13 Strategy for the Hong Kong Textile and Clothing Industry

13.1 HONG KONG TEXTILE AND APPAREL INDUSTRIES

Hong Kong textile and apparel industry was set up in 1950s. Many textile manufacturers moved from Shanghai China in 1950s and received investment from English banks and foreign banks. After half century developing, Hong Kong textile and apparel exports played an important role in world textile and apparel trading. Hong Kong textile and apparel industry exported 380 millions dollar in 1963 or 4.1% of world total export. After ten years, Hong Kong's market share in the world was 5.8%. In 1996, the export value was 36.13 billions dollar and accounted for 11.5% world export as one of the leader of exporter of textile and apparel [1]. In the later of 1990s, the sectors contributed 24.9 percent ($20.4 billion) of value-added of Hong Kong manufacturing industries and accounted for 41.6% Hong Kong domestic export or 5.8% of Hong Kong total exports [2 p.6-4b] as Hong Kong's top industrial employer and exporter in 1997. Furthermore, the Hong Kong textile and apparel industry, having survived the Asian financial turmoil, remains its strength as a leader in the world's textiles and clothing trade. It has secured a moderate growth of 1.6% in 1998 regardless of the overall contraction of the manufacturing sector in the 1990s. [3].

The garments industry is one of Hong Kong major export earners, accounting for 39.7% of total domestic exports in 1998 [4]. The steadily of the Hong Kong textile and clothing industry in the turmoil seems own to a cluster existing which we will discuss below.

Table 13.1 Hong Kong textile and apparel industries' market share in world exports

Hong Kong textile and apparel industries' market share in world exports			
	1963	1973	1996
Hong Kong export value (billion dollars)	0.38	2.09	36.13
World (billion dollars)	9.28	35.84	313.54
Market share (%)	4.09%	5.83%	11.52%

Source: Textiles and Apparel in the Global Economy page 185,189 and 194

13.2 HONG KONG GARMENTS CLUSTER

13.2.1 Cluster

In the way of stage-wise progression, strategy develop history can be divided four steps. First came Financial Planning (1950s and earlier), then Long Range Planning (1960s), then Strategic Planning (1970s), then Strategic Management (1980s), and Globalize & Regional Strategy (1990 Michael Porter) [5]. The tools of Strategy in its developing steps were Learning Curves (late 1960s), The Growth-share Matrix (late 1960s), Strategic Business (1970), The Industry Attractiveness-Business Strength Matrix (early 1970s), Profit Impact of Marketing Strategies (mid-1970s), Life Cycle Analysis (1970s), Scenario Analysis (1970s), Five Forces (1980), Net Present Value (early 1980s), Value Chain (mid-1980s) and Cluster (1990s) [5] [6].

After entering 1990s, the hot topic in management strategy was globalization. Quickly developing information and telecommunications technology drove companies to be competitive in global economy. Input factors such as labor force, managerial skills, financial capital, technology and etc. are eminently transportable across borders. The globalization minifies the disadvantage for the firms on high labor costs and storage of natural source in competition. People regarded that globalization as the current most important strategy for company or industry. Although, the globalization can just minify the disadvantage for the firms, it cannot create advantage *per se* in the competition. There are quite indications that firms concentrated in some location, close linked with special suppliers and firms that had related skill, same input and so on, usually own advantage in competition. It is apparent that clothing industry in Abruzzo (Italy) and Lombardy (Italy), textile and clothing industry in California (USA), fashion and textiles industry in Quebec (Canada) and etc. gave the evidences.

Michael Porter introduced a new concept "cluster" in his book "The Competitive Advantage of Nation" in 1990. The cluster concept represented a new way of thinking about national, state, and city economies, and pointed new roles for companies, governments, and other institutions striving to enhance competitiveness [7]. And now, economists and market analysts look cluster analysis as the standard way in analyze regional economies [8] [9]. In cluster theory, competitive advantage is determined by productivity instead of factors of production (labor, capital, or economy scale). "A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities"[10]. As Porter pointed, a health cluster is the age long source of the company or industry competitiveness [11]. Cluster also is a bridge that links firm management and regional or national economy together.

Five elements constitute a successful cluster, they are: (1) Advanced infrastructure exists in the geographic area. (2) A set of supplier firms provides the highest quality and most cost-effective components and services to the industry. (3) The cluster must be comprised of numerous individual firms competing with each other to continually improve products, reduce costs, and sharpen corporate strategies that keep them competing for market leadership. (4) A strong global market for the firm's goods or services and sophisticated and demanding local customers must exist to maintain the pressure for innovation. (5) Government removes obstacles away from the growth and upgrading of industries, and cooperates with institutions (for example, university,

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standards agencies, and trade associations) to provide supporting on training, education, research, information, and etc. The five aspects link companies and institutions with efficiency, effectiveness and flexibility, promote both competition and cooperation.

Cluster effects regional firms' competition by increasing the productivity, driving innovation and stimulating new business formation creation. Cluster motivates and measures productivity improvement through firms better accessing to employees and suppliers, better alternative to vertical integration, easy finding specialized information, and linking complementary forms in existing cluster. Secondly, cluster increases the firms' ability to innovation through sheer pressure (competitive pressure, peer pressure, and constant comparison), more opportunities innovation adoption, and better match with buyer's requirements. Finally, new suppliers, easy perception of gaps in products and services, few barriers and more resources in cluster, promote new business formation [10].

A cluster could be born due to historical circumstances in a location, arise from sophisticated local demand, prior existence of supplier industries, related industries, or seed provided by previous cluster [7 p.237]. The innovation in local company and chance also are root for cluster birth. Cluster development often becomes specialized suppliers emerge; information accumulates; local institutions develop specialized training, research, infrastructure and appropriate regulations; and cluster visibility and prestige grows [7 p.240]. A successful cluster may prosper at least for decades, however, cluster atrophy and decline can also be found. Internal rigidities are important reason for the cluster decline, which diminish productivity and innovation. External threats, technological discontinuities and buyer needs changing, are the most two important factors result in cluster decline [7 p. 244].
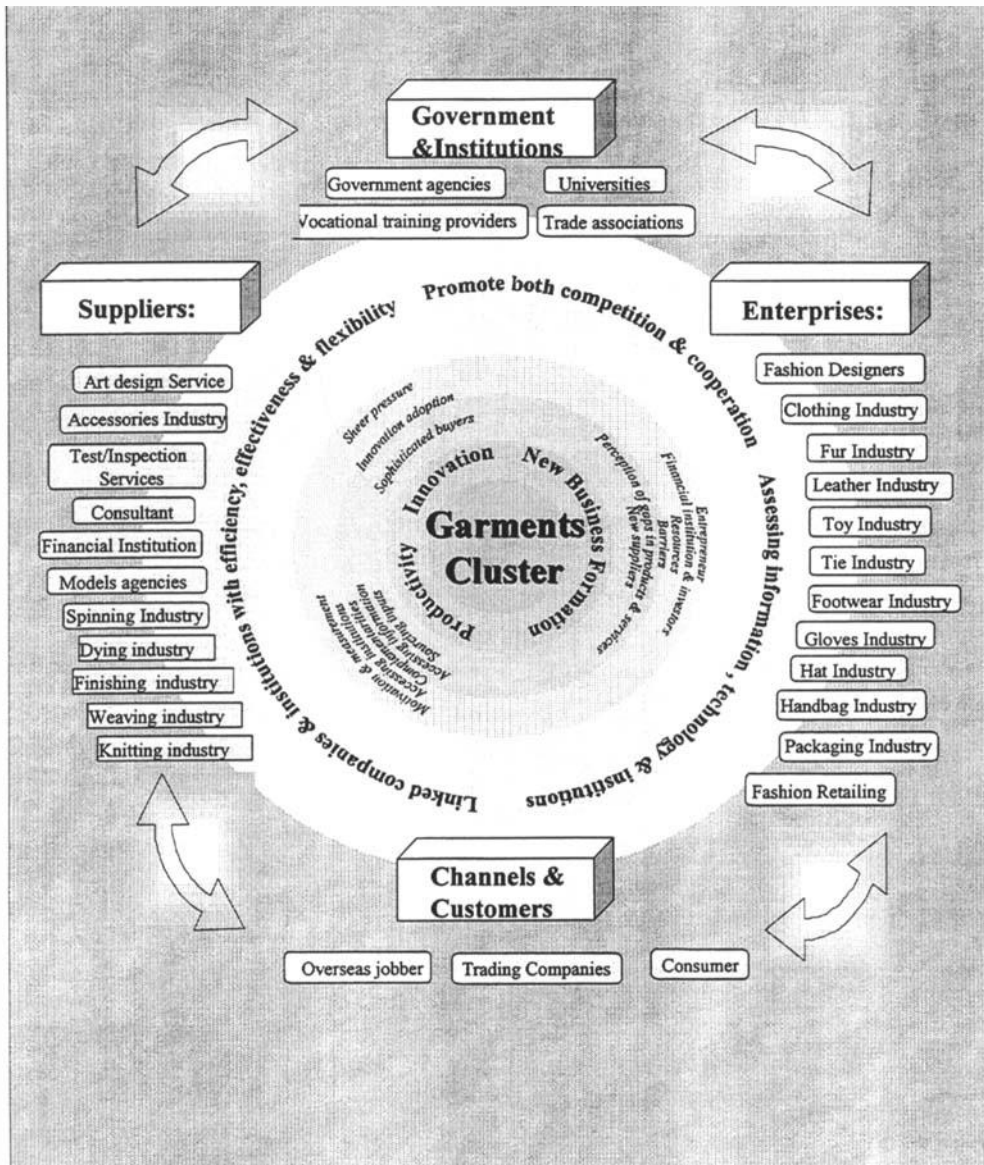
13.2.2 Hong Kong existing garments cluster

A team in Harvard Business School, leading by Michael Porter, surveyed Clusters in thirty-five countries (areas) in the world, included Hong Kong. The results indicated that there were ten clusters in Hong Kong including garments, air cargo, civil engineering, electronics, filmmaking, fund management, sea cargo, telecommunications services, tourism, and trading clusters [12]. The Hong Kong garments cluster also was mentioned in the book "Hong Kong Advantage" [20]. The numbers of dynamic 'clusters' were the source of Hong Kong economic energy, which related to each other, drew upon common skill bases or inputs, and reinforce each other's competitive positions through dynamic interaction. However, in above references, Hong Kong garments cluster just was in a name or summarizes. In the following sector, we would argue the existing Hong Kong garments cluster in detail.

Infrastructure
In the view of a cluster, Hong Kong has well-developed physical infrastructure strengths in many areas, including its busiest container seaport, third busiest airport, and telecommunications system. And the corporations in Hong Kong are taxed at a low fixed rate with no surcharges. This corporate tax rate is the lowest of any industrial country or developing country in the Asia and Pacific region [13].

Open Market   Legal System   Physical Infrastructure
Free Economy   Corporate Tax Rates

13.1 Hong Kong existing garments cluster

Further more, entry barriers for industry were really low in Hong Kong. Hong Kong is an open market that no concessions are offered to any investment or industries or for companies, but also no limitation on business forms. The foreign investment was not enacted incentive, but the government made efforts to improve investor protection. No duties are imposed on imported goods, except a small number of goods; no special legislation encourages export incentives. No specific incentives are offered to invest in other countries [13].

The sound legal system has played a vital role in Hong Kong's past success. The rule of law begins with individuals and their right to seek the protection of the courts, in which justice is administered by impartial judges. It protects the freedom of individuals to manage their affairs without fear of arbitrary interference by the Government or the improper influence of the rich and powerful. Its starting point is the individual but it encompasses the whole of society. The existing Basic Law provides for the continuation of the rule of law and the judicial system beyond 1 July

of 1997 with no fundamental changes, and will continue to be essential for Hong Kong's future. The common law and all the laws previously in force in Hong Kong, except for any that contravene the Basic Law, are maintained; the judicial system continues to operate fairly and independently as before [14].

The advanced infrastructure strengths made up the weaknesses of Hong Kong domestic nature sources, high costs in land rent and etc. Future more, Hong Kong's has internationally recognized legal system, favorable corporate tax rates and open market, which were untouched after return to China, providing a sound foundation for the garments cluster developing. The well-developed infrastructure is one of important elements to Hong Kong garments cluster's competitiveness.

Government and institutions

The government in Hong Kong has traditionally adopted a policy of nonintervention toward the regulation of private business and industry, and has actively promoted a free-enterprise, free-trade economy. In his first Policy Address, the Chief Executive of the Hong Kong SAR reiterated that Hong Kong's development strategy would continue to be based on the principles of a free-market economy, prudent fiscal policy, and maintaining a sound legal system [13]. In the policy address by the Chief Executive in 1998, he reiterated that the government would work on enhancing Hong Kong's economic vitality and promote sustained economic growth; raising the quality of education, starting from basic education; leading the Civil Service in an open government and together build--a stable, free, democratic, equitable and compassionate society; a decent society with a level playing field and fair competition under the rule of law; a world class cultural, educational, and scientific research center; a society proud of it national identity and cultural heritage. Further more, he announced [15], on the basis of the recommendations from the Commission, that to realize this vision, Hong Kong need to become:

- *a leading city in the world for the development and application of information technology;*
- *a world class design and fashion centre; ...*
- *a leading international supplier of high value-added products and components in the areas where Hong Kong already excels today;*
- *a regional centre for supplying professional and technological talents and services; and*
- *a market place for technology transfer between Mainland and the rest of the world.*

On the institutional side, the government has established several organizations in an effort to promote Hong Kong's manufacturing and services industries, including the Hong Kong Productivity Council, the Hong Kong Trade Development Council, the Industry Department, the Hong Kong Export Credit Insurance Corporation, and the Business and Services Promotion Units [13] operated effectively and efficiently, to provide service on trading space enlarging, vocational trading, technology improving and productivity enhancing.

One thing need sing praises that the government and institutes has built a set of public information network to encourage information flowing. To textiles and garments sectors, there was some relative information resources in Hong Kong as listed in Table 13.2.

There were also many Hong Kong universities commit the textiles and garments development in different areas (See Table 13.3). The Institute of Textiles and Clothing in the Hong Kong Polytechnic University has maintained the exclusive role in the provision of textile and clothing education in the tertiary education sector. In addition to academic education in technician, technologist, and executive levels for the industries, the Institute also assists the industries by undertaking research and consultancy services. The Hong Kong University of Science and Technology (HKUST) respond for 3D Garment Program and HKTAIGA (A communication infrastructure for Hong Kong textile and apparel industry global application). Three universities, the Hong Kong University of Science and Technology (HKUST), Chinese University of Hong Kong (CUHK) and the Hong Kong Polytechnic University (POLYU), cooperated to develop an Internet based system for souring and trading of fabrics. City University of Hong Kong developed multimedia document and workflow management system to help industry improve productivity. The Chinese University of Hong Kong (CUHK) developed an image database management system for textiles and clothing.

Suppliers

Hong Kong just with more than 1,100 hundreds square kilometres areas has poor nature source. The major raw material for textile and garment industry was oil, natural gas or other natural fiber, which was scarce in Hong Kong. In the aspect of suppliers, advantage from the local dyeing, weaving, knitting, and accessories industry supplied strong supporting to the Hong Kong garments cluster. Benefited from its favorable taxed rate, free economy and open market, firms could source material, machinery, and accessories from other countries to make up the shortage in domestic. Many financial institutions and management consultants located in Hong Kong, from local and international, provided professional service on financial and management to the Hong Kong garments cluster.

Table 13.2 Textiles and garments relative information sources in Hong Kong

GIC	Hong Kong Government Information Center http://www.info.gov.hk/
TDC	Hong Kong Trade Development Council. http://www.tdc.org.hk/
ID	Hong Kong Industry Department http://www.info.gov.hk/id/
HKTAIGA	Communication infrastructure for Hong Kong textile & apparel industry global application. Developed by the Industrial Engineering and Engineering Management Department of HKUST. http://hktaiga.ust.hk/
HKCAINS	Hong Kong Accessory Information Network System. Developed by the Industrial Engineering and Engineering Management Department of HKUST and the Clothing Industry Training Authority (CITA)
IGS 2000	Integrated garment system, IPC information processing Consultants ltd.
Prima Vision	Color CAD systems for the garment and apparel industry. Prima design system Ltd. http://www.prima.com.hk/prima/main.htm
Gerber	Product data management. Gerber Garment Technology. http://www.ggt.com/
TP-CSS	Three principle client/server solution garment system module. Three principles computer service Co. Ltd. HK

Table 13.3 Major textile and clothing related research projects in Hong Kong

ASD (for textiles and garments)	Part of Area of Strategy Development, focused on textiles and garments. Developed by Institution of Textiles and Clothing Department of Hong Kong Polytechnic University http://www.asd.polyu.edu.hk
HKCAINS	Hong Kong Accessory Information Network System. Developed by the Industrial Engineering and Engineering Management Department of HKUST and the Clothing Industry Training Authority (CITA)
HKTAIGA	Communication infrastructure for Hong Kong textile & apparel industry global application. Developed by the Industrial Engineering and Engineering Management Department of HKUST. http://hktaiga.ust.hk/
HKfab	An Internet based system for souring and trading of fabrics. Developed by HKUST, CUHK and HK POLYU.
CityMerchant	Multimedia document and workflow management system. Developed by MADLab, Dept. of CS, City University HK http://icg.cityu.edu.hk/madlab/citymerchant/
Montage	Image Database Management System. Hong Kong Chinese University. http://www.cse.cuhk.edu.hk/~viplab/

Enterprises

In the garments cluster, enterprises complementary products and to companies related by skills, technologies, or common inputs, including fur firms, leather firms, toy firms, tie firms, which were had competitive advantage in the international or regional market. Others such as scarf firms, footwear firms, gloves firms, hat firms, and packaging firms also were famous. The existed complementary products and to companies provide potential source to innovation, better access to skilled labor, and accessories suppliers.

Channel and customers

Hong Kong has more than 6 million populations with high purchase power in the Asian-Pacific area. In the nearest decade, with an efficient network of information, mass media, and high technology have together created a global communication system, Hong Kong has become a important city in the world, especially in South-Eastern Pacific Area. The Hong Kong domestic consumers pay a lot of attention of their appearance. They have good test on clothing and are sophisticate, which was an important consumer group. Meanwhile, the Hong Kong garments industry focused on the international market rather than just on the domestic. The US and Europe were the two most important markets to the Hong Kong garment industry.

The trading sector has been developed since the middle of the nineteenth, played a vitally role in the Hong Kong economy developing history even today. Traditional intermediaries are complemented by Hong Kong firms, which match sources of supply with source of demand on a global basis. By the strong help from the government, Hong Kong trade jobber enjoyed a large trading space, as Hong Kong is a member of WTO and being a free port.

The Hong Kong garments industry in the cluster had competitive advantage in the international competition for long time, which based on a well-developed infrastructure, close linked with companies or products related by skills, technologies, or common inputs, got special supply from Hong Kong advanced financial service and management consultants, and supported by Hong Kong government and institutions.

However, it would not be optimistic after we studied the SWOT (Strength, Weakness, Opportunity, and Threat) showed in chapter 12. The employment of the

Hong Kong textiles and clothing industries was peaked in the 1980, which more than 390,000 people worked in 14,000 enterprises. However, the numbers employed in Hong Kong textile and clothing manufacturing have declined rapidly over the past decade, the same as Western Europe, United States and Japan. In 1997, there were just about 5,500 establishments in the Hong Kong textiles and garment sectors, providing jobs for almost 100,000 people [2]. The core business style of the Hong Kong garment firms were OEM, which was more difficult in current competition that the costs, especially the labor costs in really high in Hong Kong now.

Although the current Hong Kong textiles and clothing industries had strengths in flexibility in production, knowledge of international and national trading rule, greater sensitivity to the diverse demands of customers, expert in coordination of multi-country production systems, adept at learning from market leaders, and entrepreneurial dynamism, the industries were weak at designing, R&D culture and technological capabilities, producing clothing made of synthetic fibers and latest fabrics and etc. Meanwhile, the industries faced threats from other low labor costs manufacturers, the market concentration in US and EU, and changing quota system. Hong Kong textiles and clothing industries should grasp the opportunities, which from new clothing consumption trends, emerging Asian clothing market, and etc., to solid and explore it competitiveness in the next century. There is an urgent need to study how the industry can sustain and enhance its competitiveness.

13.3 TEXTILE AND CLOTHING INDUSTRY DEVELOPING STAGES MODEL

Peter Kilduff, developed a model to describe the rule of the textile industry developing stages after he surveyed many countries' textile industry developing history [16]. The model divided the textile industry development into eight stages, which was based on six-factor judgments, including production, international trade, product capacity, industry structure, industry strategy and national economy/government policy, listed in Table 13. 4.

The first stage is maintaining period, which was the beginning period of one national textile and clothing industry development. Majority of the work in textile was still done by hand in cottage industry used natural fiber. In the same time that little product imported and exported. The economy of the country was always agricultural orient and the domestic market was in small size with low purchase power.

The second stage is takeoff period, also was called as primitive industrial period. In the period, the production increased quickly, the clothing export and fabric import grew, the industry strategy was to enlarge the clothing industry to process big order from other countries. The economy of the country still was in agriculture-orient and market still small.

The third stage is rapid development period, when the clothing export continues growing; meanwhile, the textiles self-supply capacity also growing. The textile industry vertical integrated, especially in down-stream integrated and more products were produced. The business style mainly was process orientation, and competitive advantage in large order processing. In the period, beginning industrialization and urban economy appeared in the nation, however, the domestic textile products market still small.

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Table 13.4 Textile and clothing industry developing stages model

Textile and Clothing Industry Developing Stages Model							
Stages	Products	International trading	Industry Strategy	Production Capacity	Industry Structure	National Economy/ Government policy	Domestic Market
1st (Maintaining period)	Simple products used natural fiber	Little import or export	Maintaining was their goal	Small	Cottage industry	Agricultural orient	Small size, Low purchase power
2nd (Takeoff period)	Simple products used natural fiber	Clthing/textile import/export increased	Enlarge clothing industry	Process in bulk	Horizontal merge	Agricultural economy	Small size, Low purchase power
3rd (Rapid development period)	More man-made fiber used	Clthing and textiles export increased	Down stream integration	Process in bulk	Vertical merge	primitive industrial economy and urbanization	Small size
4th (Merging period)	More kinds products and developed man-made fiber production	Export shrink but import increased	Improve products value-added and	Process middle-class products and	Horizontal and vertical merge	Fast industrialized economy and urban pollution grew quickly	Enlarge quickly
5th (Transitional (Transformational) period)	High-tec/ fashion, and industral textiles product	Clothin import increased	Improve products quality and relocated production and investment	High value-added products	Horizontal or vertical integrated	Burgeoning industrialized economy	Market size grew and owned a group of middle-calss consumer
6th (Flexible and low integration period)	Production reduced	Clothing/textiles import/import increased	Fashion-oriented, designed products and level of service offered	Original design and brands products and marketing	Horizontal or vertical integrated reduced	High industrialized economy	Large domestic market
7th (Creative integration period)	Brand, high-fashion, high-quality and high-tec products production	High value-added products export or import increased	Globalization	Most advanced products manufacturing	Deeply horizontal and vertical integrated	Mature industrialized economy	Strong demand
8th (Creative innovation period)	Designed products	Fashion products	Creative innovation	Most advanced manufacturing technology	Industry division more specialized	Developed industrial economy	Strong demand

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The fourth stage is integration period, when the industry growing trends slow, clothing export got the peak and textiles import increased fast. The industry horizontal and vertical integrated and worked on improving product quality. The business focused on processing middle-class products and owned advantage in basic mass textiles and clothing business. Meanwhile, the national economy fast industrialized; the urban population grew quickly. The domestic market enlarged quickly.

The fifth stage is transitional (transformational) period, when the industry became mature. The production of clothing, fabric and yarn was reducing; products developed to high quality, high tech, and fashion; the mass production shift to other low cost areas; clothing export declined; man-made fiber played more and more important role in the industry. High quality, fashion fabric, and clothing import grew. The industry strategies were product development, innovative design, brand building, and marketing. The industry structure trended optimized after horizontal and vertical integration. The economy was burgeoning industrialized. The market grew and owned a group of middle-class consumers. The advantage of the industry depended on man-made fiber and its products.

The Sixth stage is flexible and low integration period, when the production of clothing, yarn, and fabric was downturn; the and the index of the economy may be negative; the export or import of textiles and clothing were high; the strategy of the industry were focused on fashion-oriented, design, and level of service offered. The industry produced brand product or original designed products. The integration of the industry became low not matter in horizontal or vertical. The economy was high industrialized; and the scale of the domestic market was large and free competition. The advantage of the industry was in high fashion or high tech products.

The seventh stage is creative integration period. In the period, the economy was maturity with low growing rate. The products were high fashion, quality, high tech or brand products, mass production sift to other countries mostly, except some firms owned special technical and commercial skills. The industry strategies were production innovation, advanced technology, design, marketing skill, quick respond and high quality service proving. Middle enterprises were the industry main component, produced core item products with global operating. High quality, fashion products obtain in the domestic market. Distribution channels integrated with other sectors, for example, retailing combined with information technology, consultation, and high tech development to provide high quality service to consumers.

The eighth stage is that innovation and marketing operating separate from production and distribution. Brand exploring is the core business to the merchandising company. The core business of the industry would be innovation and marketing.

Based on Kilduff's model, the Hong Kong textile and clothing industry was at the fifth stage [16], developed from advanced in high quality product processing to high fashion and high tech products producing. Now, the Hong Kong clothing industry works on establishing its up market image through design, workmanship and quality. To sustain or enhance the competitiveness of the Hong Kong clothing industry, the Hong Kong existing garments cluster should be upgraded to a fashion cluster to get advantage in the new millennium.

## 13.2 Cluster root (birth), growth and decline
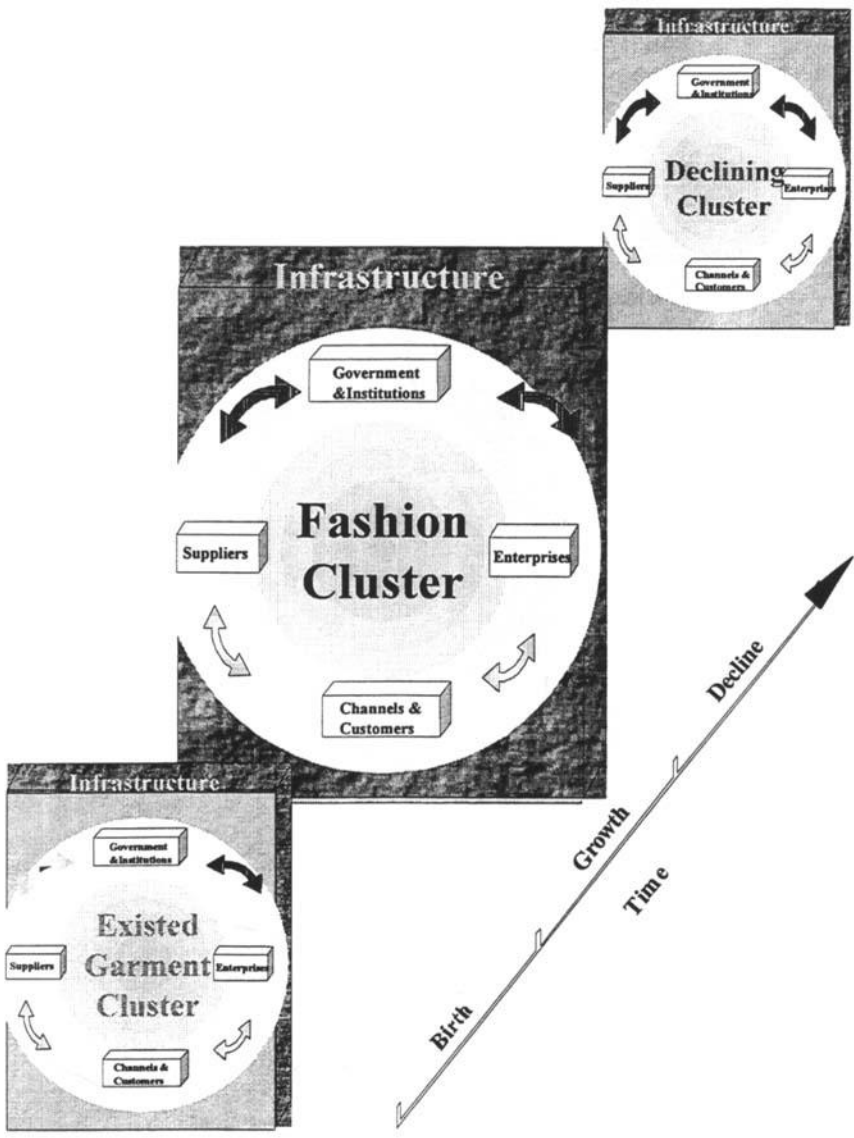
13.4 HONG KONG FASHION CLUSTER DEVELOPMENT

The fashion cluster should be more plenteous than the existing garments cluster. A fashion item is seen as a culture product, which are influenced by accepted aesthetic criteria and evaluated by the aesthetic taste habits of consumer. A fashion cluster should be supported by the Hong Kong unique culture. Wide culture convection is necessary to promote unique culture take shape and spread the culture accepted by more people. A fashion cluster also required hi-tech supporting, which provide new material, new tool communicate with consumer (Internet), new machinery, new design technology, and so on. Other kind service, such as technical design service, also necessary that design new style yarn, fiber, fabric, and texture. Test/inspection service provides insurance for the product quality, and more importantly, accurately tests the physical performance of the fashion item. Fashion designers will play a vital in the fashion cluster. The fashion designers dictated fashion by introducing new styles, often extreme, exclusive and original, for fashion followers, manufacturers and the general public. A term of fashion designer is one of a key supporting of the fashion cluster. Another type of designers, function designer, are also necessary in the fashion cluster. Modern consumers require more comfortable garment then ever, function designer major designer functional fiber, fabric and clothing that meet the consumer demand. Academic research, including fundamental and interdisciplinary study should be intensified to promote innovation creating.

A fashion cluster conglomerated by well-developed infrastructure, free and fair competitive environment, supplier, competing and cooperating enterprise, fluent distribution channel, and consumer. Innovation would be motivated in the fashion cluster. The fashion cluster will sustain or enhance the competitiveness for the Hong Kong industries, not just only the clothing industry, but also for the other industry in the fashion cluster. It will be the energy source of the Hong Kong economy in the new millennium.

13.5 STRATEGY

To realize the vision outlined above, a clear strategy needs to be developed to establish the essential infrastructure for Hong Kong becoming a world class design and fashion center. In studying the new economics of competition, Porter (1998) argued that the enduring competitive advantages in global economy lie increasingly in local things, which distant rivals cannot match, including knowledge, relationships and motivation [10]. Modern economic map of the world is considered dominated by clusters, which is defined as geographic concentrations of interconnected companies and institutions that achieve unusual competitive success in a particular field. For countries or regions moving from a middle-income to an advanced economy, it is essential to develop well-functioning clusters. To promote cluster formation, government needs to work with private sector to reinforce and build on existing and emerging clusters. Successful new clusters often grow out of established ones.
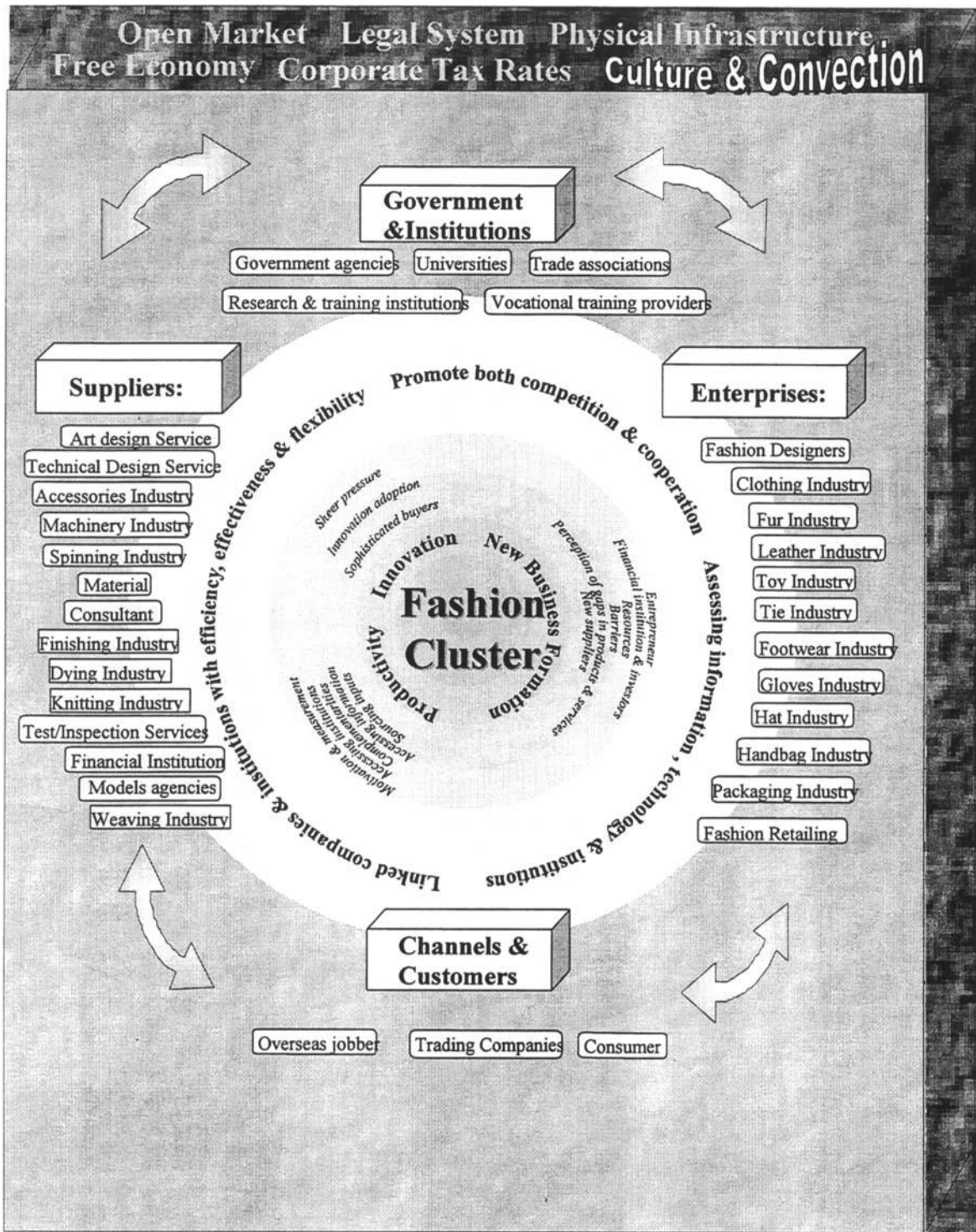
13.3 Hong Kong fashion cluster

Further, Porter pointed out that there is no such thing as low-tech industry, only low-tech companies that fail to use world-class technology and practices to enhance productivity and innovation [10]. Textile and clothing industry is very important to Hong Kong economy, has been traditionally considered as sunset industry labeled with low-tech. However, a number of successful clusters in fashion industries have created sustainable competitive advantages for their hosting countries such as Italian

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textile fashion cluster (clothing, scarves and accessories), Italian leather fashion cluster (leather goods, footwear, apparel and accessories) and French fashion industry.

Hong Kong has developed the critical mass of a large number of small-medium firms in textile and clothing industry and other associated fashion industries over the last few decades. These firms have achieved a strong position in the knowledge, relationships and entrepreneur dynamism in textile and clothing manufacturing, export, design and marketing apparel products, together with associated fashion industries such as toys, watches and clocks. Hong Kong is emerging into a fashion center in Asia [17]. Therefore, there is sound potential to develop these existing industries as a world first class cluster in design and fashion of textile, apparel and other fashion goods.

As Porter and other researchers suggested [18, 19], productivity, not exports or natural resources, determines the competitiveness and prosperity of any state or nation. Birth and growth of clusters are highly dependent on their productivity growth that is largely determined by the local competition and innovation. For clusters of fashion industries consisting of many small and midsize companies, there is a strong need for collective bodies to assume scale-sensitive functions such as technology innovation, university-based testing facilities, training and research programs, collecting cluster-related information, offering forums on common managerial problems and investigating solutions to environmental issues.

This is especially true for Hong Kong fashion industries as the industries consist of dominated small and medium enterprises with weak R&D culture and low technological capabilities. Particularly, the fashion manufacturing industries are facing great threats in their traditional markets and the best opportunity is to become a world class fashion leader targeting the emerging Asian markets. Therefore, *Design and Fashion Innovation* (DFI) is a key strategy for the competitiveness and prosperity of Hong Kong clothing industry.

13.5.1 Development of R&D infrastructure for the DFI

In view of the strengths and weakness of the industry and its threats and opportunities that the industry is facing, there are four major areas of research and development are essential for the DFI, as show in Figure 13.4.

The four areas include design innovation, technology innovation, management innovation and information innovation. Design innovation is the key area for a design and fashion center, which consists of two major aspects: fashion design and functional design, as shown in Figure 13.5. Traditionally, fashion design focus on the visual effects in consideration of fabric pattern, color and the style of clothing. Another important dimension of design is the functional performance of clothing in consideration of comfort, safety, ergonomics, protection and survival. In the areas of functional design, substantial scientific research needs to be carried out.

Design innovation needs strong support from technology innovation, which covers innovations in textile processing technology, clothing manufacturing, and evaluation technology, as shown in Figure 13.6. Technology innovation also includes product innovations from fiber, yarn, fabric to garment or non-apparel end-of-use products, to which material-fiber technology and engineering design technology need to be integrated to develop advanced materials for design innovation.

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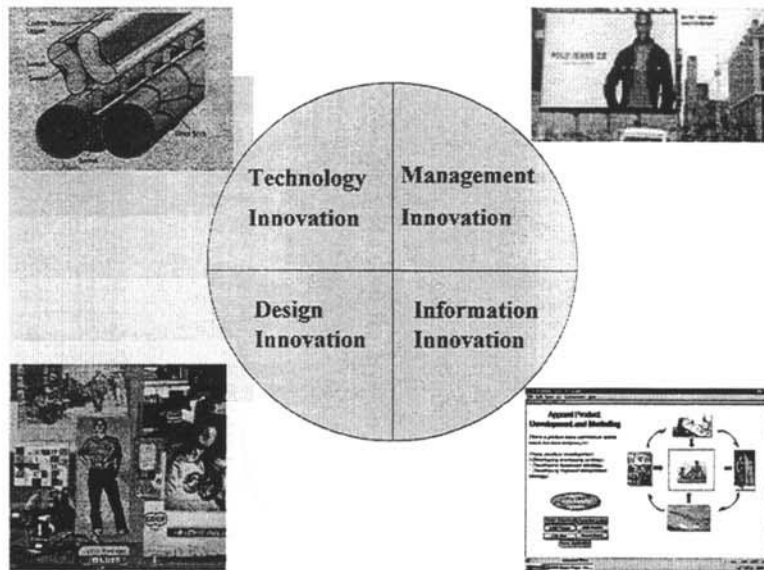
13.4 Research and development for Hong Kong fashion industry

(a) Design Innovation

- Fashion design - Aesthetic appeal
  - Fabric - pattern and color
  - Style
  - Total aesthetic effect
- Functional design - comfort, safety ergonomic, protection and survival
  - Fabric
  - Clothing assembly
  - Style

13.5 Design innovations

(b) Technology Innovation

- Textile processing technology
- Clothing manufacturing
- Product development
  - fiber innovation
  - yarn innovation
  - fabric innovation
  - garment innovation
- Evaluation technology

13.6 Technology innovations

(c) Management Innovation

- Regional strategy
- Enterprise strategic management
- Marketing
  - Consumer markets
  - Industrial markets
- Product strategy
- Quality management
- Human Resources

13.7 Management innovation

(d) Information Innovation

- CAD - Design
- CAM - Manufacturing
- MIS - Management
- DSIS - Decision Support
- PIS - Product
- GIS - Geography

13.8 Information innovation

Management innovation, shown in Figure 13.7, is another extremely important aspect for Hong Kong fashion industry, especially in areas of marketing and branding. Sound research needs to be carry out for development of regional strategy, enterprise strategic management, product strategy, marketing and branding strategy with full understand the latest trends in consumer markets and industrial markets. Strategies on quality and human resources also need to be developed to gain sustainable competitive advantages.

Finally to increase the productivity of the fashion clusters, it is extremely important to develop and apply information technology in the fashion industries, including intelligent computer aided design, computer aided manufacturing, management information system, decision supporting information system, product based information system and geographic information system, as shown in Figure 5. These information technologies provide innovative and efficient support for the innovations in design, technology and management. For instance, product information system is able to provide the fundamental information and knowledge in industrial markets, consumer markets, technology and fashion on specific product lines for individual firms to make intelligent decisions in developing product strategies, marketing strategies and business strategies.

More specifically, the development of R&D infrastructure for design and fashion innovation should consider the following major functions:

1. Provide technology, information and research support for fashion design, product development and fabric innovation.

    - Intelligent computer aided design (ICAD) systems need to be developed for fashion design, fabric pattern design, clothing comfort and functional design, clothing wear appearance retention design and consumer purchase and consumption simulation. For instance, the recent development on mathematical simulation of the heat and moisture transfer of a clothed human body can be further developed as a tool to design clothing for the survival and thermal comfort of human beings under various combinations of physical activities and environmental conditions (see Figure 5). ICAD is able to help individual firms to design products from selection of textile fibres to garment style with good estimation of the wear performance of clothing on visual appeal, comfort, appearance retention and even the degree of satisfaction of target consumers before the product is made.

    - Meanwhile, knowledge bases need to be developed on the features and history of traditional Chinese fashion, global national fashion, contemporary fashion designers and trends.

    - On the basis of the knowledge bases, intelligent fashion design system can be developed.

2. Develop and apply information technology for textile and clothing manufacturers to manage inbound logistics, production, outbound logistics, marketing, trading and retailing of textile and apparel products, especially develop Chinese language based software for the operations in the Mainland of Hong Kong firms. Software developments include computer aided manufacturing (CAM) for textile and clothing manufacturing, and management information system (MIS) for quality, operation control, financial and marketing management, and electronic commerce (EDI).

3. Carry out mid-stream research and development in the areas of textile processing technology, clothing manufacturing and apparel product

development to assist local textile and clothing manufacturers to move rapidly into higher value added and higher quality markets.

4. Conduct extensive marketing and industry research on the major markets from consumer trends, global industry development, new technology developments, trading and marketing trends to provide the critical information for local firms to make intelligent business decisions. Management decision supporting systems (MDSS) need to be developed for the different categories of products and markets, industrial sectors, cultural and national geographic distributions and international trading regulations and patterns.

5. Provide the essential infra-structural support such as consumer research, testing facility and product evaluation for local firms, especially in the areas of clothing comfort and functional performance using advanced environmental simulation technology to carry out psychological and physiological test for new product development.

6. Promote co-operation with the Mainland universities and research institutions to assist upgrading the technology level of production facilities of Hong Kong firms in the Pearl River Delta area, specifically in the areas of Chinese language based CAD, CAM and MIS, and textile technology innovations.

7. Provide a forum and place for technology transfer and technological entrepreneur dynamism.

   • Provide training on how to start new enterprises in consideration of product features, competitive analysis, market segmentation, positioning, financial planning, operational planning and human resources planning, business plan preparation and how to seek venture capitals.

   • Provide service to technological entrepreneurs in fashion industry as a technology transfer centre in preparing business plan and introducing venture capital sources.

   • Develop and attract a large number of potential technological entrepreneurs and projects that are ready for commercialisation to establish a comprehensive database on technology innovations in textile and clothing fashion industries.

   • Liaise with various venture capital sources from government, banks and private sectors and provide a marketplace for evaluation and comparison of various potential technological projects to venture into business enterprises.

13.5.2 Implementation of the DFI strategy

To adopt the DFI strategy and develop appropriate R&D structure, there are a number of issues to be addressed by both government and private sectors:

1. As small and medium size firms dominate the industry, strong support from government is needed to carry out the R&D activities in the four areas outlined. Public funded institutions such as universities or research institutes should take the responsibility to develop the necessary R&D infrastructure for the DFI.

2. Mechanisms need to be established to ensure that the R&D activities are focused to support the local industry and advanced technology and products are transferred to local firms efficiently and effectively.

3. Technological entrepreneurial dynamism needs to be developed to capitalise the research outcomes from the four areas: design innovation, technology innovation, management innovation and information innovation.
4. Industrial culture and conventions need to be changed; especially innovative business strategies in marketing, technology and product innovations should be encouraged.
5. Mechanisms need to be established to develop, attract and retain high calibre managers, scientists and engineers in textile fashion field.

If these issues can be addressed successfully, the DFI strategy can be implemented, which is to able to create a number of advantages for Hong Kong clothing industry as follows.

1. Hong Kong can develop into a marketing and product innovation centre, which has enormous marketing and technology power to sustain its competitive position in the region and in the world.
2. Hong Kong clothing manufacturers are able to upgrade technology level and R&D capacity to increase their productivity.
3. HK firms can avoid relying on price oriented strategies and competing in price sensitive market segments.
4. As a marketing and product innovation centre, Hong Kong can avoid direct competition with Mainland firms. Instead, Hong Kong and the Mainland become mutual beneficial partners, where Hong Kong will become a leading centre in design, technology and product innovation, and marketing of fashion products with targeting to Asian and world consumer markets. Meanwhile, the Mainland can continue to act as a manufacturing base and utilise Hong Kong as a gateway to access overseas markets, even after the ATC quotas phase out in 2005. Without enough marketing and technological innovation power, Hong Kong firms will face stiff competitions from Mainland firms, especially after year 2005.
5. Hong Kong firms can steer clear of the intense competition and threats from East European countries, Mexico, South East Asian countries and other developing countries in the traditional export markets such as EEC and US. With strong marketing and technology innovation power, the firms can diversify their products and business to higher value added markets, particularly the emerging Asian middle class markets.

It could be expected that, if the DFI strategy were adopted, the competitive position of Hong Kong clothing industry would be changed fundamentally. The sunset industry image would be transformed into a world class design and fashion cluster that has sustainable competitive advantages through continuous learning and innovation in marketing, design and technology.

SUMMARY

The Hong Kong clothing industry is evidently facing a number of threats and challenges: the intensive competition in its traditional export markets from developing countries, the phase out of ATC quotas in 2005, trade regionalisms in Europe and North America, retail concentration in the West and casualisation in consumer trends. To combat these threats, the industry needs to develop long term strategies to position

itself as a regional/world leader in design and fashion innovation in the highly competitive world clothing markets. An effective approach is to adopt *Design and Fashion Innovation* as a competitive strategy.

The Hong Kong clothing industry is able to obtain sustainable competitiveness by positioning itself as a marketing and product innovation centre, which can be achieved through world class innovations in design, technology, management and information with joint effort from the public and private sectors. As a marketing and product innovation centre, Hong Kong can avoid direct competition with Mainland firms and steer clear of the intense competition and threats from East European countries, Mexico, South East Asian countries and other developing countries in its traditional export markets such as the EEC and the US. With strong marketing and technology innovation power, the firms can diversify their products and business to higher value added markets, particularly the emerging Asian middle class markets.

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