD including synthetic, functional or innovative fabric production because of the disadvantages of a lack of natural fibre resources. They thus made concerted efforts in R&D of new textiles: 3,000 plus varieties of fabrics were created every year in order to cater for various customer demands for apparel production. Apparels launched were mainly intended for the worldwide branded retailers of sportswear/active and casual wears. The NW Group attempted to extend their product categories to fashion apparels in order to reduce the risk that resulted from the focused product manufacturing and to reinforce the relationships with retail buyers. By operating apparel production, they can thus obtain market information from buyers to share with textile production.

2.2 Various stages of NPD

Having begun as a textile trader, the founder of The NW Group turned the business into a manufacturer of knitted fabrics in the late 1970s. This business change implies that smaller-scale traders tend to have limited choices and controls over their own NPD to cater for their customers. **Becoming a textile manufacturer**, The NW Group was able to manipulate their own NPD by either making products themselves or selecting production suppliers and partners. They concentrated on textile dyeing and finishing, the mid-stream production of the textile and apparel supply chains, and this thus determined the direction of their NPD, mainly towards the development of apparel commodities to gain adding value. As previously discussed, synthetic fabric development was The NW Group's production core, and as a result of this the innovation fabrics allowed them to become one of the leading knitted-fabric manufacturers in Taiwan. This achievement was implemented by the progress of textile production capability including setting up the R&D department, and collaborating with yarn suppliers and other third-party or family-owned factories. The complete textile NPD was attained and incorporated into their business.

In order to consolidate their business and relationships with retail buyers to encourage

the direct sourcing of large international buyers, The NW Group had to effectively and efficiently provide their buyers with various product options together with quality and services. To achieve this, The NW Group employed both the horizontal development of mid-stream fabric manufacturing and the forward vertical **development** of down-stream manufacturing (see figure 1). Since the difficulty of obtaining sufficient capital was a hindrance in the way of conducting up-stream manufacturing, The NW Group, in 2002, thus turned into a textile and apparel manufacturer and expanded their product categories, offering not only functional fabrics but also fashion apparels. In order to establish rapports with retail buyers, The NW Group with in-house apparel production further allied with an apparel importer in the USA. They had integrated apparel design into their apparel NPD. The design alliance was established to facilitate their marketing because there was a lack of cultural interpretation and communication with the buyers in their target market. This approach had led their NPD towards the marketplace and gained competitive advantages by integrating and managing the textile and apparel NPD to supply their buyers.

3. Discussion

Competitive strategies of NPD adopted by textile and apparel manufacturers in NDCs

According to a number of researchers, the textile industry tends to develop products from low to high adding value, with increasing technological capabilities and manufacturing know-how (Dickerson, 1995; Gale and Kaur, 2002; Gereffi and Frederick, 2010). This pattern is also reflected in the international ranking data of textile export countries (see appendix i): half of the top ten are the economically developed countries. These countries no longer focus on apparel production; conversely, they have been continuously developing high value textiles in order to maintain their textile business. In line with this international textile development, this study provides empirical evidence that the NPD of The NW Group has followed a similar trajectory with competitive strategies, as illustrated in figure 1.

As identified in the case study, The NW Group adopted a two-fold NPD to gain competitive advantages: focus on textile NPD (horizontal development) and, simultaneously integrating apparel into NPD to gain value-adding service (vertical development), which are discussed in the following sections.

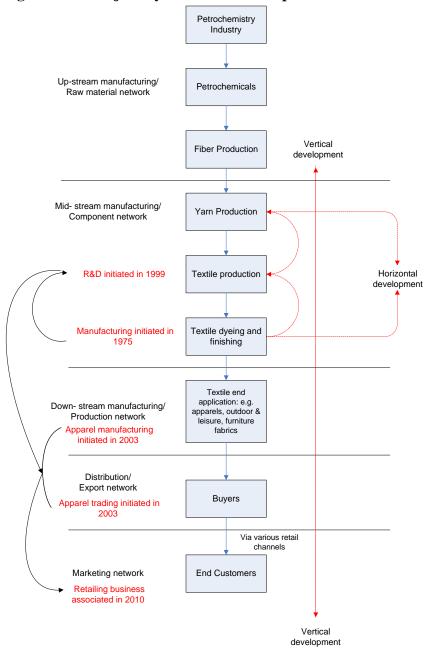


Figure 1 The trajectory of The NW Group's NPD in the textile supply chain

Source: created by the author

Specialized assets as differentiation strategy: In-house R&D, production know-how and integrated marketing

Having specialized assets can help a business to obtain a competitive advantage because of the resulting differentiation of products (Hill and Jones, 2008), and this can be integrated with marketing strategy to specify the market position. Insufficient domestic supply of natural fibres led to The NW Group concentrating on synthetics. Coupled with Taiwanese government support for technology development and the sustainability of the textile industry, this drove them to increase and to improve their

textile production capabilities. In order to offer value-added fabrics, they also established an R&D department and collaborated with other third-party factories.

Having in-house R&D is crucial for a manufacturer because it can enhance the level of product differentiation and specialization in catering for targeted markets (Ishikawa and Tsujimoto, 2006; Lin and Saggi, 2002; Yelkur and Herbig, 1996). At The NW Group, success seemed to rely on the input of textile R&D, indicating that their capabilities were associated not only with manufacture but also with design, and the knowledge of production techniques. In particular, integration of trend forecasting into R&D facilitated the design and innovation of fabrics. These assets of NPD specialty allowed the company to differentiate their products, for example, they specialized in fabrics for sport/activity wears and annually launched these ahead of fabrics for fashion apparels.

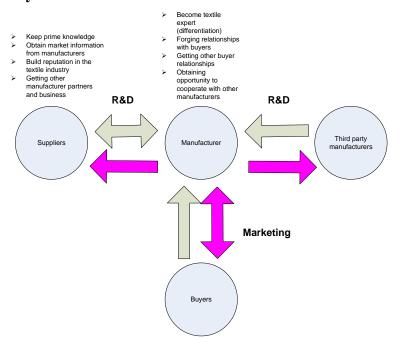
Having R&D and Standard Operating Procedure (SOP) capabilities enables collaborative NPD, instead of relying on in-house manufacturing to mitigate the risks of production investment. The networks of The NW Group included not only yarn suppliers, but also more than 300 textile factories² in so-called small-and-medium enterprises (SMEs), which in Taiwan tend to have in-house expertise. In parallel with the study by Kilduff (2000), this study reveals that the de-integration effects can be caused by the remaining textile SMEs supporting the development of large manufacturers or retailers in the industry. The NW Group was able to increase fabric varieties and focus their NPD on technical fabrics based on the collaboration with these SMEs despite an approximately 18% decline in the number of textile factories in Taiwan after the quota elimination. Such development allows manufacturers to develop expert knowledge and technology in house, or buy up the yarn suppliers towards upstream development. However, due to the size of yarn supplier companies, it may be difficult for textile manufacturers to merge with them, so contractual engagements tend to be the best solution to ensure specific supply.

The integration of R&D and marketing appears to be an important strategy that associates manufacturers with external partners with technology or innovation expertise, an approach which can increase NPD success (Griffin and Hauser, 1996; Hise *et al.*, 1990; Wang and Montaguti, 2002). An example of this was the overseas textile base of The NW Group cooperating with academic organizations and leading fibre suppliers to produce innovative fabrics, thus boosting their R&D reputation in the markets. Another R&D alliance resulting in marketing advantages was between The NW Group and a manufacturer who specialized in fabric printing with low

pollution effects. Their co-development of textiles and apparels would send a message of environmental friendliness and social responsibility, which allows their business to expand towards international markets.

The effects regarding the R&D and marketing integration on their relationships with buyers, suppliers and third party manufacturers are demonstrated in the following figure:

Figure 2 R&D and marketing relations among manufacturers, suppliers and buyers



Source: created by the author

The fibre or yarn suppliers required appropriate market information from their manufacturing partners to increase the product diversity and thus gain a competitive edge. Simultaneously, fabric manufacturers together with third party manufacturers could improve their reputations by collaborating with prestigious yarn suppliers, differentiating their capabilities by offering a wide range of fabrics to further attract other buyers. Having increased orders from their buyers, manufacturers may team up with other suppliers and manufacturers in order to satisfy buyers with various products. Such supply relationships thus have to be strengthened when a key supplier/manufacturer has built a close relationship with buyers. It was noted that internal sales personnel also externally facilitated the integration of R&D and marketing, as it resulted in the fabrics and services that buyers demanded.

The competitive advantage of differentiation: reinforcing buyer relationships with value-adding service

Providing customers with value-adding activities can gain a competitive opportunity of differentiation (Grant, 2008; Thompson and Martin, 2005). In order to sustain the relationships with their buyers, The NW Group conducted vertically integrated production offering value-adding service to obtain the advantage of differentiation. This integration model, called "Yi Tiao Long" in Mandarin, refers to the production processes from design, manufacturing to sales/distribution. It originates in the concept of total cost reduction and quality assurance and has been applied widely, for example in the food and automobile industries. In the textile and fashion industry, international retailers including Benetton and Zara have adopted this model with exclusive design, production and distribution channels (Tokatli, 2008). Against this background, buyers can benefit from control over the quality of merchandise and production, together with bargaining power over costs of materials. Simultaneously, suppliers can build close relationships with their buyers and gain market information by means of vertical integration of production and services. In other words, manufacturers can in turn differentiate their NPD through vertical integration to encourage direct sourcing from buyers.

The direct sourcing of apparel manufacturing in Asia has been increasingly prevalent since the 1970s (Gereffi, 1999a). The majority of textile and apparel manufacturers receive their production orders based on subcontracts (Easey, 2009; Goworek, 2007), and it has been argued that economic recession and quota elimination have diminished the number of SME manufacturers, leading to only those capable of dealing with direct sourcing from retail buyers remaining in the industry (Gereffi and Frederick, 2010). In order to gain direct orders, The NW Group adopted a vertically integrated approach to respond effectively to buyers' requests.

The integration of textile and apparel production allowed The NW Group to manage the manufacturing networks in order to compete with rivals. Vertically integrated production of apparel can be accomplished either in house or by outsourcing (Tokatli, 2008). They tended to keep high-value/profit production in house or within their long-term alliances, while subcontracting low-cost production to third-party factories. By integrating apparel production, they can directly gather the market information from their buyers to facilitate their NPD. In addition, they can ensure product quality by launching in-house apparel NPD to obtain production know-how and experience, in order to gain further expertise in apparel NPD. Incorporating design into their

integrated textile and apparel NPD can fortify the competitive advantage by offering value-adding service to buyers.

Design as a value-adding service

Design is recognized by numerous researchers as a strategy to obtain competitive advantage because it can enhance NPD outcomes (Abecassis-Moedas, 2006; Borja de Mozota, 2003; Bruce and Bessant, 2002; Clarkson, 2005; Sinha, 2000). In the fashion industry, design appears to be determined by buyers, who ultimately are retailers, because design is regarded as their competitive means in the marketplace. To gain relationships with retail buyers, manufacturers may have to obtain design capabilities although design appears to be a great deal of investment to manufacturers. For instance, with the vertical integration of textile and apparel NPD, The NW Group relied on not only R&D to create innovative fabrics annually, but also trend forecasting together with market feedback, designing new fabrics both seasonally and weekly, in order to accelerate sales. As a result, design amounted to an NPD service to reinforce relationships with buyers including Adidas and Li-Ning, to keep them as long-term customers. This reveals that by developing design capability as well as R&D, a textile manufacturer is able to diversify their products.

Apparel design is also essential to the NPD process because it can determine the resources and the successive activities that are required (Abecassis-Moedas, 2006; Keiser and Garner, 2008; Sinha, 2000). With such a capability, a textile manufacturer can gain the advantage of diversification. For instance, The NW Group was able to share the market and relevant design information within their textile and apparel departments to conduct NPD for the buyers in different markets. However, apparel design was initially neglected during vertical integration because design is not the priority for manufacturers, particularly for original equipment manufacturers (OEMs). Additionally, apparel design is seen as a strategy of retailers or designers, rather than manufacturers, although the integration of design and retail allows NPD performance to be enhanced (Abecassis-Moedas, 2006).

In order to increase orders and profits, manufacturers have been gradually learning about design and other retail activities through collaboration with retailers (Gereffi, 1999b). This is because design is regarded as a service which adds value to manufacturers' NPD. Being a late comer to apparel NPD, The NW Group did not fully embrace design resources and capabilities until their apparel NPD alliance was formed. The alliance with R Company, who was The NW Group's former buyer in the USA, with their linguistic and cultural advantages in terms of the American market,

enabled apparel design to be integrated into the in-house NPD of The NW Group to secure relationships with leading USA retailers. In other words, design as a value-adding service can be seen as a complementary resource stemming from the NPD integration facilitated by the alliances. This capability permits an intimate interaction of apparel NPD between manufacturers and retail buyers leading to competitive advantages in the marketplace. That is, in addition to establishing close relationships with buyers, undertaking apparel design can enable manufacturers to differentiate themselves from rivals.

4. Conclusion

Facing the severe global competition and the uncertain demands of the fashion industry, production activities are inclined to de-integrate to avoid investment risks (Kilduff, 2000), and the number of textile and apparel manufacturers has been significantly decreasing, in particular under the impacts of quota elimination and economic recession (Gereffi and Frederick, 2010; Li, 2004). Nevertheless, the surviving manufacturers in the NDCs can serve as a good example of NPD with competitive strategies: strategies help them to gain various capabilities and knowledge of NPD and to collaborate by means of alliances in order to cater for various buyers from different markets. In this study, the NW Group employed the strategy of integrating textile and apparel NPD to flexibly serve their buyers and to sustain their business in the fashion industry. This two-fold NPD allows them to differentiate their products and get closer to the marketplace. Both horizontal and vertical integration of NPD were adopted and facilitated by a number of alliances, which enabled the business to obtain the competitive advantage of product differentiation resulting from the integration of R&D and marketing, and value-adding service of design. That is, differentiation provides the competitiveness for which NPD strives, and furthermore, manufacturers with integrated NPD and production networks can use them to reinforce their relationships with buyers and sustain their businesses in the fashion industry.

- Abecassis-Moedas, C. (2006). Integrating Design and Retail in the Clothing Value

 Chain: An Empirical Study of the Organisation of Design. *International journal*of operations & production management 26 (4), pp.412-428.
- Borja de Mozota, B. (2003). *Design Management: Using Design to Build Brand Value and Corporate Innovation.* New York: Allworth Press.
- Bruce, M. and Bessant, J. (2002). *Design in Business.* Essex: Pearson Education Limited.

- Bruce, M. and Daly, L. (2006). Buyer Behaviour for Fast Fashion. *Journal of fashion marketing and management* 10 (3), pp.329-344.
- Clarkson, J. (2005). *Design Process Improvement: A Review of Current Practice*. London: Springer.
- Datamonitor (2009). *Global Textiles: Competitive Landscape.* London: Datamonitor Europe.
- Dickerson, K. G. (1995). *Textiles and Apparel in the Global Economy* 2nd ed. New Jersey: Prentice-Hall, Inc.
- Easey, M. (2009). Fashion Marketing. 3rd ed. Oxford: Wiley-Blackwell.
- Euromonitor International Reports (2010). Euromonitor International,.
- Gale, C. and Kaur, J. (2002). The Textile Book. Oxford: Berg.
- Gereffi, G. (1999a). A Commodity Chains Framework for Analyzing Global Industries.

 Duke University.
- Gereffi, G. (1999b). International Trade and Industrial Upgrading in the Apparel Commodity Chain. *Journal of international economics* 48 (1), pp.37-70.
- Gereffi, G. and Frederick, S. (2010). *The Global Apparel Value Chain, Trade and the Crisis.Policy Research Working Paper.* The World Bank Development Research Group: Trade and Integration Team.
- Goworek, H. (2007). Fashion Buying. 2nd ed. Oxford: Blackwell Publishing.
- Grant, R. M. (2008). *Contemporary Strategy Analysis*. 6th ed. Oxford: Blackwell Publishing Ltd.
- Griffin, A. and Hauser, J. R. (1996). Integrating R&D and Marketing: A Review and Analysis of the Literature. *Journal of Product Innovation Management* 13, pp.191-215.
- Hill, C. L. and Jones, G. R. (2008). *Strategic Management: An Integrated Approach*. 8th ed. Boston: Houghton Mifflin.
- Hise, R. et al. (1990). Marketing/R&D Interaction in New Product Development:

 Implications for New Product Success Rates. Journal of Product Innovation

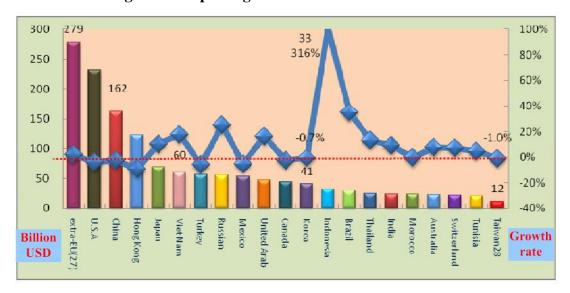
 Management 7 (2), pp.142-155.
- Ishikawa, A. and Tsujimoto, S. (2006). *Creative Marketing for New Product and New Business Development.* Singapore: B&JO Enterprise.
- Jones, R. M. (2006). The Apparel Industry. Oxford: Blackwell Publishing Ltd.
- Keiser, S. J. and Garner, M. B. (2008). *Beyond Design.* New York: Fairchild Publications, Inc.
- Kilduff, P. (2000). Evolving Strategies, Structures and Relationships in Complex and Turbulent Business Environments: The Textile and Apparel Industries of the New Millenium. *Journal of textile and Apparel, technology and management* 1 (1), pp.1-9.

- Li, H. Y. (2004). 2005: The Elimination of Quota. Taipei: [Online]. Retrieved from: http://campaign.hncb.com.tw/intranet/monthly/mon023/02306.pdf
- Lin, P. and Saggi, K. (2002). Product Differentiation, Process R&D, and the Nature of Market Competition. *European Economic Review* 46 (1), pp.201-211.
- Porter, M. E. (1991). *On Competition and Strategy.* Boston: Harvard Business Publishing Division.
- Singleton, J. (1997). The World Textile Industry. London: Routledge.
- Sinha, P. (2000). A Comparative Study of Fashion Design Processes in the Uk Women's Wear Industry. Institute of Social Research. Salford: University of Salford.
- Stone, E. (2004). *The Dynamics of Fashion*. 2nd ed. New York: Fairchild Publications,
- Taiwan Industry and Economic Research Center (2009). *Fashion Industry Promotion Plans.* Taiwan: Taiwan Government.
- Taiwan Textile Federation (2009). *Overview of Taiwan's Textile Industry.* Taipei: Taiwan Textile Federation.
- Taiwan Textile Federation (2010). *The Overview of Taiwan Textile Import and Export*.

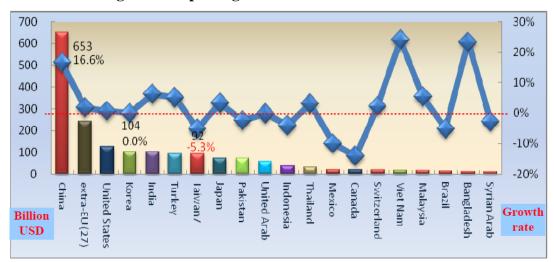
 [Online]. Retrieved from:

 http://ttf.textiles.org.tw/Textile/TTFroot/overview-english.pdf
- Thompson, J. and Martin, F. (2005). *Strategic Management: Awareness and Change.*5th ed. London: Thompson Learning.
- Tokatli, N. (2008). Global Sourcing: Insights from the Global Clothing Industry-the Case of Zara, a Fast Fashion Retailer. *Journal of Economic Geography* 8, pp.21-38.
- Wang, Q. and Montaguti, E. (2002). The R&D-Marketing Interface and New Product Entry Strategy. *Marketing Intelligence & Planning*, pp.82-85.
- Yelkur, R. and Herbig, P. (1996). Global Markets and the New Product Development Process. *The journal of product & brand management* 5, pp.38-47.

Appendix i
The world leading textile importing countries in 2008



The world leading textile exporting countries in 2008



Source: WTO cited in (Taiwan Textile Federation, 2009)

Note 1: Newly developed country: according to the criteria that IMF created, in addition to Japan and Singapore, Hong Kong, South Korea and Taiwan are newly upgrading as developed countries in Asia.

The overview of NDCs in Asia

Country	Hong Kong	Singapore	South Korea	Taiwan
Area	1,062 km²	692 km²	98,445km²	35,990km²
Population	7,055,071	4,987,600	48,758,000	23,046,177
Main Industry	Services, tourism	Service, electronics, wholesale, retail trade, tourism	IT and car industry, which their basic products are manufacturing in China.	IT industry, service
Industrial issues	Due to a decline in exports, many manufacturing operations have been relocated, mainly to the mainland.	Manufacturing output has shrunk	Service and argriculture are stagnant; the textile industry is expected to reboost by government support.	The agriculture industry accounts for a small national portion but toward value-added; their government is pushing and supporting retailing development.

Source: (Euromonitor International Reports, 2010, compiled by the author)

Note 2: According to a survey by the Taiwan Textile Federation (2010), there are 3104 textile and 1068 apparel manufacturers remaining in Taiwan in2010, while there were 3732 textile and 1325 apparel manufacturers operating in 2002.