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Features of Born-Global Processing Plants under the Global Economy

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ABSTRACT

A Born-Global Processing Plant (BGPP) is the formation of a new manufacturing plant specifically for the world-wide outsourcing industry and is a unique product of the global economy. The concept of a Born-Global entity has been mainly associated with high-tech industries and high-tech products. In this paper we extend the term BGPP to cover the concept of Born-Global to mature/low-tech and labor intensive processing plants that produce many of the traditional manufactured products. Such processing plants form the backbone of Southern China's economic development. The conventional view regards a BGPP as playing a minor role in a traditional multinational enterprise (MNE), and for this reason the role of BGPP's in traditional MNE's has not received any significant attention from researchers. In this paper we examine the BGPP and its related global supply chain from the viewpoint of the global economy, using case examples from mature/low-tech and labor intensive processing plants in Pearl River Delta (PRD) of Southern China.

INTRODUCTION TO THE PRD AND ITS INDUSTRIES

Economic globalization has been gradually bringing China and its Pearl River Delta (PRD) region into the spotlight of international trade, and this has happened quickly since China began its so called open door policy in the 1980's. With a total GDP of US\$1409.85 billion, China was seventh in the world GDP rankings for 2003. According to IMF (International Monetary Fund) data, China's per capita GDP has jumped from US\$300 in 1980 to US\$ 1,087 in 2003. However, because of its 1.3-billion population, China is still amongst the mid to low-ranking countries when considered on a per capita basis (The World Bank Group 2004).

China now takes a very active part in world trading and manufacturing, and this is particularly true of its PRD region. The total merchandise exports from the PRD were valued US\$377.36 billion, accounting for about 30% of China's exports and amounting to a 5% share of the world's merchandise exports in 2003 ((Statistical Department of China 2004), (Hong Kong Trade Development Council 2004), (Census and Statistics of Hong Kong 2004), (Federation of Hong Kong Industries 2003)). PRD region has consistently kept double-digit growth GDP figures since 1980, jumping from US\$8 billion in 1980 to US\$113.75 billion in 2002. Its per capita GDP in 2004 was US\$5,200, which is about five times China's national average. The PRD comprises eight municipalities on the coastal area of China's Guangdong Province and borders Hong Kong. After some 150 years of colonial British rule, which ended on June 30, 1997, Hong Kong became a special administration region of China, but is still treated as a separate economy in the world-wide economic output figures; Hong Kong's GDP (US\$158.596 billion) is ranked number 30 in the world with GDP per capita US\$23,300 in 2003.

In the early 1980's the PRD was an undeveloped region possessing only low-cost labor and land, much the same as other undeveloped/developing regions around the world. The PRD has now become is one of the world's leading manufacturing bases, and the term "economic miracle" is fitting in describing the developments in the PRD over lasts two decades.

Hong Kong can be regarded as the initiator, trend-setter, or catalyst in establishing the PRD as one of the world's leading manufacturing centres. In 1980's, when China began to open its door slightly to the outside world, Hong Kong's entrepreneurs were immediately attracted by the low-cost labor pool and ample land that were available and within easy reach. Those entrepreneurs quickly moved their manufacturing facilities from Hong Kong to the PRD and by the year 2003 had gradually established over 60,000 new processing and manufacturing plants in

the PRD. These plants are widely spread over different industry sectors: electronic, electrical, toys, textile and garments, printing, and publishing. China's strict regulations require all products from these plants are for export only; domestic (within mainland China) sales are restricted or prohibited. These well-known Government restrictions have helped to turn the plants in the PRD into BGPP's.

The division of labor in Hong Kong and the PRD is clearly defined: the PRD as a manufacturing base, provides low-cost labor, inexpensive land and necessary infrastructure; Hong Kong provides management, market information, finance, logistics, and other professional services, such as insurance and legal services to the PRD's manufacturing industry. Hong Kong's first class management skills and unique entrepreneurship have turn the PRD's endless low-cost labor pool into a unique and indispensable asset for the BGPP's in the PRD. The phenomenal combination of Hong Kong and the PRD results in the formation of the PRD as a unique all-in-one platform for processing and manufacturing in the world under globalization.

A major backbone of the PRD's industry is its numerous BGPP's active in processing trade and comprise over 70 percent of import and export trade of the region.

BORN-GLOBAL CONCEPTS AND LITERATURE REVIEW

It seems that the term "born-global" first appeared in Rennie's 1993 article entitled "Global competitiveness: born global". This article reported an in-depth study of over fifty born-global firms that were active in high-value-added manufacturing industries in Europe. Rennie (Rennie 1993) concluded that innovations in technology and unique product design were the key competitive advantages that enables such companies with no domestic market to succeed in the global market.

Rennie's (1993) publication on this new phenomenon of born-global firms attracted many researchers, especially since such firms become active in the international markets immediately after their inception, a phenomenon that cannot be explained satisfactorily by the Internationalization Process Theory (IPT), which is often applied to traditional firms. IPT ((Chandler and Alfred 1986), (Cyert and March 1963), and (Johanson and Vahlne 1977)) is very well accepted by researchers and often used to predict the evolution of the process of internationalization of a firm. The developments predicted by IPT are gradual and incremental, starting from a strong domestic presence and followed by a step by step expansion into exporting to one foreign market and then to others, i.e. an internationalization process that usually takes a long time to evolve and mature.

To better analyze the rapidly spreading born-global phenomenon, researchers are re-examining the premises on which IPT stands and are proposing new frameworks to better explain the born-global features of firms ((Reid 1983), (Andersen 1993), (Oviatt and McDougall 1997), (Knight and Cavusgil 1996) and (Fillis 2001)). These firms have been given various other names apart from Rennie's (1993) and Knight's (1996) 'Born Globals', with Oviatt and McDougall (1994) referring to these companies as 'International New Ventures', or as 'Global Start-ups', and Jolly et al. (1992) as "High Technology Start-ups." The term 'Born Globals' seem to have finally prevailed in terms of popularity amongst researchers, and is also the label preferred in this paper, because the term "born-global" clearly differentiates these companies from the conventional international firms that gradually evolve through many stages.

The most frequently cited theoretical framework for analyzing born-global firms seems to be that of Oviatt and McDougall, which was published in their paper "Toward a theory of international new ventures" in 1994. The *international new venture* (INV) theory emphasizes that the possession of unique knowledge resources is the key to the sustainable existence of born-global firms. INV theory is generally acknowledged as useful in explaining born-global firms in the knowledge-based or high-tech based industries. Indeed, the term *born-global* has almost been totally reserved for the knowledge-based industries, though born-global small or medium firms in non high-tech industries are occasionally reported in literature, see Madsen et al. (2000). The vast majority of published papers in born global research have focused on the knowledge-based industries, and this is understandable, since the knowledge-based high-tech firms are the most likely candidates to be born-global ((Knight 2000), (Autio et al. 2000), (Moen 2002), (Zahra and George 2002), (Rialp-Criado et al. 2002), (Knight and Tamer Cavusgil 2004), and (Autio 2005)).

Knowledge-based industries (KBI) is a term that has been used for many years; however, there is no generally accepted definition of the term (Gorman 2000). Virtually all studies in the area of born-global have been in the knowledge-based industries, which have almost become synonymous with the high-tech based industries. Firms in the KBI usually have a highly skilled/educated labor forces, are engaged in high level research and development, and their products usually have high gross profit margins. There are two common elements in the different definitions of knowledge-based firms put forwards by various researchers. The first is that the firm has a high ratio of intangible assets to tangible assets, and therefore depends heavily on the application of scientific knowledge and/or technological skills in its production processes. The second is that the firm relies on technology and innovations to gain a competitive advantage in production.

In this paper we introduce a new member to the born-global family – the born global processing plant (BGPP). From our point of view, BGPP has four salient features:

- low-cost and labor-intensive manufacturing
- mature technology-intensive manufacturing processes
- low-risk and low-margin markets
- management-intensive operations.

None of these individual features are unique to BGPP, but when they all appear together, they characterize this new entity which we call “BGPP”

BORN-GLOBAL PLANTS ENGAGED IN MANUFACTURING

Born-Global Processing Plants (**BGPP**) engaged in manufacturing are distinguished by the following features:

- The plant was created to provide some specific manufacturing processing services to whoever needs to outsource such services world-wide.
- The plant can process parts, intermediate products, entire products, or assemblies to fulfill a specific order received from the purchaser.
- The plant possesses advantages in terms of location, and/or low-cost labor, and/or low cost raw materials.

After a general discussion on the nature and role of BGPP companies, this paper will focus on revealing some features of BGPP’s using case examples from the Pearl River Delta area of Southern China.

It is a combination of the above three conditions that creates a BGPP in the global context. The three conditions can be created by: an imbalance of economic development amongst nations or regions, the possibility of specialization using elements from different parts of the world, and a culture leading to the outsourcing of routine operations. These three conditions will be explained below in detail.

Imbalance of economic development among regions is one of the main reasons for the appearance of the BGPP’s. Intensive competition in the global market also forces firms to outsource peripheral production activities and low profit margin production. This outsourcing of routine operations creates an immediate demand for BGPP’s. As the trade barriers among nations were gradually removed over the past several decades, the imbalance in economic development among nations was clearly revealed and so was the means by which such imbalances could be addressed. The imbalance is primarily reflected by differences of GDP per capita and also by the differences in industrial/technological levels among nations. These imbalances act as driving forces and lead to economic globalization, making the world economy increasingly dependent on specialist regions. This in turn produces a division of labor based on the global economy and special assets.

The definition of the special assets can be very diverse and can also include labor. The large low-cost labor pool in the PRD attracts labor-intensive manufacturing; see (Barney 1991), (Prahalad and Hamel 1990), and (Stalk et al. 1992). Internationally competitive advantages depend, and will become increasingly dependent on the possession of unique assets. A specialist zone such as the PRD is defined by a combination of tangible assets such as labor, and also by intangible assets such as technical knowledge and management skills.

Globalization makes it possible to form a specialist region or zone using elements from different parts of

the world. The formation of a specialist region, or even nation, is a rather new phenomenon in the process of globalization. A specialist region must, of course, meet the world standard. This requires the region's special assets, especially intangible assets, such as technology and management, to be up-to-date and up to the best international standards. Such intangible assets are usually lacking in developing countries, and therefore must be imported from the mature industrialized nations. The trend towards globalization, fortunately, enables specialist zones to freely acquire from world-wide sources the necessary intangible assets that can be combined with local tangible assets to form a specialist region. The PRD, for example, specializes as an international labor-intensive light manufacturing processing zone, and is typical of a specialist zone that has combined world-wide special assets with its own labor resources. When the PRD zone was first opened, it only had a large low-cost labor pool. A low-cost labor pool, however, is a common feature of most developing countries. But the PRD was able to attract top class management from Hong Kong, Taiwan, Japan, Korea, and the USA to make effective use of its low-cost labor pool and ample land. Convenient transportation of final or intermediate products around the globe enables supply chains to form and to further consolidate the reputation of a specialist zone such as the PRD.

SPECIFIC FEATURES OF BORN-GLOBAL PROCESSING PLANTS

Low-cost labor intensive manufacturing

A distinctive location feature of BGPP's is the availability of a sustainable low-cost labor pool combined with a sustainable demand for labor-intensive manufactured items. An estimated 10 million workers are employed in the PRD by around 60,000 Hong Kong related BGPP's. Some BGPP's have more than 5000 workers, including well-established manufacturers such as SMT Holdings in EMS (electronics manufacturing services), Kingboard Holdings in PCB (printed circuit board), Playmates in toys, and Leo in printing and paper products. The average monthly wage of workers in the PRD is relatively low, and is about 5% of their USA counterparts.

Labor-intensive manufacturing processes cover a considerable portion of the spectrum of the manufacturing industry: IT communication equipment and mobile phones in the high-tech sector; household electric appliances, printing, and electronic components in the mid-tech sector; and toys, garments, shoes in the low-tech sector ((M. Khurram and S. Bhutta 2003), (Li 2003)). Even the assembly of mobile phones involves low cost labour; about 70% of new mobile phones in the world were assembled or manufactured in China in 2004. It is also true that a good part of the PRD labor force is not local, as many workers from the inner provinces of China move to and seek work in the PRD. It is therefore very safe to assume that the PRD will have, at least for the foreseeable future, an ample supply of low cost labour that can meet the requirements of both existing and new manufacturing plants.

In order to save costs in every element of production in labor-intensive industries, manufacturers are constantly seeking more cost-effective production methods. This results in better production methods and procedures that can improve labour productivity using the same low skill and low labour. Efficient internet and communication tools have enabled manufacturers to move many elements and working procedures of production around the world in order to achieve cost savings. Such factors and procedures can include: reduced transportation cost, easily transferable manufacturing lines, increased use of module or cell production and changing international trade barriers. However, it seems safe to conclude that cost of labor will remain the main consideration in labor-intensive manufacturing.

A low-cost labor pool is unique in that it cannot be moved around the world at will. Except for a small number of professionals whose salaries are virtually globally uniform, labor rates are determined by local and national factors. Labor-cost varies across different nations or regions, and this situation shows no sign of changing in the foreseeable future.

As a developing country with one fourth of the world's population, China offers a sustainable low-cost labor pool. China's unskilled industrial work force is more than enough to meet the world's demand for low-cost labor. Potential increases in labor costs in China are further limited by the competition from low-cost labor from neighboring countries, such as India and Vietnam. According to figures from China's State Council, the current average monthly salary of factory workers in the PRD is between US\$60 and US\$110. The average labor cost in the PRD has remained virtually constant over the last twenty years when figures are adjusted for inflation.

Mature technology-intensive manufacturing processes

The general definition of a mature technology manufacturing process is as follows.

- The manufacturing technology and skills used by a BGPP in the processing industry are mature and well established.
- The manufacturing machinery or manufacturing line can be quickly purchased in a ready-to-use state.

Mature technology is a common feature of many BGPP's in the PRD. Since BGPP's process parts and/or assembles products for others at the low-end of an industry sector, profits can come quickly, but the profit margins are often tight. To save cost in such low-end, labor intensive processing, mature technology is the logical and sometimes the only choice for BGPP's in the PRD. Mature technology has the advantages of reliability, low-risk and familiarity, but, of course, yesterday's high technology can become today's mature one. This requires BGPP's to constantly monitor the evolution of relative mature technology and choose accordingly. In addition, some BGPP's do not have their own brand products, and as such, do not need to invest in product R&D. While this may be an advantage for some BGPP's, it is also the cause of tense competition.

Low-risk and low-margin market

The level of risk for BGPP's engaged in manufacturing can be described as low. While this may seem incredible in today's competitive global market, there is a substantial amount of truth in this. This is because the output of a BGPP is based on predictable and often repeatable customer orders, and the sale prices and destinations of the products are also known before production begins. This contract-manufacturing pattern can, to a large extent, ensure profitability by allowing a BGPP to systematically plan its production output so as to maximize profit-margins.

A BGPP is also able to solicit customers world-wide and is not confined to a local market. To stabilize profit and production, a BGPP will always try to establish a good level of business with the leading global market retailers, and as long as a BGPP can continue to process orders in accordance with the requirements of customers, its profits and sales should be relatively stable.

BGPP's do not usually rely on a particular product in an industry sector, and thus can reduce the risk of product phase out. By taking advantage of flexible manufacturing systems and cell production, BGPP's are usually able to process different products across several manufacturing sectors. For example, there are over 4800 BGPP's in the PRD engaged in the production of toys, involving a wide range of toys for overseas manufacturers, license holders and chain stores. A BGPP specializing in plastic toys, such as dolls, action figures, construction sets, toy guns, make believe toys, gimmicks, etc., can always swiftly respond to the imbalances in the market demand. An exception would be a BGPP engaged in the production of a major item such as Babe dolls; other toys, however, are renewed and change constantly.

The major input of a BGPP is low-cost labor and mature manufacturing technology, and from the above discussion, it is not unreasonable to conclude that their business is in fact low risk. Low profit margin is in fact a common feature of contract-manufacturing, which effectively trades profit for a lower market risk.

Management intensive operations

BGPP's in the PRD appear to depend heavily on management skills. The skills can be divided into two categories: local management and overseas management. The main purpose of local management is to facilitate the physical input to a BGPP and to maintain smooth production. This is done by recruiting and training low-cost labor, by ensuring a reliable supply of power and water, by ensuring that the transportation of goods is efficient, and through quality management of production operations. The role of overseas management is threefold. The first is to guarantee customer satisfaction by maintaining international standards; the second is to gain and retain customer confidence; and the third is to consolidate a BGPP's position in the supply chain, i.e. to make it a valued supplier on the customers' supply chain ((Madariaga 2004), (Houn-Gee Chen et al. 2004)).

Management by the local authorities consists of two levels. Level one is aimed at transforming a region into a BGPP suitable area, while level two aims to keep a sustainable environment suitable for BGPP's. The second level can include maintaining a relatively low-cost labor pool, ensuring that an adequate amount of land is available, and other resources used in production, such as electricity and water, are also readily available. Take the PRD in the 1980's as an example, when entrepreneurs of BGPP's had to focus on level one management tasks by providing housing for workers and by using their own electricity generators to overcome the then chronic power shortage.

Since the 1990's, the local authorities have very much taken over the level one management tasks, leaving the BGPP's in the PRD to focus on level two. This second level involves ensuring a sustainable cost-effective business environment and managing those operations which organizations in the developed economies focus on.

A BGPP is attractive to its multinational customers only if its low cost products and services can meet international standards, in both good quality and short lead time. To produce products of international standard in a developing region and to transport these products to world-wide customers requires a high degree of managerial skill, and this is where the overseas management input plays a crucial role in the BGPP's of the PRD. For example, almost all Hong Kong related BGPP's in the PRD regularly assign top management staff from Hong Kong to oversee operations in the BGPP's of the PRD. Hong Kong managers are well trained in multinational trade management, and are better able to "satisfy" customers' reasonable or unreasonable requirements. Facilitating production to international standards in terms of quality management and lead time management is another demanding management task for a BGPP. For instance, high labor turnover rates are not uncommon in the BGPP's; workers, after having gained some experience, tend to look for more attractive employment. Hence issues arise as to how to manage production procedures in such a way that they are least affected by unplanned labor changes and materials shortages.

To gain and retain international customers' confidence, a BGPP must also possess skills in managing international marketing and customer relationships. For example, many BGPP's in the PRD have developed long term relationships with customers by alliance, franchised manufacturing, customer and BGPP co-managed manufacturing processing, etc. However, some BGPP's prefer to keep an at-arms-length relationship with customers, and survive by remaining competitive through good quality and low-cost products. Since many customers tend to treat BGPP's as part of their supply chain, a BGPP needs to manage its production to match the customer's schedule in order to remain firmly attached to the chain. When the number of customers that a BGPP has becomes large, the more challenging it is to manage the multi-production schedules and to remain firmly on the chain.

TYPES OF BORN-GLOBAL PROCESSING PLANTS AND PRD CASES

BGPP's in the PRD can be categorized into three groups based on ownership, as follows:

1. Foreign-funded BGPP's, which include those established in the PRD using foreign investment only and which are totally owned by foreign investors. These BGPP's are not subsidiaries and include most of the Hong Kong owned BGPP's in the PRD.
2. Contractual joint BGPP's, which include those established in the PRD and in which foreign partner(s) have a share. The foreign partner may have partial or total control of the establishment.
3. A third category of BGPP's in the PRD operate under the term of "three forms of processing and assembly operations." The three forms stand for processing with supplied materials, assembly with supplied parts, and processing in accordance with supplied samples. These are locally owned, even though some of the loans and equipment may have been provided by foreign partners. The foreign partner(s) may also provide management expertise.

We will not discuss those BGPP's that service only a single customer and operate under "three forms of processing and assembly operations", such as a BGPP which may, for example, only produce Barbie dolls for Mattel. The main reason for this exclusion is that a single customer will effectively treat such a BGPP as a subsidiary. The types of BGPP are usually categorized and analyzed using the theory of expansion of multinational enterprises ((Chandler Jr 1986); and (Johanson and Vahlne 1990)).

Two selected cases from different industry sectors are given below to demonstrate how some BGPP's operate.

Case one: Surface Mount Technology Holding Limited

Surface Mount Technology (SMT) Holding Limited is a contract manufacturing company controlled by a Hong Kong owner. SMT has three BGPP's in the PRD; the main one was established 1993. This company provides electronics manufacturing services (EMS) to original equipment manufacturers (OEMs) of computer peripherals, telecommunications, consumers and industrial products. SMT's major customers include Sony, LG Electronics, New Japan Radio, Samsung, Clarion, Pioneer, IBM, and several others. SMT processes and assembles various products using its customers' brand names, and there is a proud saying at SMT that "behind their big names is our name." The company produces more than six million 3.5" Floppy Disc Drives (FDD), which accounts for about 20% of the annual total number of FDDs marketed under the name of Sony, and more than 10% of the annual global supply of CD-ROM drives. Other products of SMT include keyboards, PC motherboards, RF modulators, television tuners, LCD modules, VCD and DVD PCBAs, and other PCBA services. PCBA stands for Printed Circuit Board Assembly and refers to the process of assembling electronic components onto a PCB, which in turn allows customers to choose from low to high volume batch orders. Order volume can range from hundreds to hundreds of thousands of units. SMT undertakes customer orders on a turnkey or consignment basis. A turnkey order means that SMT is in charge of sourcing all the parts and components required for finishing the order, and consignment order means that the customer is responsible for supplying parts and components required by SMT to finish the order.

The three BGPP's of the company occupy a total floor area of 620,000 square feet for production alone, and they employ over 9,000 workers on a two shifts basis. It has 78 fully automatic SMT lines and over 220 sets of Pick and Place (PNP) machines that can operate 24 hours per day, all year long. The company's turnover has grown from US\$80.6 million in 1998 to US\$262.8 million in 2004, representing a seven-year annual compounded growth rate of 21.8%. The development of the company into a global contract manufacturer can be traced back to 1993, when the first BGPP of the company was established in the PRD as a co-operative joint venture with a local company; the second and third BGPP's of the company were opened in 2002 and 2004, respectively. At that time the experienced Hong Kong entrepreneurs decided to take a long term view of the advantages offered the PRD, especially in terms of the availability of a low cost labour pool which could meet the labor-intensive needs of the EMS industry. Floor area requirements for production equipment were also substantial, and the PRD was also able to supply relatively cheaper land. These two factors encouraged SMT to locate their BGPP in the PRD, and by incorporating their BGPP's in the PRD it was easier to meet requirements of local business regulations and the general local operating environment.

The company and its BGPP's' management team are from Hong Kong. All the senior and a good part of the middle level management staff have over ten years experience in their respective areas of expertise. By international standards, the company pays attractive salaries and benefits to its management, thus encouraging its management staff to keep pace with developments in the industry and to try and meet or exceed the requirement of its big name customers. The management team has implemented various international quality management and safety related procedures, such as ISO9002 for quality, TS16949 for Automotive Industry, ISO14001 for Sony OEM Green Partner and OHSAS for Occupational Health and Safety. Production operations management in the BGPP's is efficient and comfortably meets international standards, such as single digit defective parts per million (PPM), production line setting up time within 10 minutes, work in process (WIP) stock levels of less than 10 days, and monthly accounting statements produced in less than 10 days.

In addition, as a contractual process and assembly manufacturer, SMT adopts mature technology to perform manufacturing services. The main expectations of its customers are high product quality, short lead time and low-process-cost, and there is little incentive to use advanced technology and innovation at SMT when the combination of mature technology and low cost labour are sufficient to meet the main expectations of their customers.

Case two: Leo Paper Group

Leo Paper Group is an Original Equipment Manufacturer (OEM) of paper products controlled by a Hong Kong owner. Leo has two BGPP's in the PRD. Its headquarters are in Hong Kong, and it has four regional

marketing offices, two in the USA, one in continental Europe, and one in the UK. Leo provides printing and book-binding services, paper bags and boxes for around 50% of the world's top publishing and gift companies.

Leo mainly produces children's books for publishers, such as board books, book sets, book plus, mini books and other bindings. Leo also makes a variety of paper bags and boxes for gift companies. As an OEM, Leo never does original design, but with its heavy capital investment in equipment, it can provide an all-in-one service platform for different customers with different requirements. Leo has over 5,700 pieces of printing and manufacturing equipment, including a full line of pre-press, different printing processes, surface treatment, binding and finishing, and all these facilities are located in Leo's 2,000,000 plus ft² plant in the PRD. Leo also employs over 10,000 workers in its BGPP's in the PRD. Over 95% of the BGPP's products are by order from overseas clients. The sales growth at Leo has consistently been in double-digit figures, starting from a base of about US\$100 million turnover in 1997.

Leo has two BGPP's; the first one was established in 1989 and the second one in 1995. The first BGPP has about 3000 workers making paper bags, who are mostly in engaged manual work. The size of the plant is about 250,000 ft², and the plant layout and equipment has not changed significantly since its establishment. The establishment of the second BGPP assisted Leo in consolidating its niche in the market. The second plant is equipped with all machinery required for Leo's product portfolio. At the beginning of 1995, the plant had about 1000 workers and a plant area of around 200,000 ft². Nine years later, in 2004, both the number of workers and plant area have increased by almost a factor of 10.

Paper product and printing is a labor and capital-intensive industry. The PRD's low-cost labor pool, culture similarity with and geographical proximity to Hong Kong are the main reasons why the founder of Leo decided to establish their BGPP's in the PRD. The founder of Leo believes that there is little or no room for price increases in the industry, and therefore cost reduction and high product quality is the only way to remain competitive. In order to reduce costs and improve product quality, Leo has localized its middle management team in its BGPP's in the PRD, and in this respect it is worth noting that the PRD has now started to acquire local expertise in terms of industrial/production engineers. Leo has also implemented quality management activities and has also established technical quality assurance (TQA) Departments. Such quality undertakings improve the level of printing techniques and raise the efficiency of production process. Leo BGPP's were able to obtain quality accreditations, such as ISO9001, ISO14001 and OHSAS18001. TQA departments are also responsible for analyzing the necessity of investing in new machinery and for adopting new technology.

The senior management team of Leo's BGPP's is from Hong Kong. Leo pays attractive salaries and benefits to its management staff, encouraging them to keep pace with the development of the market and to satisfy or exceed the fast changing taste of various clients.

CONCLUDING COMMENTS

Clusters of BGPP's in different industry sectors were rapidly established in the PRD within twenty years, a phenomenon without precedence in economic history. This phenomenon cannot be explained satisfactorily using both traditional MNE expansion theory (Chandler 1986, Cyert 1963, and Johanson 1977 & 1990) and the recently developed New Venture Internationalization Theory (NVI) (Oviatt and McDougall 1994). The long established Process Theory of Internationalization (PTI) of MNE's is mainly focused on enterprises that gradually expanded from powerful domestic enterprises to large and well-known multinational corporations. The NVI, also referred to as Born Global Firm theory, is focused on technology-based new firms operated in knowledge-intensive industries. Born Global Processing Plants (BGPP's) are basic requisites for labor-intensive, mature-tech-intensive manufacturing that exists in almost any industry operating in a made-in-the-world economic global environment (Ferdows 1997). A BGPP is an independent and core business of a company and it does not belong to any MNE. As a BGPP only provides mature-tech-based processing/manufacturing services to customers and has no brand products of its own, a BGPP is not a knowledge-based firm, and is thus out of the scope of both PTI and NVI.

This paper has attempted to reveal four features of BGPP's that have brought significant economic power to Southern China. To summarize, these four features of BGPP's are: low-cost labor-intensive, manufacturing; mature technology-intensive production; operations management intensive production; and market risk-free

production. These features suggest that a successful BGPP is the outcome of integrating high quality business management skills with lowest-cost resources. Such resources include labor, land, material, production equipment, and, of course, the necessary external infrastructure to enable quick and efficient delivery.

As a BGPP lives in symbiosis with its outsourcing market, a rapidly expanding outsourcing market means that more and more companies will be outsourcing their manufacturing functions to BGPP's. This trend indicates that the lucrative and relatively low risk BGPP business will bring new competitors into play. As a conclusion, we would like to suggest that a BGPP must be vigilant of competition and can only gain a competitive edge via a careful combination of low production cost, short lead time; and high product quality.

To conclude, there is the interesting social question as to whether the unskilled manufacturing labour force in the PRD will eventually acquire the skills necessary to be classified as semi-skilled/technical. Should this happen, then the low labour cost advantages will disappear. However, we have no evidence of this happening at this point in time. And in this respect, it is worth remembering that it is the job of Industrial Engineers and production professionals to de-skill tasks, so that the work can be carried out by low cost labour in a repetitive manner. This in turn suggests that large groups of semi-skilled manufacturing labour will not emerge. Manufacturing personnel in China will most likely continue to be made up of a large body of unskilled, low cost labour and a few manufacturing professionals at the top, and with virtually no semi-skilled workers in between. The semi-skilled jobs in China will eventually come with the development of the service industries.

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