

THE ATTRACTION TO EMERGING REGIONS FOR CONTRACT MANUFACTURERS

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EMERGING REGIONS FOR EMERGING MARKETS

In the past three years, new regions emerged in the electronics global horizon to attract manufacturing facilities. With annual growth rates in the electronics contract manufacturing industry hovering around 30% for the last few years, contractors continue to seek ways of adding capacity and capabilities in customer-desired regions. While the actual proportion of production in these regions in terms of market share or revenue is still low, these areas should not be ignored by contract manufacturers or OEMs seeking trends in business strategies because they offer strategic positioning for present and future markets. It is worthwhile to consider the relative strengths of each area, as well as the motivations behind establishing a presence in the global frontiers of electronics manufacturing.

It's easy to state that reduction of costs is the driving factor in opening up facilities in emerging regions, but that would be an inadequate, if not misleading, explanation. Certainly lower labor and fixed costs contribute, yet emerging regions create a momentum of their own. Once a critical mass of companies locate there, it becomes even more attractive for other companies to conduct business there as well. Indeed the second-most elicited reason by contract manufacturers to open a facility is to be near their customer base.

Key emerging regions are Mexico, India, China, Brazil, and Eastern Europe, but other areas of South America and Australia are also cited. These regions gained appeal as a result of economic globalization, the dissolution of the Soviet Union, the recent openness of the People's Republic of China, a general liberalization of government regulations and tariffs, the surge in the telecommunications industry, and the trend toward outsourcing. Technology in printed circuit board assemblies changes rapidly, so products stay current for a short period of time, and this rapid turnaround cuts into profit margins. This led to the rise of contract manufacturing in Asia. Originally, the primary motivation for locating in a foreign location was to take advantage of lower labor costs. Southeast Asia—Singapore, Malaysia, and Thailand—offered the labor cost advantage, with a skilled labor force and government-supported incentives. This arrangement still works well for many suppliers and customers. But the distance, time zones, language, and culture issues frustrate some, especially when immediate feedback is needed.

Labor savings are not that great outside the U.S. And the drawbacks outside the US are time differences and language barriers, so we try to stay with local contractors. (Hughes)

Most of our manufacturing is done in the U.S. It is more convenient in terms of logistics, cost of transportation, communications, and flexibility. (Exide)

Emerging regions vary in the advantages and disadvantages they offer the electronics manufacturer. Not only does the actual geographic location affect the calculation of its strategic worth, but so do its manufacturing, political, economic, and cultural features. Depending on the product and the customers, some locations make more sense than others, and for some companies, the time for emerging regions is not on the horizon. In addition to labor costs, land costs, tax incentives, etc., are often less expensive than production in the US and Canada. Add the need to be near customers and emerging *markets*, it becomes critical to examine the global arena.

We have been asking contract manufacturers (CMs) and original equipment manufacturers (OEMs) their thoughts on emerging regions. Their comments showcase the reasons for and against opening a facility in emerging regions. While there are cost incentives, there can be trade-offs that erase the advantage in cost that might accrue. The trouble with Asia, for example, is that it's simply too far away from American customers and the headquarters. In addition, language and cultural problems can impede relationships between customers, especially in communicating changes in engineering design.

For prototyping we need a local presence close to our engineering design centers. We look at total cost, what level of support is needed, and where customer support is needed. [Advantages of local outsourcing are] communications, service, and proximity to manufacturing, plus ease of implementing engineering changes and flexibility. (Bay Networks)

The capabilities of the company are a function of the resources and infrastructure of the country of its location. Beyond simple logistics, there are regional variations in expertise. A general consensus is that while individual

companies in emerging regions may have state-of-the-art technology, it is not something to be relied upon.

Don't make judgments because it depends on the company. We look at the company capability vs. our needs; how well organized they are; what does the management and engineering team look like, and how are they set up to handle turnover such as do they have a good training program. (Polaroid)

Asia is now firmly established as a location for attracting global electronics manufacturing, but in the last couple of years Mexico, India, and now China are vying for the attention (and jobs) of electronics manufacturing services, contract manufacturers, and semiconductor companies. These countries have developed their electronics industries enough recently to compete effectively in the high tech industry.

REGIONAL VARIATIONS

Mexico

Mexico has the advantage of being relatively close to the United States. And because a kind of 'migration momentum' has occurred, more companies move there, in turn making it more reasonable for companies to open facilities there in order to be close to customers and/or suppliers. Table 1 displays contractors that have recently set up operations in Mexico. The recent trade agreements of GATT and NAFTA have helped create a favorable business climate as well.

Mexico has proven potential and it is a NAFTA partner. We should consider Mexico as equal to any other location. The drawback for us, of course, is that there would be two borders to cross. (NCR Canada)

Table 1: Recent Expansion in Mexico by Contract Manufacturers

Company	Location of Recent Expansion
Avex Electronics	Guadalajara
DII Group, Inc.	Guadalajara
Elamex S.A. de C.V.	Torreon, Chihuahua, Delicias, Juarez
Flextronics Int'l	Guadalajara
Jabil Circuit	Guadalajara
Johnson Matthey	Juarez
Natsteel	Guadalajara
Ogden Atlantic Group	Reynosa
SCI Systems	Mexico City, Monterrey, Guadalajara
Solectron	Guadalajara

Mexico has advantages in labor supply and costs and it has easy access to the North American markets. We also feel that NAFTA would play an important role to Mexico's future development in the contract manufacturing industry. (Orient Semiconductor Electronics, Ltd.)

New entrants into Mexico this year include the industry's number two player, Solectron Corporation, as well as Avex Electronics, Jabil Circuit, Inc., and Flextronics International. These new players are all moving into Guadalajara. Contractors already operating in Mexico such as SCI Systems, Inc., DII Group, Inc., and Elamex S.A. de C.V., are increasing their square footage in the region. For example, SCI recently acquired Group Technologies' plant in Mexico City and DII is planning on building in Guadalajara. (See Table 1 for recent expansions.)

Despite the general sense that Mexico is a hot location, it is not without its drawbacks. Suppliers and customers found that Mexico is good for labor intensive products, but several observed that labor turnover is a problem. Others still see Mexico as being appropriate only for lower technology products.

Only consumer product manufacturers would use contractors in either Mexico or China because they don't require high quality and they have high-volume requirements. (Octel)

An executive voiced concern over the impact of manufacturing on environment. (Wavespan)

China

The recent entrance of China into the world electronics industry is met with mixed feelings. On one hand, the potential market is most lucrative. The potential development of the telecommunications infrastructure alone is staggering. China is installing about 80 million phone lines a year, more than an RBOC. With its status as a most favored nation for trading, the investment opportunities are turning heads. In addition, the labor market ensures low wages. Several Asian contract manufacturers in areas such as Singapore and Hong Kong are moving into lower cost areas, especially China. Hong Kong-based Nam Tai Electronics, Inc., and GET Manufacturing, Inc., have moved all their manufacturing facilities to the mainland. Other contractors expanding in China include Solectron, Flextronics International, and International Manufacturing Services.

Despite the potential, manufacturers are only slowly warming up to China. For most contract manufacturers, it is an unproven region, and OEMs, CMs, and their customers may not be able to afford the learning curve time and cost. In addition, there are concerns about the integrity

of conditions for protecting human rights, copyrights, and intellectual property rights.

There would have to be safeguards in place to ensure that technology does not get stolen. (Wavespan)

The Chinese government is highly motivated and wants to invest money, but the region is still behind in technology. Even though things are starting to change, there are still a lot of unknowns. China has a long way to go. (HAL Computers)

Little local experienced management, low cost, few current manufacturing facilities; lots of government involvement; huge market potential. (Tektronix)

Bold, daring companies that have an insight to Chinese culture and business practices might want to be pioneers. The profits could be substantial, but the risk is definitely there, too.

China is becoming increasingly important as more and more OEMs are setting up manufacturing facilities here. China is the country with the fastest growth in the telecommunications business. (Wearnes Technology)

India

India is another up and coming region. While still offering relatively low cost labor, it also offers proximity to Asian markets. Even more importantly, English is spoken by the skilled technical and managerial staff, many of whom trained in the United States, making them already familiar with American culture. With about one-fifth of the world's population, India, like China, stands as a potentially rich market for telecommunications and computer products. For that reason, foreign investment has boomed in the last three years. But there is still some hesitancy because most of the country is quite poor, despite the rise of the middle class, and that could lead to political and economic instability. Software is a big industry there, though it remains to be seen how manufacturing continues to develop.

We see India as a key emerging region, comparable to Malaysia. Singapore and Taiwan have become too expensive. (XOtronic)

If India straightens out tariff and import duties it would be a good place to locate, but they are trying to protect their internal market. (Polaroid)

Costa Rica

Costa Rica is not widely known as an emerging region, but it deserves careful thought. Its socioeconomic, demographic, and political environment is that of a more

developed country. All indicators point to a thriving country. It has a highly educated labor force that is all dressed up without enough places to go. Out of its population of 3.5 million, there are some 85,000 students in its many universities. Accordingly, President Figueres has been actively wooing electronics companies to come to Costa Rica. In a recent meeting with American electronics executives, President Figueres presented a powerful argument for locating a facility in his country. The advantages are an educated labor force, usually fluent in English, and well developed electric and electronic infrastructure (next year all high school students will have their own Internet account). Costa Rica is strategically located, forming a geographic and commerce bridge between the Americas. Intel, Motorola, Dell, and Acer are some that thoroughly investigated possible locations and decided to open facilities there. This meeting demonstrates another important aspect of global business—the active support, complete with tax and customs advantages—from the government. Indeed, one of the new features of the global economy is the melding of government and business concerns.

Brazil

Brazil is another emerging region, and Costa Rica seeks to be close to that market as well, while offering western technological expertise. Brazil is taking off in its own right, however. For example, SCI also has acquired the Group Technologies plant in Hortolandi, Brazil, while Solectron has acquired the Ericsson Telecom AB facility in San Jose dos Campos, Brazil. These acquisitions will allow both contractors to serve those customers demanding a manufacturing presence in South America so they can better access the market there.

Eastern Europe

East European countries have also been considered as a possible location for better market access. Until the political, economic, and ethnic situations stabilize, however, it is not likely to emerge into prominence in the near future, though for some European companies an Eastern European facility could provide a critical competitive edge. More European OEMs are beginning to outsource, so more potential customers for contract manufacturers are on the horizon. Indeed, SCI has plans for moving into Hungary as a low-cost strategic alternative to Western Europe. Some contractors in Western Europe, such as Electronic Service Willms GmbH, are forming alliances with contractors in Eastern Europe, such as Slovakia.

FIT REGIONAL ATTRIBUTES TO COMPANY GOALS

In contrast to emerging regions, the expectation for U.S. firms is that the technology level of their products is cutting edge. Production of prototypes and unproven technologies is not yet perceived as a strength of many emerging

regions, especially when there are language issues. However, the cost efficiencies make outsourcing the high production, low technology boards to these regions worthwhile.

We need the technological capability of a U.S. contractor, and the high-volume capability of a Far East contractor. (Auspex)

Thus the decision either to use a contract manufacturer in an emerging region, or to open up a facility there, may depend on the kind of strengths of that region (see Table 2 for a summary), the particular company, and the product needed. Investigating the availability of educated, experienced employees, from engineers to management, is essential.

The problem is developing and bringing the technology to an unskilled labor force. It is extremely difficult to get those locations running consistently. [We are] currently using [them] for lower-tech material. (Nortel)

When a company realizes it needs to expand its capacity and perhaps locate more strategically to meet an expanding customer base, there are several criteria that need to be met. First, the company must identify its customer base and the industry or market its product serves. For example, telecommunications is one of the fastest growing industries in Asia, especially in wireless technologies, but also in wireline. Second, it must identify regions that are proximate to the customer base, and the kinds of engineering and manufacturing expertise the region tends to have. So, for example, Eastern Europe is close to European customers, but management skills are weak. Australia has the training, but it is still considered a niche market. While an individual company may have the expertise, if labor force is tight and turnover is high, then that could mean a lack of reliability in meeting production goals. This is one of the drawbacks some OEMs cite in Mexico. Third, examine the socioeconomic infrastructure of the country, specifically the development of resources necessary for manufacturing (e.g., electricity and water) as well as resources for the employees (e.g., health care, education, and housing). These features, for example, are part of Costa Rica's appeal.

There is no clear cut answer of where and when to locate a manufacturing facility in an emerging region, but a careful overview of company requirements and regional offerings should lead one to an excellent match.

Table 2: Advantages and Disadvantages of Manufacturing in Emerging Regions

Country	Advantages	Disadvantages
Mexico	Low cost, proximity to U.S., trade agreements, customers	Infrastructure, labor force turnover, potential economic instability
Costa Rica	Educated labor force, advanced socioeconomic conditions, bridge between North and South America	Possible limitations to growth, new to electronics industry
India	Low cost of manufacturing, qualified engineers and management	With some people India has a bad reputation regarding its business climate; possible political instability; distance from U.S.
Eastern Europe	Low labor cost, proximity to European markets	Political, economic, and ethnic instability; environmental degradation
China	Low cost labor, expanding market, and efforts being made for favorable trade agreements	Human rights, copyrights, and proprietary concerns; distance from U.S.; unproven capability

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