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**The Role of the Western Engineer in the Emerging Asian Multinational  
Corporation**

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**The Role of the Western Engineer in the Emerging Asian Multinational  
Corporation**

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# **The Role of the Western Engineer in the Emerging Asian Multinational Corporation**

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In recent years there has been a growing trend of Western companies outsourcing many engineering jobs to Taiwan, India, and China. While companies have been outsourcing and moving manufacturing jobs for decades, there is a recent acceleration of sending “high tech” engineering jobs overseas. While the job loss in the Western world is alarming to Western engineers, there is another trend that is keeping jobs in the West that deserves some consideration. Asian multinational corporations are acquiring engineering operations in the United States and Europe. Since there is seemingly abundant talent available in their home countries, what motivates these Asian multinational corporations to invest in Western engineering operations? Is this investment a long term viable employment option for Western engineers? This paper will address these two critical questions.

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## Chapter 1: Introduction

### PURPOSE

In recent years there has been a growing trend of Western companies outsourcing many engineering jobs to Taiwan, India, and China. While companies have been outsourcing and moving manufacturing jobs for decades, there is a recent acceleration of sending “high tech” (information technology, computing related and consumer electronics) engineering jobs overseas. Western and Japanese firms have hired hundreds of thousands of programmers and engineers in China, India, and other developing nations<sup>1</sup>. This trend of moving high quality “R&D” jobs offshore has been gaining momentum in the past ten years; the impact to the engineering profession in developed nations such as the United States and Europe could be dramatic if the trend continues.

Evidence of the outsourcing trend is found day to day by the average American who needs support for one of the high tech products in the home such as digital TV, cell phone, computer, etc. Call centers and help desks have virtually all been moved to lower cost labor areas such as India, and the caller is faced with a knowledgeable but sometimes difficult to communicate with service professional.

The primary motivation for this movement of jobs from the United States and Europe to Asia is cost. In the case of the call center, it’s much less expensive to operate a call center in India than it is in the United States or Europe. For example, the low cost of manpower available in India enables Indian call centers to provide call center outsourcing services at half the cost of the United States or United Kingdom.<sup>2</sup> However, it’s not just service centers that are being moved offshore. With the emergence of talented, low cost

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<sup>1</sup> Brown, A., “A Shift in Engineering Offshoring”, Mechanical Engineering Magazine, March, 2009

<sup>2</sup> “Call Centers in India”, [http://www.outsource2india.com/why\\_india/articles/call\\_centers\\_india.asp](http://www.outsource2india.com/why_india/articles/call_centers_india.asp)



engineering labor sources in developing countries such as India, Taiwan, China, and South Korea, many corporations have moved research and development operations (i.e. engineering jobs) offshore to these countries. Managers can hire four or five engineers overseas for the cost of one at home (in the United States).<sup>3</sup>

The results of this outsourcing of jobs have been mixed; the quality of work that is outsourced can vary and there can be hidden costs. And there are certainly management challenges of managing and integrating work done half way around the world<sup>4</sup>. Does outsourcing really save money in the end? Engineers in the US and Europe would strongly argue “no”, but nevertheless, the trend of outsourcing continues. A 2009 survey of 10,000 U.S. workers by the Stern and Wharton business schools found 8 percent of IT workers fired or involuntarily transferred due to offshoring<sup>5</sup>. Many engineering jobs in the United States and Europe have been replaced by this job outsourcing, and the question on many Western engineers’ minds is “Will all of our jobs go to Asia?”

While the job loss in the Western world is alarming to Western engineers, there is another trend that is keeping jobs in the West that deserves some consideration. India and China are not just sources of cheap labor for Western multinational corporations – these countries and others in Southeast Asia are the home of many strong and formidable multinational corporations. The growth of these so-called “Emerging Market Multinationals”<sup>6</sup> has been phenomenal - emerging companies now account for 70 of the Fortune Global 500 list. Nine new emerging market multinational companies made the Fortune Global 500 list in 2007. Ten years ago there were only 20 companies from

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<sup>3</sup> Brown, A., “A Shift in Engineering Offshoring”, Mechanical Engineering Magazine, March, 2009

<sup>4</sup> Bucki, J. “Top 6 Outsourcing Disadvantages”,  
<http://operationstech.about.com/od/outsourcing/tp/OutSrcDisadv.htm>

<sup>5</sup> Brown, A., “A Shift in Engineering Offshoring”, Mechanical Engineering Magazine, March, 2009

<sup>6</sup> “The Rise of the Emerging-Market Multinational”, an Accenture report, January 2008

emerging markets on the list<sup>7</sup>. Emerging market multinationals are dominating their local markets, and expanding rapidly into new markets. To facilitate this growth they are also expanding their research and development operations – often by direct investment in developed countries such as the United States. At first it seems counterintuitive for a corporation in China, Taiwan, or South Korea to tap into the more expensive labor markets of the West - there is already an abundance of highly educated, capable engineering talent in their home countries, and the availability of that talent pool is growing rapidly. The number of science and engineering graduates in China has been rising every year. In 2002, Chinese universities granted 465,000 science and engineering degrees, about the same number as were granted in the US.<sup>8</sup> In 2006 the total enrollment of students in Chinese universities surpassed the enrollment in the United States<sup>9</sup>. Engineers with advanced degrees are increasingly available as well. Every year, China graduates 75,000 students with advanced degrees in engineering or computer sciences. India graduates 60,000 each year.<sup>10</sup> Since there is seemingly abundant talent available in their home countries, what motivates these emerging market multinational corporations to invest in Western engineering operations? Is this investment a long term viable employment option for Western engineers? This paper will address these two critical questions.

## **IMPORTANCE**

With more and more jobs lost in the United States and Europe due to outsourcing of jobs to lower cost labor markets, the future of the Western engineer is somewhat uncertain. Southeast Asian countries like Taiwan and South Korea have established large

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<sup>7</sup> Fortune Global 500, 2007

<sup>8</sup> “High Tech in China – Is it a Threat to Silicon Valley?”, Business Week, October 28, 2002

<sup>9</sup> Zeng, M., Williamson, P., “Dragons At Your Door”, 2007, p. 29

<sup>10</sup> Wooldridge, A., “The World Turned Upside Down”, The Economist, April 17, 2010

multinational corporations, and most of their research and development activities are based in their home countries. However, as these companies expand their markets, they are also expanding their operations. That expansion includes direct investment in developed countries, resulting in the preservation (due to acquisition of existing research and development operations) or creation (due to new operations starting) of engineering jobs in the United States and Europe. Is this a sustainable or temporary phenomenon?

The Southeast Asian multinational corporations have clearly become a permanent fixture in the global market, and are increasing their dominance. Table 1: 2Q09 Top 20 Semiconductor Sales Leaders shows semiconductor sales rankings for the second calendar quarter of 2009. Of the top twenty, nine are headquartered in Asia. Hynix (South Korea), MediaTek (Taiwan) and TSMC (Taiwan) continue to gain market share. This trend continued in 2010, with ten of the top 20 semiconductor sales leaders headquartered in Asia<sup>11</sup>.

As the sales leaders shift to regions other than the US and Europe, will the science and engineering jobs shift too?

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<sup>11</sup> “Research Bulletin, <http://www.icinsights.com/news/bulletins/bulletins2010/bulletin20100730.pdf>”, IC Insights, July 30, 2010

## 2Q09 Top 20 Semiconductor Sales Leaders (\$M)

| 2Q09 Rank | 1Q09 Rank | 2008 Rank | Company      | Headquarters | 2008 Tot Semi | 08/07 % Change | 1Q09 Tot Semi | 2Q09 Tot Semi | 2Q09/1Q09 % Change |
|-----------|-----------|-----------|--------------|--------------|---------------|----------------|---------------|---------------|--------------------|
| 1         | 1         | 1         | Intel        | U.S.         | 34,490        | -2%            | 6,573         | 7,382         | 12%                |
| 2         | 2         | 2         | Samsung      | South Korea  | 20,272        | 2%             | 3,686         | 4,767         | 29%                |
| 3         | 3         | 5         | Toshiba      | Japan        | 10,422        | -12%           | 2,008         | 2,310         | 15%                |
| 4         | 4         | 3         | TI           | U.S.         | 11,618        | -13%           | 1,939         | 2,285         | 18%                |
| 5         | 10        | 4         | TSMC*        | Taiwan       | 10,556        | 8%             | 1,162         | 2,238         | 93%                |
| 6         | 5         | 6         | ST           | Europe       | 10,325        | 3%             | 1,657         | 1,993         | 20%                |
| 7         | 6         | 8         | Qualcomm**   | U.S.         | 6,477         | 15%            | 1,316         | 1,786         | 36%                |
| 8         | 8         | 7         | Renesas      | Japan        | 7,017         | -12%           | 1,233         | 1,381         | 12%                |
| 9         | 7         | 9         | Sony         | Japan        | 6,420         | -11%           | 1,270         | 1,360         | 7%                 |
| 10        | 13        | 10        | Hynix        | South Korea  | 6,182         | -33%           | 927           | 1,301         | 40%                |
| 11        | 11        | 14        | Micron       | U.S.         | 5,688         | 3%             | 1,020         | 1,225         | 20%                |
| 12        | 9         | 12        | AMD          | U.S.         | 5,808         | -1%            | 1,177         | 1,184         | 1%                 |
| 13        | 12        | 11        | Infineon     | Europe       | 5,903         | 2%             | 970           | 1,150         | 19%                |
| 14        | 14        | 13        | NEC          | Japan        | 5,732         | 2%             | 863           | 1,005         | 16%                |
| 15        | 16        | 18        | Broadcom**   | U.S.         | 4,509         | 20%            | 827           | 966           | 17%                |
| 16        | 15        | 19        | Panasonic    | Japan        | 4,321         | 13%            | 850           | 920           | 8%                 |
| 17        | 19        | 25        | MediaTek**   | Taiwan       | 2,845         | 16%            | 704           | 847           | 20%                |
| 18        | 21        | 20        | Nvidia**     | U.S.         | 4,959         | -11%           | 597           | 795           | 33%                |
| 19        | 20        | 15        | NXP          | Europe       | 5,020         | -14%           | 648           | 788           | 22%                |
| 20        | 18        | 16        | Freescale    | U.S.         | 4,959         | -11%           | 798           | 784           | -2%                |
| —         | —         | —         | Total Top 20 | —            | 173,523       | —              | 30,225        | 36,467        | 21%                |

\*Foundry      \*\*Fabless

Source: IC Insights, company reports

Table 1: 2Q09 Top 20 Semiconductor Sales Leaders<sup>12</sup>

In order for the future of Western engineering jobs to be secure, the relationship between the Western engineer and the emerging market multinational corporation must be explored and understood. Is there a long term role for Western engineering operations in a foreign owned, emerging market multinational corporation such as those listed above?

### STRUCTURE OF THE DOCUMENT

Available literature has been reviewed on the topic of emerging market multinational corporations and the business strategies of these companies. The literature review chapter of this document (Chapter 2) will focus on the definition of the emerging market multinational corporation, and the motivation for expansion of research and

<sup>12</sup> “Climbers, descenders seen in Q2 IC rankings”, EETimes, July 30, 2009

development operations in Western countries such as the United States and Europe. The intent of this literature review is to identify the key opportunities for the Western engineer working for the emerging market multinational corporation.

The long term employment prospects of Western operations by foreign acquisitions are largely unreported. Similarly the status of Western design centers, the success of the Western operations, and the innovations occurring in the West under the umbrella of the emerging market multinational has been undocumented. Therefore, Chapter 3 will explore the motivations for an Asian multinational corporation to make investments in the United States and in Europe. Chapter 4 will look at examples of emerging market multinational corporations operating in the US. Contributions from the Western operations will be further researched and conclusions about the long term prospects of Western engineers working for Asian multinational corporations will be drawn. Chapter 5 will state conclusions.

## **Chapter 2: Literature Review**

While much has been written about US and European based corporations investing in emerging countries (primarily as a means to lower operating costs), very little has been written about Asian multinational corporations investing in Europe and the US.

### **DEFINING THE ASIAN MULTINATIONAL CORPORATION**

In order to further study the prospects of Western engineers working for Asian multinational corporations, a definition of the type of Asia-based company that is investing in the United States is needed. Brazil, Russia, India and China are the countries that most frequently come to mind when thinking about emerging markets. Companies based in these four countries account for nearly 10% of the 2008 Fortune Global 500 list: Brazil has 5, Russia has 4, and India has 7, while China has the overwhelming majority with 29 companies on the list. The so called “BRIC” countries (Brazil, Russia, India, China) account for 45 total companies on the 2008 list.<sup>13</sup> Figure 1: Composition of the Fortune Global 500 shows the increasing trend of emerging market companies as profiled in the Accenture report “The Rise of the Emerging-Market Multinational”.

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<sup>13</sup> “Fortune Global 500 list”, Fortune Magazine, July 21,2008

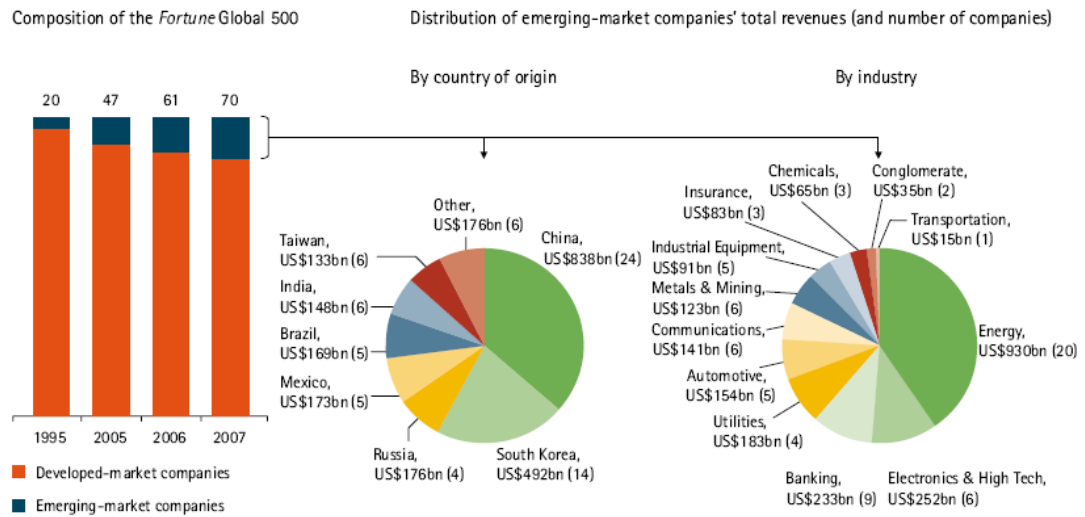


Figure 1: Composition of the Fortune Global 500<sup>14</sup>

The 2009 list has similar profiles for Brazil (6), India (7), and Russia (8), while China continues its global presence with a total of 37 companies making the list. In 2009, the “BRIC” total comes to 58 companies making the list, a 29% increase from 2008. However, China accounts for more than half of the new companies making the list so there is clearly growth in China that warrants special consideration. South Korea (14) and Taiwan (6) also have prominent positions on the list.<sup>15</sup> The combined contribution from China, South Korea, and Taiwan totals 57 companies, just one shy of the “BRIC” total. Because of their prominence in the high tech sector and the recent trend of outward direct investment from countries based in Taiwan, China, and South Korea, this paper will focus on multinational corporations originating from these countries.

Japan also has a very prominent position on the Fortune 500 Global list with 64 companies in 2008 and 68 companies in 2009. However the characteristics of Japanese investments versus investments from China, Taiwan, and South Korea may be different.

<sup>14</sup> “The Rise of the Emerging-Market Multinational”, an Accenture report, January 2008

<sup>15</sup> “Fortune Global 500 list”, Fortune Magazine, July 20, 2009

The Japanese economy is much more developed than its neighboring Asian countries, and it has been characterized that Japan was in the “first wave” of multinational corporations investing outside their home countries.<sup>16</sup> The traditional Brazil, Russia, India and China (BRIC) based companies, as well as those companies based in South Korea and Taiwan are said to be of the “second wave”.<sup>17</sup> Due to the rapid acceleration of companies based in the “second wave” countries, the likelihood that the motivations for expansion and continued investment in the West are different between companies based in Japan and the less developed countries of China, Taiwan, and South Korea. Therefore, the investments from Japan should be treated separately and the “first wave” investments will be considered outside the scope of this paper.

For the purpose of this paper, the term “Emerging Asian Multinational Corporation” will be used to describe companies who are headquartered in South Korea, Taiwan, and China and have operations in at least one other country. The term “Emerging Asian MNC” will be used interchangeably with emerging Asian multinational corporation.

### **COMMON CHARACTERISTICS OF EMERGING ASIAN MNC**

As illustrated previously, emerging Asian MNCs are achieving growth at an accelerated pace compared to the rest of the world. When analyzing some of the top Asian MNCs some common characteristics can be seen.

#### **Long Term View**

Asian MNCs tend to have a long term view on their research and development activities as well as their investments and their goals. The quarterly earnings hysteria that

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<sup>16</sup> Kumar, K. and McLeod, M.G. , “Multinationals from Developing Countries”, 1981

<sup>17</sup> Buckley, P., & Ghauri, P.N., “Globalisation, economic geography and the strategy of multinational enterprises” *Journal of International Business Studies*,2004: pages 81-98.



occurs in many Western companies does not affect the Asian MNC. While Western companies are often more focused on short term financial results and keeping Wall Street happy, the Asian MNC is more concerned about methodically growing their business and reaching their long term goals<sup>18</sup>. They can weather the ups and downs of consumer market goods more readily than Western companies who are constantly under the scrutiny of their investors.

### **Nimbleness**

Asian MNCs are very focused and unwavering when trying to reach their goals, but if they detect a shift in the economic climate or an opportunity for new products, they can quickly mobilize to attack the new opportunity. Because the management structures are very flat, decisions are made by a few top executives and executed by the subordinates without question. There is not a lot of consensus building that needs to occur as is common in Western companies. Because the command structure allows efficient communication from the decision makers to the lowest levels of the organization, and culturally these decisions are accepted without question, the emerging Asian MNC can reorganize its business units and dramatically change the allocation of its human resources to targeted areas literally overnight<sup>19</sup>. This allows them to penetrate new market opportunities quickly.

### **Local Success Applies to Other Markets**

By navigating through many challenges in their local markets and being successful on their home turf, the emerging Asian MNC is well prepared to compete on a global level<sup>20</sup>. The most successful have faced intense local competition and gained

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<sup>18</sup> Estrin, J., "Closing the Innovation Gap: Reigniting the Spark of Creativity in a Global Economy", 2008

<sup>19</sup> Zhang, M. and Edwards, C., "Diffusing 'best practice' in Chinese multinationals: the motivation, facilitation and limitations", *International Journal of Human Resource Management*, December, 2007

<sup>20</sup> Zeng, M., Williamson, P., "Dragons At Your Door", 2007, p 4

market share over local and global rivals. China is in many ways a microcosm of the global market. Chinese companies have been competing against each other for Chinese market share and also global rivals since China opened up to foreign trade and investment in 1978. These reforms led China's foreign trade to soar from \$12 billion in 1978, when China was at best a marginal player in global trade, to more than \$1.1 trillion in 2004, when China became the world's third largest trading economy<sup>21,22,23</sup>.

The emerging Asian MNC understands their home country economy very well. The challenges present in their own emerging market customers and the strategies they devise to win in that market are very applicable to other emerging markets. An example of this phenomena is China International Marine Containers Group (CIMC). CIMC started business as a joint venture with a Danish shipping firm East Asiatic Company in 1980. After a rocky start, the company had to fight against 20 other Chinese companies also trying to compete for shipping business. CIMC had to conquer the local competition before setting sights on the global market. Over a 16 year battle with internal Chinese competitors, CIMC came out on top and by 1996 was the number one shipping company in China. Since CIMC was already the dominant player in one of the largest markets in the world, CIMC possessed the knowledge and infrastructure to capitalize on economies of scale and to compete on the global market<sup>24</sup>.

Many of the leaders of Asian MNCs have been educated in the top Western universities and have worked abroad. This provides them with a global mindset and an understanding of the customers and cultures in other emerging markets. They have the

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<sup>21</sup> Brandt, L., Rawski, T, "China's Great Economic Transformation", 2008

<sup>22</sup> National bureau of statistics, 2005, p. 161

<sup>23</sup> World Trade Organization, 2005, p.16

<sup>24</sup> Zeng, M., Williamson, P., "Dragons At Your Door", 2007, p 4

confidence and insight to invest in other emerging markets before the broader global competition identifies these opportunities.

### **Competitive Cost Base**

The last and most obvious characteristic of the emerging Asian MNC is the competitive cost base of their operations. The core of their research and development operations are in labor markets where there is an abundance of local talent at a much lower cost base than in the West. Hourly wages in China are much lower than those in the U.S., with low-skilled workers earning around \$1 per hour compared with between \$15 and \$30 per hour in the United States and Europe<sup>25</sup>. Computer engineers have a starting monthly salary ranging from 4,000 to 5,000 yuan, which is approximately \$7000-\$9000 per year; about 1/10 that of a starting salary for a computer engineer in the United States<sup>26,27</sup>. By having access to both low-skilled and highly-skilled workers at a rate that is much lower than their rivals in the United States and Europe, the emerging Asian MNC can design and produce goods at a much lower overall cost structure. Last year, China surpassed the United States in total enrollment in universities<sup>28</sup>. With this influx of an educated workforce, the supply of highly skilled workers is likely to remain abundant which should keep salaries in their home countries low for the foreseeable future.

Additionally there are local government subsidies which make capital investment in their home countries very lucrative. It's very common for governments in South Korea or Taiwan to establish "science parks" to make it easy for companies to open research and development facilities, and to incubate small start ups. In China many of

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<sup>25</sup> "China Report: China and the New Rules for Global Business,"  
<http://knowledge.wharton.upenn.edu/papers/download/BCG-KWspecialreport-final.pdf>

<sup>26</sup> Chao, C., Shen, S. "IC Design Houses Likely Forced to Reduce Quotes on Rising Labor Costs in China", DigiTimes, June 14, 2010

<sup>27</sup> "Salary Opinion and Survey", EE Times, October, 2009

<sup>28</sup> Zeng, M., Williamson, P., "Dragons At Your Door", 2007, p 29

the most successful companies are government owned or a combination of private sector and government owned, and therefore heavily subsidized by taxes. China's R&D spending has grown at about 20 percent a year since 1999, with plans for it to rise to 2.5 percent of gross domestic product (GDP) by 2020. The government funded Hsinchu Science Park in Taiwan now accounts for 75 percent of the world's semiconductors<sup>29</sup>. Because of the strong government backing of technology development in these countries, many of the technology gaps that exist in a developing country can be closed more quickly.

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<sup>29</sup> The Times, "South East Asian economies herald a new dawn of technological innovation," January 17, 2007

## Chapter 3: Motivation for Expansion

In order to analyze if there is a future for Western engineers in Asian multinational corporations, one must first better understand the emerging Asian MNC's motivation for internationalization. It's clear what motivates a company operating in a developed country to invest in operations in a developing country. The classic reason is lower labor costs.

Basic economic principals explain the very simple motives for a company to move into foreign markets. These include securing key supplies in resource rich countries, and market-seeking behavior such as obtaining economies of scale and finding means of lower cost production (largely lower labor costs). Historically, when tariff barriers were minimized in the 1960's, U.S. labor costs were so much higher than those in other nations that U.S. products had a hard time competing with foreign products in terms of price point. Offshore sourcing of product components or even entire lines became necessary to keep prices low enough to compete with similar foreign produced products<sup>30</sup>.

Harvard Professor Raymond Vernon's famous product cycle theory provided an explanation of how diversification into foreign markets transpired through the 1960's – 1980's. Professor Vernon breaks the product cycle into three stages. In the first stage, a U.S. company (for example) develops an innovative new product idea for which there is U.S. demand. A home base is established in the country of origin (the U.S. in this example), which includes research and development as well as production. Demand in other foreign markets for this product emerges slowly during this time.

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<sup>30</sup> Bartlett, C., Ghoshal, S., and Beamish, P., "Transnational Management: Text, Cases, and Readings in Cross-Border Management", 2008, p 4-8

During stage two, demand in foreign markets has grown significantly to the point that other foreign companies have copied the product idea and are now competing for market share. For many companies, their home base market becomes too small to support their growing industry. To minimize the loss of market share to these new competitors, the original U.S. company must establish other sites in the growing foreign markets.

By stage three, competitors have flooded the market. Product pricing has become the distinguishing factor to consumers. Thus, finding a means for lower cost production becomes essential, necessitating the need for the U.S. company to expand into developing countries with lower labor costs. The result is that these developing nations then become the main exporters of the product line.

Vernon's theory was the reigning explanation of diversification into foreign markets for roughly 20 years, but by the 1980's, while still applicable, the global market had become too complex to explain much of the corporate motivation<sup>31,32</sup>.

The world climate is different today, and the motivations for an emerging market based company to go global are different then they were for the US companies that Vernon's theory previously applied to. So why would an emerging market based company invest in a country where labor costs were higher? More directly, why would an emerging Asian MNC corporation invest in a developed country such as the United States?

The reason for the outward direct investment in Westernized countries by emerging market corporations (and more generally the essence of the modern global business climate) is summarized very succinctly in the following quote:

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<sup>31</sup> Bartlett, C., Ghoshal, S., and Beamish, P., "Transnational Management: Text, Cases, and Readings in Cross-Border Management", 2008, p 4-8

<sup>32</sup> Vernon, R., "International Investment and International Trade in the Product Cycle," Quarterly Journal of Economics, May 1966, pp 190-207

“In a world with just one time zone – ‘now’ – business must source materials, innovation, talent, logistics, infrastructure and production wherever they are best available.” – Yang Yuanqing, Lenovo<sup>33</sup> This statement effectively embodies the impetus for modern internationalization. An increasing global market and global labor pool drive multinational corporations to globalize. As the markets expand, the requirement for the resources to meet those markets’ needs expand. This is definitely true for the emerging Asian MNC from South Korea or Taiwan, as their home markets present limited opportunities to them because of their size. China, on the other hand, has a huge home market for goods and services, but only recently has a middle class emerged which can consume many of the higher margin goods so lucrative for companies to produce. So the emerging Asian MNC must expand its market share globally to continue its accelerated growth, and in the process expand its resources to deliver goods to those markets. That is the basic motivation for internationalization. A recent report by Accenture on the “Rise of the Emerging-Market Multinational” suggests there are actually five main drivers for going global: access to new markets, realizing efficiency gains, moving up the value chain, access to new resources, and gaining national prestige<sup>34</sup>. Each motivation should be analyzed and each motivation tested to see if it supports Western investment.

## **GLOBAL DRIVER: ACCESS TO NEW MARKETS**

### **Analysis**

Emerging Asian MNCs often have dominance in their local market, but because of their limited total available market, quickly saturate their local opportunities. Investing in overseas markets allows them to get closer to their customers, allowing them to better understand customer needs and preferences. There may also be trade barriers such as

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<sup>33</sup> “The Rise of the Emerging-Market Multinational”, an Accenture report, January 2008

<sup>34</sup> “The Rise of the Emerging-Market Multinational”, an Accenture report, January 2008

tariffs and quotas (e.g. NAFTA) that the emerging Asian MNCs can overcome by having operations in the foreign countries<sup>35</sup>.

Additionally, accessing new markets reduces a company's risk in any one market, much as diversifying a stock portfolio reduces the risk of financial loss. With loss and risk minimized, a company can then follow a broader and more long-term vision in corporate goal setting and expansion. They are not at the whim of the current financial trends and can better weather any one financial downturn. This allows multinational companies the latitude to take risks and make choices that better ensure their position in the future as compared to companies that have less diversified markets<sup>36</sup>.

## **Conclusion**

Access to new markets is definitely a reason for an emerging Asian MNC to set up operations in another country. However, this is likely not a main motivation to maintain research and development operations that would employ engineers. Sales and distribution channels are likely the operations that are required to establish the new market. One aspect to consider is that local research and development could develop products better suited to that region; however thorough market analysis and transfer of marketing research would allow Asia based research and development to account for locality customization. It is unlikely that access to new markets is major driver for the emerging Asian MNC to invest in Western engineering.

## **GLOBAL DRIVER: DESIRE TO INCREASE OPERATING EFFICIENCY**

### **Analysis**

Emerging Asian MNCs, like other multinational companies from developed markets, will always look for ways to lower their operating costs. While the most direct

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<sup>35</sup> "The Rise of the Emerging-Market Multinational", an Accenture report, January 2008

<sup>36</sup> Accenture, "The Rise of the Multipolar World", 2007



way to accomplish this is to move as many production, research and development operations to the lowest wage workers, this type of “efficiency” optimization doesn’t apply for Western workers, who are well compensated. However, the growth into Western labor markets can make the company’s operations more efficient in less obvious ways. One way is to expand on the “now” concept mentioned by Lenovo’s Yang Yuanqing – by having research and development in Eastern and Western countries, development can continue around the clock; European engineers complete their daily activities and pass them to US engineers, who complete their activities and pass them to Asian engineers, who in turn pass to Europe to complete the cycle. In this method development never stops, and proceeds at a very fast pace maximizing the time zone difference between localities. In practice, however, truly efficient global development is very hard to achieve.

## **Conclusion**

The concept of working around the clock and passing technology development from one time zone to the next sounds great in theory. However the practical application of this concept is very difficult. Often, engineers will need access to each other to collaborate and to discuss the technology they are co-developing. If critical issues arise, development may stop until the region of the world responsible for the issue resolution “wakes up”. For example consider co-development of technology between the central United States and Taiwan. The Taiwan time zone is 13 hours ahead of central United States. Therefore, there is very little core working hour overlap – when it is 9am in United States, it is 10pm in Taiwan. When it is 9am in Taiwan, it is 8pm in United States. This basic fact makes it very difficult for teams in these two time zones to collaborate as someone will always have to stay late or get up early to facilitate information exchange.

Global research and development can create a difficult working environment if gating work issues arise frequently. Partitioning research and development work around the world purely for efficiency and around the clock development is not likely a major driver for the emerging Asian MNC to employ Western engineers.

#### **GLOBAL DRIVER: DESIRE TO MOVE UP THE VALUE CHAIN**

##### **Analysis**

Many emerging Asian MNCs base their success on supplying commodity products at an acceptable quality and lower cost than their rivals. However, these commodity products are still relatively low margin, and margin pressure increases as new emerging markets are formed and new competitors appear. One way to stay ahead of competitors is to move from commodity products to higher value, higher margin products. Developing these high profit margin, high technology products is not straightforward, however. The development cycle for technology required for sophisticated products with higher profit margins is usually long and expensive. Additionally, the intellectual property required for these products is often protected by patents and unavailable to the emerging Asian MNC. In fact, an estimated less than 1% of Chinese companies own the IP rights to the technology in their products<sup>37</sup>, with the majority of that IP owned by Western companies. The technical knowledge and the intellectual property belong to companies in developed economies, and the emerging Asian MNC needs access to this technology to move up the value chain. As a shortcut to gain access to this technology, many emerging Asian MNCs expand abroad.

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<sup>37</sup> The Times, "South East Asian economies herald a new dawn of technological innovation," January 17, 2007

Another path to move up the value chain is to partner with Western companies or develop a supply chain relationship. Through this relationship, the emerging Asian MNC can gain the basic capability and know how to develop more advanced products. LG, which originated in South Korea, has moved up the value chain by gaining experience first by delivering components. Over time, LG has moved from the selling of components for cell phones, televisions and other electronics to major Western brands to selling the actual complete electronic goods themselves directly to consumers under the LG brand name. The profit on these complete goods is higher than on the components themselves supporting the value-added impetus theory<sup>38</sup>.

## **Conclusion**

Many emerging Asian MNC's begin their advancement onto the global market by developing low cost products. To expand their market share higher end, higher value product development is needed. The key point of this global driver is that the technical knowledge and the intellectual property belong to engineers in developed economies, and the emerging Asian MNC needs access to this technology to move up the value chain. This knowledge is largely tacit knowledge, and the only way to access this knowledge is to employ the engineers directly. By acquiring or investing in engineering operations in Western countries, the emerging Asian MNC can acquire the key knowledge required to develop products that move them up the value chain. Innovation driving new product features and creating new markets is a primary driver for Western investment. This driver for Western investment by emerging Asian MNCs is sustainable only if Western engineers continue to create and provide innovative technology unable to be replicated in other parts of the world.

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<sup>38</sup> Accenture, "The Rise of the Emerging Market Multinational", 2008

## **GLOBAL DRIVER: GAINING NATIONAL PRESTIGE**

### **Analysis**

Some companies increase their global presence out of national pride. Surely, this is a secondary or tertiary motivation, but the desire to not be considered a local, low margin commodity player can be achieved by acquiring subsidiaries in the West or starting new offices. Improving the international profile and thereby the viability of a company by having a global presence can open up new Western customers for the emerging Asian MNC. By acquiring international companies, emerging Asian MNCs are able to increase their global presence, and exert their cultural influence in the global economy.

Emerging Asian MNCs desire to prove that an emerging market company is as good as or better than anyone else, and want to put their country in a target industry “on the map”. Advancing the positive perception of a country is also sometimes supported by the government. China, for example instituted a so-called “go out” policy in 2002; which was a plan to create between 30 and 50 globally competitive companies from the most promising state-owned enterprises.<sup>39</sup>

Perhaps somewhat ironically, many of these same companies that seek global expansion also seem adept at staying seemingly small and local to their original populace by staying true (at least on a local level) to the practices which fostered their initial success, thus maintaining local loyalty while expanding globally. Perhaps this need for a continuing “local” image will help the Western engineers remain employed in the US by the Asian MNCs. Possible future perception by the US government that foreign goods

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<sup>39</sup> Accenture, “China spreads its wings,” 2007.

and companies provide a threat to the US economy could ultimately result in more regulation to keep these foreign goods out of the US consumers' hands. By providing a local base and source of employment within the US, an Asian MNC could potentially overcome any such regulations and foster a local image to Western customers.

## **Conclusion**

This global driver will likely drive emerging Asian MNC's to enhance their image as a truly global corporation. However, it is likely only a temporary driver for Western investment. While the acquisition of Western companies and establishment of research and development may add credibility and global prestige to the emerging Asian MNC, this cannot be a major driver for maintaining research and development in expensive developed economies. For continued investment, the value of Western research and development must produce solid economic returns, therefore gaining national prestige by investing in the West is likely only a temporary employment driver for Western engineers.

## **GLOBAL DRIVER: NEW RESOURCES**

### **Analysis**

Emerging Asian MNCs often are faced with resource shortages as they expand their business. Shortages occur in every imaginable resource – for example raw materials to build their products. Chinese companies invest in foreign mining operations, Brazilian companies investing in foreign oil fields to overcome these resource limitations. However, just because raw materials are available in the West that may be attractive to an emerging Asian MNC, this need is unlikely to provide a long term source of employment for Western engineers.

Labor shortages also exist in emerging Asian MNC corporations. Surprisingly, despite the large numbers of college graduates and increasingly educated populations, there is a rather significant talent gap that exists in many emerging Asian MNCs. As an example, Hisense, a large Chinese electronics company, states that talent deficit is one of their largest challenges as they attempt to expand their operations<sup>40</sup>. Leaders operating companies in emerging markets cite acquiring the necessary talent to run and expand their business as one of their top concerns.

Specific talent gaps of emerging Asian MNC's include:

- a) A limited ability to run complex, systemic businesses<sup>41</sup>, and
- b) Limitations of growing market share by innovating on cost alone<sup>42</sup>

Leaders operating companies in emerging markets cite acquiring the necessary talent to run and expand their business as one of their top concerns. Only five of the top 100 MBA programs are in emerging market countries<sup>43</sup>, which could lead to employees skilled in managing businesses and senior product line managers.

The best recruits in Asia have lots of opportunities, and turnover rates are very high – manager turnover in China is 25% higher than the global average<sup>44</sup>. This lack of commitment to the company and loss of key talent makes it difficult to gain significant management depth. Also with high manager turnover, many key elements of the company culture have to be continually retrained to replacement employees. This effect can also result in an overall dilution and blurring of the company culture and identity.

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<sup>40</sup> “Operational Challenges Facing Emerging Multinationals from Russia and China”, Skolkovo Research Report, Siems Monthly Briefing, June 2009

<sup>41</sup> Zeng, M., Williamson, P., “Dragons At Your Door”, 2007, p 124

<sup>42</sup> Zeng, M., Williamson, P., “Dragons At Your Door”, 2007, p 124

<sup>43</sup> “The Top 100 Full-Time Global MBA programmes,” Financial Times, 2007.

<sup>44</sup> ”2005 Human Resources Trends in China”, Society for Human Resource Management

Stable operations in the West with low turnover can help to balance the high turnover in Asia.

## **Conclusion**

San Jose Mercury News published an article about the trend of Chinese companies acquiring Silicon Valley assets in early 2010. In this article, Bill Huang, general manager of China Mobile's Research Institute was quoted: "There's a saying: If you have ideas, you go to Silicon Valley. If you want people, you go to Silicon Valley. And if you have enough money and you want to make some more money, you want to go to Silicon Valley".<sup>45</sup> Based on this view, the most important resource that the West can supply is ideas. Growing business by increasing the value of product offerings through innovative product features is a major driver for the emerging Asian MNC to invest in Western operations.

The talent gaps that emerging Asian MNC's face can be addressed by acquiring Western operations and by establishing research and development operations in developed countries such as the United States. Where talent gaps involve skills and knowledge needed to develop high end or high technology products, the opportunity for Western engineers is the greatest.

## **SUMMARY**

Of the five main drivers for going global: access to new markets, realizing efficiency gains, moving up the value chain, access to new resources, and gaining national prestige, only two drivers seem relevant for continued Western investment by emerging Asian MNCs. Access to new markets, the lack of talent – specifically those

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<sup>45</sup> "Chinese Companies are Bargain Hunting in Silicon Valley", San Jose Mercury News Online, April 20, 2010

engineers that have strong innovative capabilities and tacit knowledge to develop key intellectual property - are the best drivers for sustained Western engineering investment.



## Chapter 4: An Analysis of Emerging Asian MNC Expansion

### INTRODUCTION

In previous sections I have documented that a primary motivation for emerging Asian MNC's to invest in the West is for access to talented engineers that can add value through innovation. If Western engineers have a future being employed by emerging Asian multinationals, the contribution and value added by Western operations must be quantified. When studying the acquisitions of emerging Asian MNC's, it is difficult to find publications on Asian MNC acquisitions as many acquisitions are done "quietly". The desire to keep strategic investments confidential, coupled with the motivation to keep negative press at a minimum when later divesting Western operations makes it difficult to discover the fate of Western operations after they have been acquired<sup>46,47</sup>.

"We leverage the brainpower in the valley," said Weijie Yun, co-founder and chief executive of 4-year old Telegent discussing a product developed in Sunnyvale, California. As of 2009, Telegent employed 80 engineers in Sunnyvale. The team in Sunnyvale developed a mobile phone chipset that could pull analog TV signals for viewing free TV programs on a mobile phone. "This has allowed us to do something unique." "We have a wealth of experience in the valley," Yun said. "Obviously, the costs are much higher here. So we had to do something that was different, something that no one else has done. The product has been on the market for two years now and we still don't have a competitor."<sup>48</sup>

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<sup>46</sup> Wooldridge, A., "The World Turned Upside Down", The Economist, April 17, 2010

<sup>47</sup> "More Tech Firms Innovate in Silicon Valley but Sell Overseas", San Jose Mercury News, February 23, 2009

<sup>48</sup> "More Tech Firms Innovate in Silicon Valley but Sell Overseas", San Jose Mercury News, February 23, 2009

With few published reports of the performance of Western operations after an acquisition by an emerging Asian MNC, another analysis method is needed to measure if Western engineers are delivering on the promise of innovation. A commonly used metric for innovation is patent generation<sup>49</sup>. By analyzing the year to year patent characteristics and correlating to news events, an attempt will be made to correlate the patent trends to the published news events. My goal in conducting this research and analysis is to look for trends/data to indicate that foreign companies making investments in the US and Europe are innovating, and that the innovation is coming from Western sources. Subsequently I will develop a model to explain the patterns of Western investment by emerging Asian MNCs.

To examine whether Western research and development operations of an emerging Asian MNC are fulfilling on their main purpose, the number of United States Patent Applications will be studied. The main interest here is generation of ideas; therefore, patent application trends will be studied in lieu of actual patents granted. Studying patent applications rather than patents granted also provides a more real time indicator of research and development activity, as the duration between a patent application and the actual granting of the patent can vary widely.

## **RESEARCH METHODOLOGY**

To collect information on innovation related to patent filings, I conducted data mining of The United States Patent Application Database (<http://appft.uspto.gov/netahtml/PTO/search-adv.html>) to examine the patent trends of several emerging Asian MNCs. The emerging multinational company selection will be based on those who have high patent output or by those companies who have publicly

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<sup>49</sup> Thomas, P., Breitzman, A., "Patent Power Scorecards: Japan Ascendant", IEEE Spectrum Magazine Online, March, 2010

announced investment in Western operations. For each company, the trend of total United Patent applications will be compared against the number of patents generated by Western engineers. The contribution measured by Western engineers is collected by counting patent applications where the author's home address is outside of that of the emerging Asian countries. In other words, for a given company the number of patents generated by Western engineers will be compared against the total number of US patent applications by a given company.

Since there is an eighteen month lag from application date until the application appears online, and since the database mining is being performed in July and August of 2010, only annual data through 2008 is accessible as a complete year. Therefore only patent application trends through 2008 will be included in my research.

## **CASE 1 – TCL**

### **Background**

TCL Communication Technology Holdings Limited (from now will be referred to as TCL) was established in China in 1981. It is a state owned enterprise joint venture with individual investors in Hong Kong. TCL arrived in the international market with its purchase of the German subsidiary Schneider Electric in 2002 and its merger with U.S. based GO-video Corporation, as well as with Thompson of France in 2003. Thompson owns such brands as GE, RCA and Alcatel. TCL was listed on the Shenzhen Stock Exchange in China in 2004.<sup>50</sup> In 2005 TCL began a joint venture with Alcatel in which TCL acquired a 55% share of Alcatel's failing mobile phone industry. However, only 5 months later, TCL acquired the remaining 45% due to continuing failing Alcatel profits. Losses at that time exceeded TCL's original investment capital. Reasons cited for the

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<sup>50</sup> "TCL History", [http://www.tcl.com/main\\_en/About%20TCL/History/index.shtml?catalogId=13048](http://www.tcl.com/main_en/About%20TCL/History/index.shtml?catalogId=13048)

total take over were the acquisition of Alcatel’s technologies, patents, and research and development centers, as well as a way of overcoming international intellectual property law.<sup>51</sup>

TCL is selected for analysis due to their long corporate history and due to their recent investments in Europe.

### Patent Data

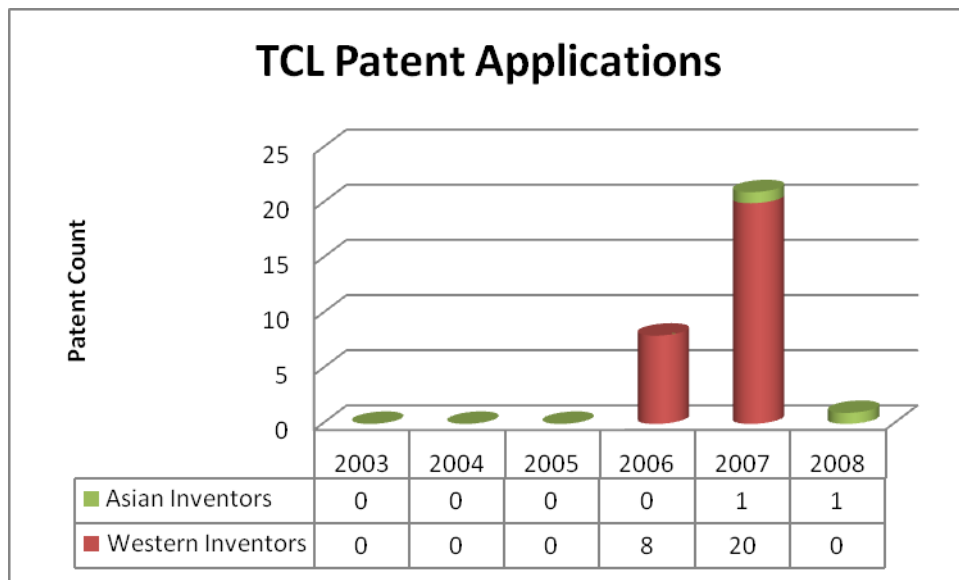


Figure 2: TCL Patent Applications

### Analysis

TCL is not heavily investing in United States patent applications, as they only have 30 total applications over the analysis period of 2003-2008. TCL had no United States patent applications 2003-2005. The eight filings in 2006 appear to correlate to the Western investment by TCL in their European joint ventures, which were announced in 2005. It appears from patent trend a harvesting of patents occurred, spiking the patent applications with 20 from Western inventors in 2007.

<sup>51</sup> He, Yuxin, “The Disillusion of TCL and Alcatel”, Caijing Magazine Online, May 30, 2005, <http://english.caijing.com.cn/2005-05-30/100043203.html>

In 2006, TCL announced major restructuring of European operations, which appears to coincide with a spike in patent applications. The steep drop off of patent applications by Western inventors in 2008 suggests that research and development activities in the United States and Europe ceased. Part of that restructuring included closing Thompson production factories in Mexico and moving production to China.<sup>52</sup> Additionally, a “substantial number” of the 1,345 European employees were made redundant.

From correlating the patent application to the news events, it seems clear that TCL harvested the technology available from their Western operations, and then discontinued investment.

## **CASE 2 – HUAWEI**

### **Background**

Huawei, a China based company specializing in telecommunications, has become the world’s fourth largest patent applicant<sup>53</sup>. In 2008 Huawei was listed under the WIPO’s Patent Cooperation Treaty as the largest patent applicant with 1,727 patent applications. These patents account for 10% of the LTE global patents.<sup>54</sup> Since its establishment in 1988, Huawei has received numerous accolades including being named to the Global Fortune 500 in 2010 by Forbes, listed as the 5<sup>th</sup> most innovative company in the world by FastCompany in 2009, making the World’s Most Influential Companies list in Business Week in 2008, and being named by Forbes to the World’s Most Respected 200 Companies list in 2007. Additionally, Huawei has ranked in the top three in global

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<sup>52</sup> De Ramos, Abe, “China’s Growing Appetite”, CFO Magazine Online, November 3, 2005

<sup>53</sup> Wooldridge, A., “The World Turned Upside Down”, The Economist, April 17, 2010

<sup>54</sup> Huawei Corporate Information Online [http://www.huawei.com/corporate\\_information/milestones.do](http://www.huawei.com/corporate_information/milestones.do)

marketing share of radio accessories and equipment, worldwide marketshare in mobile network equipment, and mobile broadband devices.<sup>55</sup>

Huawei has 62,000 employees globally. Sixty five percent of their revenue for their \$11 billion company is from overseas markets. Of the 20,000 employees located at the Shenzhen headquarters, half work in research and development. Ten percent of Huawei’s annual revenue goes back into their research and development enterprises. In 2004 Huawei also received a loan from the Chinese government for \$10 billion to help Huawei customers finance network purchases.<sup>56</sup>

Due to Huawei’s status as the fourth largest patent applicant and their numerous dealings with Western companies, Huawei is selected for analysis.

### Patent Data

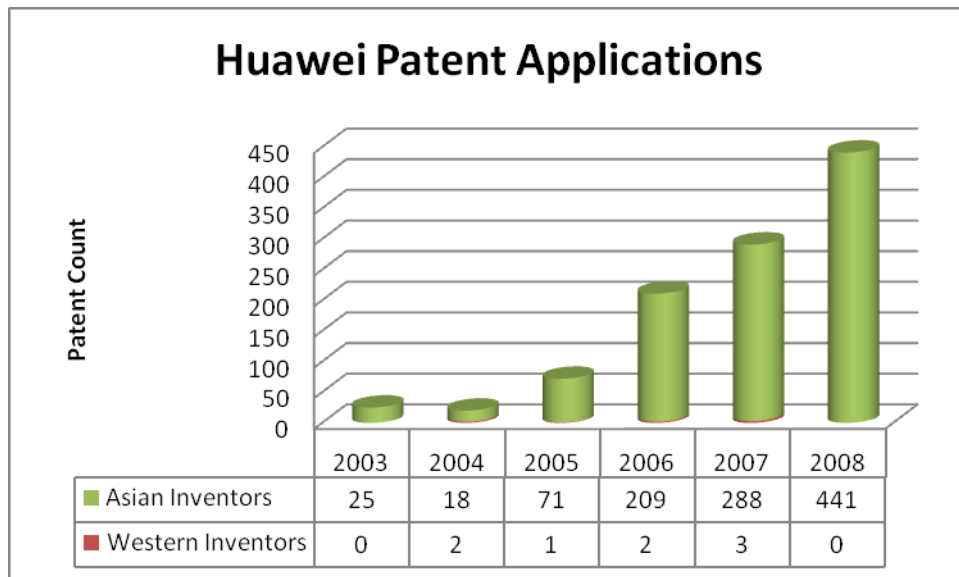


Figure 3: Huawei Patent Applications

<sup>55</sup> Huawei Corporate Information Online [http://www.huawei.com/corporate\\_information/milestones.do](http://www.huawei.com/corporate_information/milestones.do)

<sup>56</sup> Griffin, Peter, “China’s Technological Challenger”, The New Zealand Herald Online, March 15, 2007, [http://www.nzherald.co.nz/telecommunications/news/article.cfm?c\\_id=93&objectid=10428813](http://www.nzherald.co.nz/telecommunications/news/article.cfm?c_id=93&objectid=10428813)

## Analysis

Huawei's patent trend is impressive, increasing at a greater than 35% rate year over year. With many investments in the United States and Europe, it is expected that a fair percentage of Huawei's numerous patent applications would be from Western inventors. However, from the patent trend this is not the case; nearly all of Huawei's patents are from Asia based inventors with Western inventors contributing only around 1% annually. How can this be?

Huawei's business practices have received more scrutiny than accolades with lawsuits filed by companies and joint venture partners such as Motorola and Cisco Systems accusing Huawei of technology theft. An incident at a Supercomm trade show in 2004 further revealed the lengths Huawei would go to surpass all competitors. Supercomm security caught Yi Bin Zhu, a Huawei employee, in a competitor's booth afterhours examining their products and equipment. In his possession were pictures of competitor FNC's FNC 4300 product with the casing removed to reveal the circuit board. The photographs were reported to have been taken at "surreptitious angles." Additionally, a notebook found on Zhu contained two pages of proprietary diagrams of an AT&T Corp. central office. Zhu and Huawei denied knowing photographing competitor products was illegal and denied pulling circuit boards from any competitor products.<sup>57</sup>

Possibly most concerning though, Australia, India and the U.S have all expressed concern that Huawei poses a national security threat due to its ties to China's military who is both a customer and research and development partner.<sup>58</sup> In 2008 Huawei's

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<sup>57</sup> Harvey, p., Heywood, P., Le Maistre, R, "Huawei in Spying Flap", Light Reading Online, June 24, 2004, [http://www.lightreading.com/document.asp?doc\\_id=55172&site=supercomm](http://www.lightreading.com/document.asp?doc_id=55172&site=supercomm)

<sup>58</sup> Basu, Indrajit, "India's Telecom Agency Raises China Spy Scare", UPI Asia Online, October 8, 2009, [http://www.upiasia.com/Security/2009/10/08/indias\\_telecom\\_agency\\_raises\\_china\\_spy\\_scare/1789](http://www.upiasia.com/Security/2009/10/08/indias_telecom_agency_raises_china_spy_scare/1789)

attempt to purchase U.S. competitor 3Com was halted by Congress after reviewing a military report regarding China.<sup>59</sup> That same year Australia began a “security check back system” with Australian-based Singtel Optus believing Singtel Optus and Huawei had partnered in some way. Singtel Optus admitted later to a partnership with Huawei. In 2009 the Department of Telecommunications in India requested that “all domestic telecom companies refrain from buying Chinese telecom equipment.”<sup>60</sup>

Huawei clearly appears to be supporting their research and development activities primarily in Asia. Huawei has been accused of questionable business practices and lack of ethics by their Western partners. The patent trend clearly indicates a steep trend in applications, but virtually none are from Western inventors.

### **CASE 3- BENQ**

#### **Background**

Acer Computers was founded in Taiwan in 1976.<sup>61</sup> Acer Computers originally made components and sold them to end-product companies. A separate spin off corporation, Acer Communications and Multimedia, was formed after Acer Computers underwent extensive business reorganization in 2000. This subsidiary was renamed BenQ in 2001. The strategy behind the BenQ name was brand establishment so that BenQ could manufacture and sell its own brand name end products.<sup>62</sup> While Acer, currently the third largest PC vendor in the world, initially maintained representation on BenQ’s board of directors as well as significant stock holdings, direct product

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<sup>59</sup> Wahba, P., Lee, M., “Update 2 – Motorola Sues Huawei for Trade Secret Theft”, Reuters Online, July 22, 2010, <http://www.reuters.com/article/idUSTOE66L02620100722>

<sup>60</sup> Basu, Indrajit, “India’s Telecom Agency Raises China Spy Scare”, UPI Asia Online, October 8, 2009, [http://www.upiasia.com/Security/2009/10/08/indias\\_telecom\\_agency\\_raises\\_china\\_spy\\_scare/1789](http://www.upiasia.com/Security/2009/10/08/indias_telecom_agency_raises_china_spy_scare/1789)

<sup>61</sup> Acer Group corporate website, [http://www.acer-group.com/public/The\\_Group/milestones.htm](http://www.acer-group.com/public/The_Group/milestones.htm)

<sup>62</sup> “Ex-Siemens Subsidiary Flops: BenQ Bankruptcy Causes Furor”, Spiegel magazine online, Sept. 29, 2006, <http://www.spiegel.de/international/spiegel/0,1518,440049,00.html>



competition between the two entities led to bad feelings between the companies. In 2005, Acer sold 50 million shares of its BenQ stock, and in 2006 Acer removed itself from BenQ's board of directors, severing all connections between the two companies.<sup>63</sup>

BenQ acquired Siemens' mobile phone division in October of 2005. The deal involved 6,000 Siemens employees transferring to BenQ.<sup>64</sup> The employment of Siemens employees by BenQ was guaranteed through 2006; however their salaries were cut by 25%.<sup>65</sup> The agreement allowed BenQ use of the Siemens trademark for five years. All mobile phone research and development, sales and marketing, and the Siemens headquarters were acquired by BenQ.<sup>66</sup> For those privileges, Siemens paid BenQ \$316 million to cover the losses that Siemens had suffered the previous year. When the merger/acquisition was announced, Siemens' head, Klaus Kleinfeld announced he perceived the agreement as a way to "create lasting perspectives for customers, employees and shareholders".<sup>67</sup>

In June of 2007, BenQ changed their name to Qisda<sup>68</sup>, thus the following patent data was for either Qisda or BenQ. Interestingly, Qisda has won numerous German-issued red dot awards for design excellence, as well as Japan-issued G-mark design awards since 2008. Design Office Chief, Manfred Wang reports Qisda has received 279 international design awards to date.<sup>69</sup>

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<sup>63</sup> Nystedt, Dan, "Acer Leaves BenQ Board to Avoid Conflict", Infoworld Online, April 17, 2006, <http://www.infoworld.com/t/hardware/acer-leaves-benq-board-avoid-conflict-880>

<sup>64</sup> "BenQ announces to purchase Siemens' mobile phone business", XinhuaOnline, June 8, 2005

<sup>65</sup> "Ex-Siemens Subsidiary Flops: BenQ Bankruptcy Causes Furor", Spiegel magazine online, Sept. 29, 2006, <http://www.spiegel.de/international/spiegel/0,1518,440049,00.html>

<sup>66</sup> "BenQ announces to purchase Siemens' mobile phone business", XinhuaOnline, June 8, 2005

<sup>67</sup> Blackett, Tom, BenQ and Siemens: A Tale of Two Brands", Nov. 20, 2006, [http://www.brandchannel.com/brand\\_speak.asp?bs\\_id=151](http://www.brandchannel.com/brand_speak.asp?bs_id=151)

<sup>68</sup> Ricker, T., BenQ renamed Qisda, but still BenQ...Huh?", June 20, 2007, <http://www.engadget.com/2007/06/20/benq-renamed-qisda-but-still-benq-huh>

<sup>69</sup> Qisda company website, <http://www.qisda.com/page.aspx?uid=33>

## Patent Data

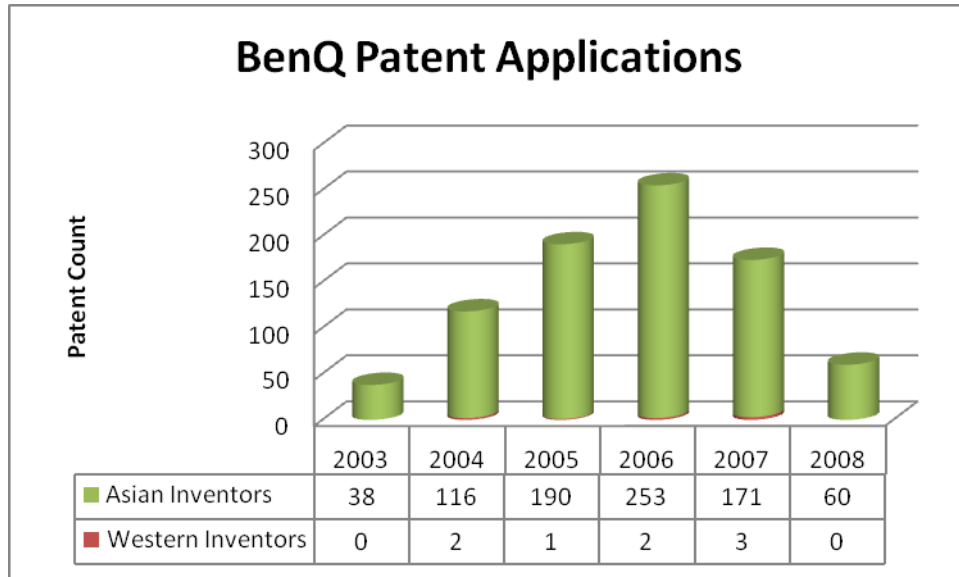


Figure 4: BenQ Patent Applications

## Analysis

It appears from the patent trend that BenQ had strong research and development activities during period 2005-2007 with their United States patent applications peaking in 2006. However the trend rolls off quickly, and by 2008 they file only 60 patent applications compared to 116 in 2004. The trend could suggest a company peaking and then in decline. An insignificant number of patents applications are from Western sources; around 1% annually from the period 2004-2007, with no Western inventor applications during 2003 or 2008.

BenQ's acquisitions in Europe were an attempt to grow market share and expand their research and development activities. The acquisition of the Siemens handset division was widely publicized, and a courageous move by BenQ. Unfortunately this union was not to last. It is assumed that overcoming the mismanagement of the previous leaders as well as the German labor laws and trade unions was too great an obstacle for BenQ to conquer. As the failing company continued to lose money totaling \$1.1 billion

since the acquisition, enough was enough.<sup>70</sup> In September of 2006 BenQ discontinued funding of BenQ Mobile, the new name of its acquired German Subsidiary, and BenQ Mobile subsequently announced bankruptcy. Up to 3000 employees lost their jobs. Talk by former employees that BenQ had “systematically cannibalized” the company had a German official speaking of investigation and legal action.<sup>71</sup>

BenQ acquisition of Siemens mobile never really took off. BenQ stopped investment in 2006. The patent trend and the financial straits of the company correlate; the declining business post 2006 correlates to a decreasing number of United States patent applications. The patent application from Western sources is negligible, and from news sources the Western investment ceased or was greatly reduced.

#### **CASE 4 – LENOVO**

##### **Background**

In 2005, Lenovo, a China based company owned in part by the Chinese government, bought IBM's PC division, which marketed ThinkPad notebooks, for about \$1.75 billion.<sup>72</sup> The reason IBM stated for exiting the PC market was that they felt they had greater profit potential in the PC services market. Though they sold off their PC rights, they continued to control financing, leasing, maintenance and warranty services.<sup>73</sup> As part of the deal IBM also received ownership of almost 19% of Lenovo. Management of the acquired business was split between both Lenovo and IBM executives. This deal created Lenovo research and development in China, Japan and the U.S with a total of

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<sup>70</sup> Blackett, Tom, BenQ and Siemens: A Tale of Two Brands”, Nov. 20, 2006,

[http://www.brandchannel.com/brand\\_speak.asp?bs\\_id=151](http://www.brandchannel.com/brand_speak.asp?bs_id=151)

<sup>71</sup> “Ex-Siemens Subsidiary Flops: BenQ Bankruptcy Causes Furor”, Spiegel Online, September 29, 2006, <http://www.spiegel.de/international/spiegel/0,1518,440049,00.html>

<sup>72</sup> “Chinese Companies are Bargain Hunting in Silicon Valley”, San Jose Mercury News Online, April 20, 2010

<sup>73</sup> Williams, M. and Kallender, P., “IBM sells Its PC Business”, PC World Online, Dec. 8, 2004

19,000 employees, 4000 of whom resided in China.<sup>74</sup> They also moved the Lenovo headquarters from China to New York. Lenovo planned on cutting costs and introducing several new products to the market including the newest version of the Thinkpad under a shared Lenovo/IBM name shortly after the acquisition. Eventually they planned on switching the brand awareness from IBM to Lenovo.<sup>75</sup>

That same year Lenovo received extensive funding from the equity firms Texas Pacific Group, General Atlantic LLC, and Newbridge Capital LLC and William Amelio is appointed Lenovo's CEO and President. Lenovo also created an "innovation center" in North Carolina.<sup>76</sup>

Three years after his contract term was up, Lenovo/IBM CEO Amelio resigns after announcing layoffs of 2500 employees including 200 from Beijing which included 10 senior management positions. Third quarter earnings that year were dismal with a \$96.7 million net loss. The expectation was that a more streamlined company could better respond to market fluctuations and desires.<sup>77</sup>

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<sup>74</sup> Thurrott, Paul, "Lenovo Completes Acquisition of IBM's PC Business", Windows IT Pro Online, May 2, 2005

<sup>75</sup> Lemon, S., "Lenovo Completes Purchase of IBM's PC Unit", PC World Online, May 2, 2005

<sup>76</sup> Lenovo Corporate Website, [www.lenovo.com](http://www.lenovo.com)

<sup>77</sup> Yeo, Vivian, "Lenovo to Cut 2500 Jobs Amid Restructuring", CNET Online, Jan. 8, 2009

## Patent Data

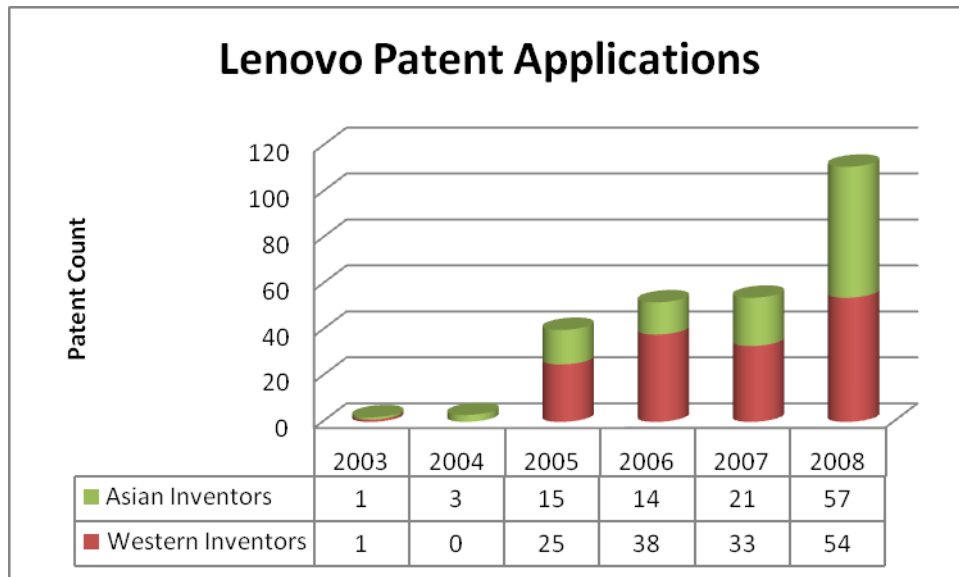


Figure 5: Lenovo Patent Applications

## Analysis

An analysis of the patent trend data for Lenovo indicates that the company is leveraging the inventions of Western engineers. The patent trend indicates increased innovation and a very balanced approach to research and development. For years 2005 through 2007, patent applications from the United States and Europe were higher than those from Asia. In 2008, the contribution is quite balanced at 57 patent applications from Asia and 54 patent applications from the United States and Europe.

Lenovo is a strong global competitor and accounts for 10.2% of global personal computer sales, which ranks them at fourth overall in the second quarter of 2010.<sup>78</sup> Lenovo's acquisition of IBM's PC operations has been successful, and the fact that patents continue to be generated in the US and Europe coupled with the business success of the company is a promising sign that Western engineers can provide value to the emerging Asian MNC.

<sup>78</sup> McEntegart, J. "HP and Dell Still Dominating U.S. PC Sales", Tom's Hardware US (online), July 16, 2010

## **Summary of Emerging Asian MNC Patent Trends**

By analyzing the patent application trends of several emerging Asian MNCs and correlating the results to news headlines and reports, it is observed that three of four emerging Asian MNCs temporarily rely on Western operations, acquiring the talent and intellectual property needed for their business and then reducing or eliminating the foreign research and development activities. One company, Lenovo, acquired a major Western operation and continues to invest in research and development activities, providing a strong counter example to the other companies studied.

There are 2 models that can be created based on case study examples and personal experience:

Model 1 – Emerging Asian MNC acquires or partners with Western operations, harvests technology, transfers technology and development to Asia. Emerging Asian MNC divests or eliminates Western operations. BenQ, Huawei, TCL support this model.

Model 2 – Emerging Asian MNC acquires Western operations and continues investment in Western research and development over a multi-year period. This creates a global research and development engine leveraging global talent and regional expertise (Lenovo supports this model).

## **Chapter 5: Conclusion**

Through my research, I have studied the characteristics of the emerging Asian MNC; their motivations for globalization have been established. Through analysis of several emerging Asian MNCs who have had investments in Western engineering operations, I have proposed some patterns and models for identifying whether or not the Western investments are short term technology acquisitions. Examples studied show that in some cases the technology gets assimilated and transferred to the Asian engineering teams. Another case shows that the Western engineering operations remain in place and contribute to the emerging Asian MNC in their own unique way. In total, my research and case studies suggest that the trend is for emerging Asian MNC to acquire the talent and technology they need, and then transfer whatever possible to the lowest cost labor pool capable of completing the work. In order for the Western engineering teams to remain viable contributors to the emerging Asian MNC, the Western engineer must show differentiating value. Vernon's theory shows businesses will gravitate towards the lowest cost labor pool capable of completing the business needs. Companies need to follow this path to remain competitive. Western engineers will be put in positions where their merit is questioned and compared to lower cost talent in Asian. The only way to guarantee the future of the Western engineer is for the Western engineer to provide a capability or service that is unavailable in Asia. While there are pockets of expertise that Asia has not yet mastered, eventually Asian universities and engineers will catch up and fill the technology gaps. The best chance for the Western engineer is to continue innovating and creating new technologies that drive consumer and industrial markets. In doing so, the differentiation will be achieved and the value of the Western engineering operation will be clear.

My analysis of the Western engineering operations would not be complete without recognizing some of the challenges faced by global operations; especially Asia based companies integrating employees from the United States and Europe. Asian companies expanding their operations into the U.S. and Europe face numerous challenges including cultural differences, cost, and long distance management. Add to that differing management philosophies of Western vs. Eastern managers, as well as human resource challenges, and the challenge of the Western engineer is much more than just innovation, it is adapting to the culture and practices of the emerging Asian MNC.

Differing work hours and company policy can lead to animosity between engineering teams in Asian countries versus US and Europe. The expectations around a typical work day and time spent in the office varies widely. Engineers in Taiwan typically spend 12-15 hours in the office. Engineers in the US will also spend 12 or more hours per day working, but do so with great flexibility and many hours are spent working from home. European engineers spend less time working and have more vacation time than US or Asian engineers. These factors, combined with time zone differences, make it difficult to form strong bonds between teams and building an environment of trust between teams spread across the globe is challenging.

In addition, the difficulty of scheduling meetings with engineers in US, Europe and Asia can create integration challenges. US engineers are required to get up very early, and Asian engineers are required to stay very late to accommodate overlap for all three regions. The continued drain of off hour meetings and the lack of “on-demand” availability for individuals with key information can sour the promise of leveraging global talent.

I have found current trends that show that the United States is losing the battle to maintain its dominant position as the premier “high tech” country for research and



development. An April, 2009 Business Week article reported “The U.S. is losing its lead in patents”<sup>79</sup>. In 2008, more US patents were issued to foreigners than to Americans; the trend was repeated in 2009<sup>80</sup>. This trend suggests that increasingly innovation abroad is exceeding innovation the United States. There are some analysts who will point that the highest quality patents are still granted in the U.S., and that the trend does not necessarily indicate a real shift in technology development. Darlene Slaughter, general manager of IFI Patent Intelligence, stated the trend “...doesn't mean U.S. firms are losing an edge in innovation because it's important to consider quality, as well as quantity of patents”<sup>81</sup>.

However, the shrinking number of “high tech” jobs in the United States certainly supports the notion that U.S. firms are indeed losing their edge in innovation. Figure 6: Tech Job Losses in Silicon Valley”, which shows job losses in Silicon Valley, suggests that the shift of the majority of “high tech” jobs from the United States to Asia may be accelerating.

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<sup>79</sup> Arndt, M. “The U.S. Is Losing Its Lead in Patents”, Business Week Online, April 22, 2009

<sup>80</sup> “Foreign firms edge out locals in U.S. patent awards”, EETimes Online, <http://www.eetimes.com/showArticle.jhtml?articleID=222301142>, January 15, 2010

<sup>81</sup> “Foreign firms edge out locals in U.S. patent awards”, EETimes Online, <http://www.eetimes.com/showArticle.jhtml?articleID=222301142>, January 15, 2010

## TECH JOB LOSSES IN REGION ARE ACCELERATING

Since the recession began 14 months ago, cuts in high-tech employment, which accounts for about one out of every four local jobs, contributed 13.6 percent of all jobs lost in the San Jose region. During the first two months of 2009, tech job losses rose to 21 percent of all job cuts.

|                                     | DECEMBER<br>2007 | FEBRUARY<br>2009 | CHANGE SINCE<br>DEC. '07 | PERCENTAGE<br>CHANGE | YEAR-TO-DATE<br>CHANGE | PERCENTAGE<br>CHANGE |
|-------------------------------------|------------------|------------------|--------------------------|----------------------|------------------------|----------------------|
| All jobs                            | 930,500          | 892,400          | -38,100                  | -4.1%                | -19,500                | -2.1%                |
| Tech jobs                           | 219,500          | 214,300          | -5,200                   | -2.4%                | -4,100                 | -1.9%                |
| Tech jobs as<br>percent of all jobs | 23.6%            | 24.0%            | 13.6%                    | —                    | 21.0%                  | —                    |

Source: California Employment Development Department

MERCURY NEWS

Figure 6: Tech Job Losses in Silicon Valley<sup>82</sup>

Another factor to consider is that many of the engineers responsible for “U.S. Innovation” are actually foreign born engineers. For example, an estimated 60 percent of scientists and engineers working in Silicon Valley were not born in the U.S.<sup>83</sup>. As opportunities arise in their home countries, such as those created by emerging Asian MNCs, it is possible that the foreign-born engineers innovating in the U.S. will return to their home countries. In fact, in August, 2010, a delegation composed of representatives from major Taiwanese high tech firms, universities and the Taiwan government visited the U.S. in an attempt to recruit the estimated 1000 Taiwanese expatriates working in the U.S. back to Taiwan<sup>84</sup>. The prospect of China, Taiwan, and Korea recruiting experienced engineers educated and trained in the U.S. could put further pressure on the engineering talent available in the U.S., and further shift the balance of innovation towards Asia.

Is investment in Western engineering operations from emerging Asian Multinational Corporations a long term viable employment option for Western engineers? My conclusion is that ultimately, the continued investment in Western engineering

<sup>82</sup> “Tech Jobs Hammered by Recession”, San Jose Mercury News, April 13, 2009

<sup>83</sup> “Silicon Valley Slump Shows Shift of U.S. Technology”, Transcript, PBS NewsHour, April 5, 2010

<sup>84</sup> Clarke, P., “Jobs await U.S.-based Taiwanese expats”, EE Times Online, August 27, 2010

operations after an acquisition by an emerging Asian MNC will depend on the Western operation to deliver results. Lily Chung, an advisor to Chinese companies from the consulting firm of Deloitte asked her Chinese clients about the motivation for their investments in Silicon Valley. "...what is your objective? Are you here to acquire people, technology, or assets?". Her clients respond "Oh, we really don't know. The assets look cheap. It's an opportunity. We'll get it and figure out what to do"<sup>85</sup>. Based on this perspective, the emerging Asian MNC makes the acquisition with the expectation that the Western operation will add value. It's up to the engineers in the acquired operation to fulfill this promise of innovation.

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<sup>85</sup> "Chinese Companies are Bargain Hunting in Silicon Valley", San Jose Mercury News Online, April 20, 2010

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