Research & Education FOUNDATION

REPORT

Successful Strategies for Competing in a Low-Cost Manufacturing World©

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Introduction

The Manufacturing Extension Partnership is a network of more than 60 extension centers throughout the U.S. providing assistance to small and medium-sized manufacturers to help them become more globally competitive. Working through these centers, nearly two thousand manufacturing and business specialists help companies with decision and information support, performance and productivity improvements, and strategic planning.

The 360vu Research & Education Foundation was created to provide a broad range of applied research and educational/training services to both public organizations and private companies nationally, identifying trends and technologies designed to improve the competitiveness of small U.S. manufacturers.

As a resource to Manufacturing Extension Partnership centers, industry trade associations, economic development groups and private sector organizations, the Foundation offers expertise on the application of technologies, innovation, and business practices to help companies become more productive.

Successful Strategies for Competing in Our Low-Cost Manufacturing World

The face of global competition for U.S. manufacturers has changed dramatically in recent years. To help companies effectively compete in this difficult environment, the 360vu Education & Research Foundation engaged in a research study to focus on the migration of manufacturing to China, the impact on small and mid-sized manufacturing companies, and most importantly to offer insight and successful competitive strategies for surviving and thriving.

Research Methodology

This report is based upon two research efforts. First, secondary research was conducted by MEP on the current business climate in China. Second, the 360vu Education & Research Foundation contracted with the management consulting and research firm Stone & Associates to conduct additional research in the fall of 2003 and spring of 2004. Their research was accomplished in two phases:

Phase One

General secondary research focused on China's emergence as a global manufacturing center, and probably the most potent low-cost country competitor, as well as the migration of U.S. manufacturing to China. 360vu theorized that an assessment of China would have implications for competing with all emerging low-cost countries in the global marketplace. Additional secondary research examined five specific industries—metal fabrication, tool, dies and molds, plastics, furniture, and electronics—which are under pressure from China.

Additionally, Phase One interviews were conducted with top management of 39 successful companies (within the five selected industries) to understand how and why they have survived and grown despite competition from China and other low-cost countries. Companies were identified through published articles on successful companies and referrals from MEP-affiliated centers, based upon the companies' revenue and employment growth, reputation for being successful or an industry leader, indications that the firm had made significant productivity improvements or other dramatic performance improvements, and/or when available, information on performance in terms of profitability or cash flow.

Seven additional interviews were conducted with industry analysts and experts and firms that assist other companies to do business in China.

Phase Two

Stone & Associates conducted interviews with top management from 64 companies in the 360vu Market Research Panel, which includes progressive 360vu/MEP repeat clients in a variety of different industries. Panelists are queried periodically throughout each year on select topics. Questions to these panelists focused on competition with China and other low-cost countries, as well as these companies' adaptive behaviors and attitudes.

Based upon this research, Stone and Associates identified a subset of 65 companies (from phases one and two) which are successfully competing in today's competitive environment. The effective strategies and adaptive behaviors that these companies utilize and exhibit—and that the other interviewed companies also revealed—provide the foundation for the strategies presented in this report.

The China Juggernaut

The threat of competition from China is reported on a daily basis, and has become a growing concern among America's manufacturing community. Journalists, politicians and policy-makers, and CEOs and line employees have all focused on the perception that China's competitive advantage is based on low wages and an undervalued currency, and that this 'juggernaut' is overwhelming, leaving U.S. small manufacturers no chance or ability to compete against it.

In fact, the situation is not that simple. There are many factors contributing to China's influence on the world market. In some cases, when China's advantages are all in alignment, the cost advantage is large. In other cases, U.S. companies can be within competitive range. Furthermore, production is not migrating to China only to pursue low costs, but also to follow manufacturing customers, and to serve the large and growing Chinese domestic market.

China's Cost Advantage

Indeed, China's cost advantage can be as large as 50-75% on a part price basis. This advantage is driven by seven key factors:

1. Low labor rates. China's ready access to cheap labor enables Chinese companies to pay on average 70 cents per hour (1/36th the average labor rate of the U.S.). With nearly 700 million inhabitants in Western China seeking a better way of life in the East, manufacturing plants provide improved pay and living conditions, including free housing, food, and medical care. This nearly inexhaustible supply of labor is bound to keep wages low for many years.

2. Lower cost of materials and components. Stemming from the low labor rates of local suppliers, companies producing in China benefit, in some cases, from lower cost of materials and inputs.

Estimated Manufacturing Wage Rate Comparison

Country	$U.S. Per Hour (all inclusive)
Bulgaria	$0.60
China	$0.70
Mexico	$1.80
Brazil	$4.50
Taiwan	$5.00
Hong Kong	$5.60
Singapore	$7.60
United Kingdom	$16.00
United States	$19.10
Germany	$28.80

Source: Deutsche Bank Securities Cited in Interliance LLC presentation, "Why China?", Electronics Supply Chain Association (ESCA) July Discussion Group, July 17, 2003

3. Undervalued currency. China's aggressive currency policies have kept the yuan, or Renmenbi (RMB), artificially low, not allowing it to float freely compared to foreign currencies. The result is that goods exported from China to the U.S. are "artificially" low in price.

4. Government incentives and less regulation. The Chinese government offers tax breaks and other financial incentives to multinational corporations (MNCs) that engage in joint ventures in China. These MNCs are also often attracted by the opportunity to do business while being subject to little or no environmental, health or safety regulations.

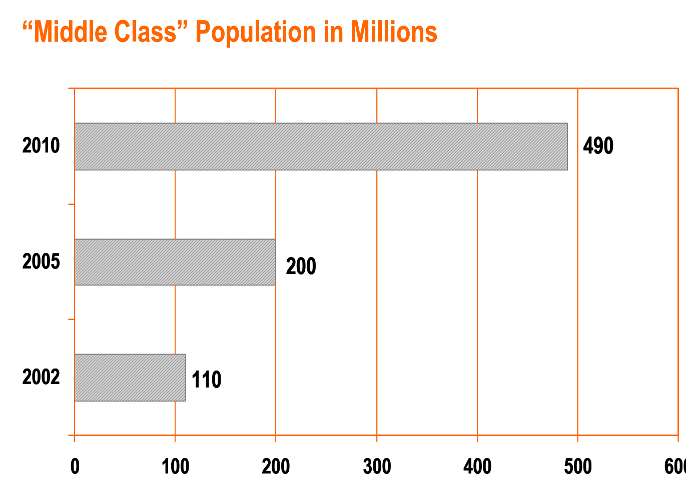
5. Capital not paid back, or loans are forgiven. The Chinese banking system is carrying an estimated $500 billion in non-performing loans, much of which is never repaid. This has become such a concern that China has formed four asset management companies to deal with these bad loans.

6. Tendency within China to oversupply. As a result of China's "half-reformed" economy, companies often expand production even when profits are gone. The usual market forces that correct this situation are often absent, such as a bank willing to collect on a loan. This tendency to oversupply is also strategically employed to help address Chinese unemployment and to stave off inflation.

7. Intellectual property protection and acquisition. The government's lack of protection for intellectual property causes rampant piracy in the country and makes it far less expensive for Chinese firms to acquire IP. Secondly, the government requirement for foreign manufacturers to transfer technologies to Chinese companies means that IP can be acquired that would not otherwise be available.

U.S. companies are being driven by OEMs to manufacture in China and other low-cost regions to pursue these lower costs. Doug Barnes, Vice President of Manufacturing for Planar Systems, a vendor of flat panel LCDs, reported to the Business Journal of Portland (May 26, 2003) an experience that many other CEOs echoed: "Many of our customers now have a metric they're applying to us, and to other vendors. They want to see 65-85% (of content) produced in low-cost countries—primarily Asia, with some in Eastern Europe."

The Large and Growing Chinese Domestic Market



Source: State Information Center; Chinese Academy of Social Sciences; Morgan Stanley cited in Presentation by Gloria Kamph, CEO of Interliance, entitled "Why China?", Electronics Supply Chain Association (ESCA) July Discussion Group, July 17, 2003

While middle class definitions vary, and the Chinese government does not recognize the term 'middle class' in official documents, the Chinese middle class in fact represents a colossal market opportunity for manufacturers. Defined as generally having annual income of at least U.S.$10,000, being able to purchase an apartment, and take leisure vacations annually, the Chinese middle class is estimated to quadruple by 2010, to nearly 500 million people. This great market opportunity is attracting business from the U.S. and throughout the world, and making China fertile ground for foreign direct investment. As a result, domestic competition is heating up between Chinese and foreign manufacturers in many industries, such as cellular phones, beer, and electronics.

The Domino Effect: U.S. Suppliers Follow Customers to China

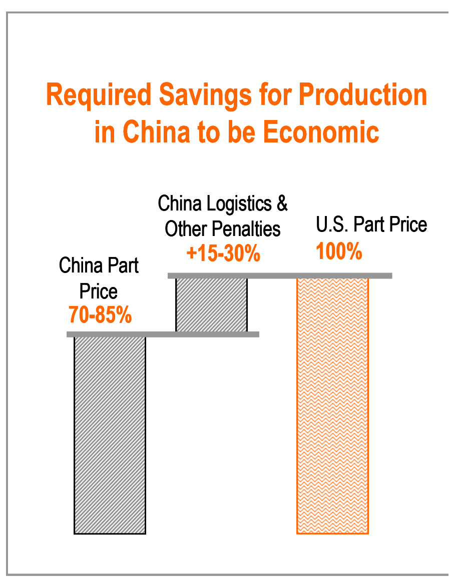
U.S. small and medium-sized manufacturing enterprises are often suppliers to OEMs/end-product manufacturers or T1/T2 suppliers. As these manufacturing customers go overseas to take advantage of lower costs or access to a new market, U.S. small manufacturers may be forced to follow.

A metal fabricator reported during these interviews: "As end-items are increasingly being made in China, our company loses domestic production of components. [For example] one customer now makes 25-35% of its products overseas, which are coming in fully manufactured, and another customer moved their work overseas, so now 13 products which were manufactured in our U.S. plant will now have to be moved overseas."

The *Los Angeles Times* reported in its article "China Polishes Off Rivals (October 21, 2002): "As furniture factories have moved to China, their suppliers and related businesses have followed, making the country an exceptionally efficient place to operate. Akzo Nobel, a Dutch-Swedish conglomerate that is one of the largest suppliers of furniture finishes, has closed plants in the U.S. and Europe and is opening three factories in China. 'We can't expand fast enough,' says the managing director, who predicts 90% of U.S. furniture production would move to China in five years."

The Economics of Manufacturing in China

Given the climate in China and other low-cost countries, and the reaction of large companies to these challenges, a herd mentality has developed. While some companies should and will be forced to set up some operations in countries like China, such a move is not always a recipe for success or necessary. In fact, when all of the hidden costs and risks are factored in, China does not always look favorable.



Summarized by Stone & Associates based on the various sources.

In electronics, consulting firm Technology Forecasters reports that "sometimes it makes sense, sometimes it doesn't—migrating operations is not always a rational decision. People tell their bosses what they want to hear, [that going to China] gives a boost to the stock valuation, but you really have to do the analysis on a case-by-case basis." While initial costs may be exceedingly low and hard to ignore, total costs of doing business overseas can offset such initial cost advantages.

In fact, middle management executives in U.S. companies are facing the challenge of enlightening their own senior management, investors, and customers alike of the hidden costs which are often buried in other budgets and assumed to be part of the price of business generally. Certainly cost savings at times may be too large to overcome. But analysts in various industries indicate part price savings in China must be roughly 15-30% in order to offset the wide range of logistical and hidden costs.

Production in China: Cost Penalties

- Freight for overseas shipment, including expediting
- Logistics within China, where infrastructure is poor
- Duties, fees, and taxes
- Additional inventory carrying costs (such as additional safety stock to ensure uninterrupted supply; minimum order/container sizes; reduced flexibility to respond to demand)
- Costs/lost sales due to stock-outs or unreliable delivery
- Cost of quality and the impact on customers' process/costs as a result of inferior supplier quality (consider customer scrap or yield rate, rework, warranty claims and cost of litigation, debugging costs, and the cost of finding or eliminating defective products in a long pipeline)
- Additional costs related to communication and management oversight of overseas production operations

Production in China: Risk Factors

- Business Ethics
  - "You can get a prototype [from a Chinese supplier] that is good, but when it goes into production, you'll get a completely different part. Or the first three orders can be good, but then the manufacturer—who acts as a broker—subs the job out, and the next run is made by somebody else, who substitutes a different material. And sometimes you can't tell just by looking at it. In medical, you can't take that risk." (Company interview)
- Legal Hassles: 50% of Sino-Foreign relationships result in some form of dispute. (Interliance, "Eight Steps to Successful Sourcing in China", October 9, 2003)
- Corruption
- IP Theft
  - "We were approached by someone from Beijing who wanted us to set up a factory in China. But what happens is they get you over there, learn your business, want you to

set up a facility and then copy you. It's a cheap way to build an industry." (Company interview)

- Currency shifts
- Political instability

The Case of the Disappearing Customer

For decades, companies assumed that if your customers love you as a supplier, your products are high quality and competitively priced, and you've had a close productive relationship for many years, they will not leave you. This assumption is no longer safe in today's newly competitive global marketplace. Now customers can disappear anytime, sometimes without warning.

"Our biggest customer—50% of our revenues—pulled their parts and sent it overseas and/or brought it in-house. [Was there any warning?] No. Nothing."
(Company interview)

With increased competitive pressure, particularly on price, customers are increasingly sourcing parts from China, migrating operations to China (and sourcing locally) or losing out to competitors based in China. Additionally, design and engineering is also migrating to China, particularly in the electronics industry. All of this has led to tremendous negative impacts on U.S. small manufacturing as a sector, and on individual companies.

"We thought we'd be immune to offshore [competition] with these customers: Rolls Royce, Pratt & Whitney, GE. Wrong. They're all setting up JVs in China."
(Company interview)

Competitive Positions of American Manufacturing

How do companies begin to gain an edge, so they can avoid being blindsided by customers fleeing without warning or lower-cost competitors? Our research found that a company and its product lines can be categorized as sheltered, in danger, or gone:

- Sheltered businesses or product lines have a defensible competitive advantage versus China and other low-cost countries. They have carved out a protected position within industries or markets that are under pressure.
- In Danger businesses or product lines do not have a clear basis of competitive advantage and face strong pressure from low-cost regions. They will die a slow death unless they carve out a sheltered position.
- For businesses or product lines which are gone, production has already migrated to China or other low-cost regions.

How do you know where your business or product lines fall? Generally, if all the following conditions are met, the part or product (or business) is gone:

- Proximity to the customer does not provide an advantage. The part is easily shipped, not easily damaged or too bulky, a long lead time is acceptable, and the part is not customized.
- It's easily manufactured, not complex, of low quality, and with a high unskilled labor content.
- Volumes are higher; tolerances are lower.
- Little or no engineering/design interaction is necessary—the part has become a commodity.

Interviewees agree that these types of products are gone, and that low-cost countries like China have a cost advantage that is nearly impossible to overcome:

"[We've] already lost the high volume/low tolerance work to China…all low volume work will stay here. If it's not truckload, Chinese don't want to ship it. They're not interested in low volume parts."

And entire industries are becoming vulnerable:

"Molding businesses are shutting down all over North America. This trend is accelerating. If it continues at the current rate, the bulk of low-end molding jobs will have moved to China within a few years." (*Injection Molding Magazine*, August 2003)

Seeking Successful Strategies to Stay Sheltered

Our research demonstrates that successful companies are not relying on performance improvements alone—such as Lean—to maintain their competitive advantages. Instead, these companies seek out such niches where they can offer higher value versus offshore competitors, through specialized product or process capability, service advantages based on proximity to the customer, or innovative technologies. This focus on higher value niches shelters them from off-shore competition. None of the companies we interviewed relied solely on cost competitiveness as a strategy.

Specifically, successful companies discovered under the pressure of today's global marketplace that some combination of the following nine competitive strategies enabled them to survive and grow. These strategies are divided into two sub-groups, over the next two pages. The first are primary strategies, which offer higher customer value as compared to offshore providers, often by focusing on a specific niche. The second are supporting strategies, which reduce cost and risk, enhance capabilities, and help companies better serve their niche. (All of the companies we interviewed who are successfully competing with low-cost countries are utilizing some combination of these strategies. Specific percentages of companies interviewed employing each strategy are cited.)

Primary Competitive Strategies: These offer a higher customer value as compared to off-shore suppliers, often through a niche-focused strategy.

1. Focus on specialty product or process capability (59% of successful companies we interviewed utilized this strategy):

   - Product-based: Focus on tight tolerance, difficult to manufacture, high quality products

     "We do the tough projects no one else wants to mess with. We look for China-proof jobs—high complexity, thin tolerances—products for which the customer doesn't want to risk a blip in the supply chain." *(Company interview)*

   - Process-based: Specialized process capabilities or skilled labor

     "We focus on highly engineered plastics, which replace metal parts. Ours is a niche product. It uses custom versions of available engineering-grade resins—exotic materials not everyone can mold."

2. Develop innovative product/process technologies (19%): unique and often patented technologies that offer significant performance advantages versus alternatives available in the market.

3. Target business where proximity to the customer provides a service advantage, based on logistics or design/customer/interaction (86%):

   - Logistics
     - Quick turn, high mix/variation, make-to-order or customized business (where domestic production is required to respond rapidly to changes in demand)

       "I have one customer—his work can't be done overseas. He's selling to retail and they don't give him any lead time. He would have to have a huge inventory. I can ship him a truckload of parts in three days, provide different colors, etc. We're almost to the point we're one company."

     - Value-added inventory management is required: JIT, kan ban, consigned inventory

       "We provide value of the life of the part: JIT, inventory consignment, etc. We make their life easy, and make it hard for them to abandon us just for price. We provide things China cannot provide, such as kan ban. What they get from us is not worth delays in shipment."

     - Freight economics: the product is too bulky or expensive to ship

- Low volume/short run business, which is not of interest to the Chinese, and not worth setting up sourcing arrangements

- Design/customer interaction

  - Intensive design/engineering interaction with the customer, requiring frequent modifications

    "We target work where there's lots of concurrent engineering—the kind of thing that is difficult for overseas companies to do because of the time, shipping, language, and that offers customers innovative ways to save total dollars."

  - Fashion-sensitive, where close work with designers or architects allows ease in adjusting to changing seasonal fashion
  - Strong customer relationships and loyalty, tied to personal relationships and a strong service track record.

Supporting Competitive Strategies: These reduce cost and risk, enhance capabilities, and help you serve your niche.

1. Target the right customers, those who are less likely to go offshore and may be less price- sensitive (34%).

2. Work to be cost competitive in manufacturing processes through Lean, automation, and other investments to reduce costs (35%).

   "We've been investing in technology and automation from the beginning to make us faster and quicker. You have to be innovative, move with the times, so you're not in a me-too business."

   "We will build customized equipment to meet customer demand. Customized equipment makes parts cheaper and better."

3. Consider cost reduction through production in low-cost countries, via sourcing or joint ventures (19%).

4. Develop strategic partnerships with companies that offer complementary products, as well as customers, suppliers, and even competitors (11%).

5. Become a global player through a worldwide presence or production system. Use partnerships and alliances off-shore to expand reach and distribution capabilities. Become a global sourcing manager by using offshore production capabilities once the U.S. facility has managed product development, introduction, and debugging (15%).

6. Diversify your products, markets, customers. Avoid reliance on any single entity (25%).

Still, A Sheltered Position is No Guarantee

While the advantages that China has ridden to its current strength in the world marketplace have focused on low cost and high-volume capabilities, in fact their manufacturing capabilities are becoming increasingly sophisticated.

- U.S. and other foreign manufacturers are setting up joint ventures in China, where technology transfer is explicit and piracy of intellectual property continues.
- The Chinese government is working on attracting skilled Chinese émigrés back to mainland China, and training skilled workers to increase manufacturing sophistication.
- While China is currently focused on large volume work, this new attention to more sophisticated manufacturing processes and technology will enable them to look toward the low-volume, higher tolerance work that the U.S. currently has an edge on.
- The challenge of engineering/design interaction (which until now has largely been a U.S. advantage) is diminishing through the use of the internet, separation of new product introduction and design from volume production, and migration of entire R&D operations offshore.
- Proximity is becoming less of an issue in some areas. For example, Chinese tool/die/mold suppliers are offsetting shipping time with shorter manufacturing lead times.

As the manufacturing capabilities of China and other low-cost countries continue to increase, some current shelters will erode. The only solution for companies in a currently sheltered position is for them to be continuously adaptive: anticipate, prepare for and adjust to disruptive market changes; look outward and forward, beyond current customers; focus on competitive advantage, and maintain and adjust advantages as the market and competitive landscape changes.

Adaptive Behavior is the Key

Companies typically fall on a continuum of adaptive behavior. Our research examined the significance of adaptive culture on the success of companies.

Highly adaptive companies are outward-oriented, forward thinking and embrace change. They are able to identify and respond to a changing competitive environment. They continuously look ahead to seek out new customers. They work to build and maintain their competitive advantages, and develop new competitive advantages as old ones erode. Adaptive companies have the greatest chance of continued success, because they can prepare for and adjust to changes in the competitive and market environment. These companies are dynamic.

On the other end of the continuum are less adaptive companies. These firms do not look forward or embrace change. Instead, they focus inwardly, respond sluggishly to market change, and do not have an adequate vision or imagination about future market changes and potential threats. In many cases, company management is too busy fighting fires to look ahead. Some of these less adaptive companies are "lucky" if they have been fortunate enough to find sheltered niches. They may be safe for the moment, but may not have the agility to find a new sheltered position if their current competitive advantage erodes. These companies are static.

It is the adaptive companies that have the best chance of maintaining a sheltered position over the long run. These companies have a world view and exhibit a set of specific behaviors:

- They expect change.
- They look outward to current customers and external trends to assess the world around them.

  "Stay close to the customer—get to know what's happening. Before our customers shift products overseas, we know well in advance. We have solid relationships with decision makers, who tip us off. We're in the know, not on the sideline."

  "I don't really have time to be involved in my industry association, but I do it to stay on top of things. This way I can see the market shifts, recognize opportunities, and understand what's happening."

- They maintain a diversified customer base.

  "Times are changing so fast you have to diversify. We've turned down business with one of our biggest customers to keep their concentration down."

- They are constantly evolving, by assessing changes to their environment.
- They aggressively sell and market.

  "Technical expertise and innovation are not the most important things anymore. Market position and selling are key. Opportunities are there—you just have to dig to find them."

- They develop new products to better meet customer needs, recognizing that newly developed products and markets are the hope for the future.

- They shift focus to customers that offer the best opportunities.

  "We target our customers. They have to meet our criteria: be involved in a growing industry or hold a market strength position."

- They shift focus to new markets that offer better opportunities, even when times are good.

"We are positioning ourselves in industries unlikely to migrate to China, for example those needing JIT. Long-term you need to find protected products and markets. We spend a lot of time analyzing what's going on in the global marketplace."

- They understand and shift competitive advantage (by leveraging current advantages to effectively pursue new products, customers, and markets, and by creating new advantages as old ones disappear).

"We've lost customers in our traditional core products (circuit boards, cable harness assemblies, electronic controls) to China. But we've developed three new proprietary products, all of which utilize our company's traditional manufacturing capabilities. All three serve different markets which are all sheltered from China."

The CEO's Role in Creating an Adaptive Environment

Maintaining an adaptive company is not easy, and the CEO drives this behavior on a daily basis inside the company. This requires significant proactive energy and confidence from the CEO, but results in enormous payback when carried out consistently. Making investments and changes before they are necessary requires the belief that "the risk of doing nothing is greater than the risk of acting." Such investments must be made ahead of the pack to support and maintain or shift your competitive advantage. Specifically, the proactive CEO will initiate and manage change by:

- Envisioning future market changes, threats, and opportunities that the company and industry may face.
- Carving out time for forward-thinking activities, that look outward and not just inward.
- Focusing on competitive advantages and niche-establishment.
- Investing in sales and marketing efforts that create and identify new market and product opportunities.
- Seeking outside counsel that can give unbiased advice and help the CEO see the company with new perspective, and assist with communications, strategic planning, and preparation for potential challenges and disasters that may occur.
- Persevering despite resistance to organizational and cultural change required to move the company forward.

As a result of the CEO's proactive efforts, an environment is cultivated where employees embrace change and look for new opportunities. The imagination, vision, energy, and commitment of the CEO will quickly trickle down to the entire staff and create an environment where employees take initiative, responsibility, and feel ownership and pride in the achievements of the company.

Who Will Succeed?

Those companies who will survive today's threat from low-cost countries are the adaptors. They will exhibit the capability to build new competitive advantages as current ones erode. They are outward-oriented and forward-thinking, looking ahead and outward for market changes, emerging needs, new applications and opportunities. They will continuously revise their market strategy as the competitive landscape shifts, by identifying and exploiting niches based on specialized products and processes, innovative technologies, and service advantages. They will build business models around these advantages by making investments in research and development, product development, equipment and other capabilities that support their strategies. And they will find new shelters as China and other off-shore competitors move into their currently sheltered territory.

Adaptive companies know that what wins today may not survive tomorrow.