

White Paper Simon Ellis, Practice Director, Supply Chain Strategies & Technology-Oriented Value Chains September 2012

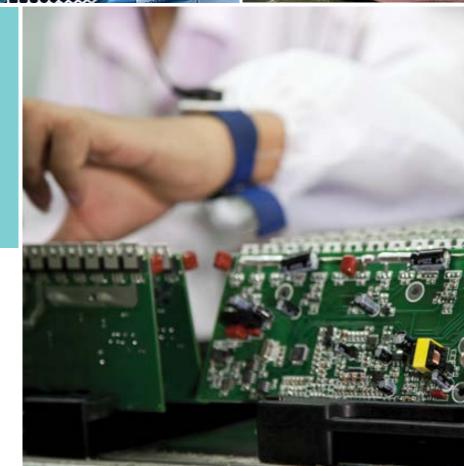


Change in the Chain: Import/Export in the U.S. High-Tech Supply Chain

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Executive Summary

High-tech companies operate in a complex supply chain environment where rapid product life cycles and narrow margins put constant pressure on market share and financial performance. The global recession of 2008 and 2009 hit the high-tech industry hard, and many companies are still looking to recover lost sales and profits.

As United States-based high-tech companies look for ways to drive share growth, three main areas emerge: emerging markets, targeted innovation, and complementary services. However, IDC Manufacturing Insights' discussions with these companies reveal the overwhelming view that future growth performance will be tied to emerging market demand and the ability to navigate the complexities of import and export efficiently and effectively. Indeed, of the four segments that IDC Manufacturing Insights defines within the manufacturing industry, the high-tech segment has been the most aggressive in terms of adopting global operations and adapting to globalizing demand.

Consequently, IDC Manufacturing Insights' 2012 *Change in the Chain Survey*, with 125 United Statesbased high-tech manufacturers, looked at the challenges and opportunities inherent in the import and export process:

- The anticipated shifts in global supply and global demand over the next three to five years suggest that global demand demographics will be more diverse than the supporting supply networks, with significant implications for attendant import/export requirements.
- Despite the importance of import/export, only about a quarter of the companies identified themselves as having a core competency in this area.
- Although cost remains the top priority, long lead times were identified as the next most important priority, both for the past two years and in terms of driving changes in the supply chain over the next three to five years, and as a significant pain point for the import/export process.

The "winners" in the high-tech marketplace will be companies that successfully leverage emerging market growth with strong products and import/export excellence. This "global imperative" is paramount, regardless of near-term economic conditions or 2012 U.S. election uncertainty.

In the White Paper

In this white paper, IDC Manufacturing Insights looks at the state of the high-tech manufacturing industry, focusing on the critical issues surrounding the importing and exporting of components and finished goods. To get as current a view as possible, we recently conducted a survey of 125 United States-based hightech companies that focused on import/export opportunities and challenges. In addition, we conducted 10 in-depth interviews with U.S. high-tech executives to gain a deeper understanding of some of the complex issues facing the industry.

Demographics

The survey that underpins this white paper was conducted in May and June 2012 and comprised 125 senior high-tech supply chain professionals:

- Respondents to the survey identified themselves as working in the supply chain (44%), manufacturing operations (31%), or logistics and distribution (25%).
- Almost all respondents are involved in either import or export at their company (97%), or both (91%).
- All of the respondents are either decision makers or have visibility into supply chain initiatives for their company.

The survey also cuts across multiple sub-segments in the U.S. high-tech industry and across company size. The sub-segments are summarized in Figure 1.

In terms of company size, 37% of the companies responding to the survey had in excess of \$1 billion in annual revenue, an additional 22% had between \$250 million and \$1 billion, and 42% had between \$5 million and \$250 million.

The breadth of respondents across functional role, industry subsegment, and company size provides a balanced perspective of both challenges and opportunities relating to the import and export process. It also gives us the opportunity to document divergent views across multiple dimensions where notable.

Methodology

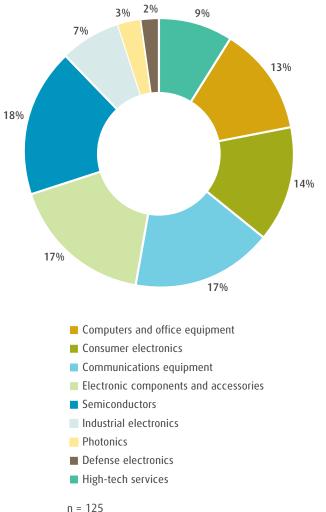
IDC conducted a telephone survey of supply chain stakeholders at 125 United States-based high-tech firms. The survey was conducted in May and June 2012 and consisted of 25 closed questions. To be considered qualified respondents for the survey, individuals had to have responsibility for manufacturing operations, logistics, or the supply chain, and they had to have visibility into the key business and supply chain initiatives at their company. The minimum threshold for company size was annual revenue of at least \$5 million.

The 1:1 in-depth interviews were conducted in the same time frame, with qualified United States-based senior high-tech executives responding to a set of 17 open-ended questions about their import and export process and related business challenges.

Figure 1 - High-Tech Industry Sub-Segment

QUESTION

Which one of the following industry sectors do you consider your company to be in? (Select one.)



Source: IDC Manufacturing Insights' UPS Change in the Chain Survey, 2012

Background

The high-tech industry has all the challenges that other industries have, but in many respects, these challenges are greater in magnitude in the high-tech industry. The high-tech industry is fragmented, with diverse sub-segments and high levels of customer churn. The supply chain, and by extension the inventory, is fragile, dynamic, and particularly susceptible to obsolescence given the very short product life cycles. The products themselves are more complex, and the margins are thinner.

At IDC Manufacturing Insights, we view the high-tech industry through the lens of what we call technology-oriented value chains, where the cadence of the business is driven by the rapid generational cycles of key technological innovations. Subsegments of the high-tech industry are listed in Table 1.

While the fundamental nature of the high-tech industry is affected most by the rapid life cycles of technology, the disparate sub-segments also look a bit like asset-oriented value chains (semiconductor), brand-oriented value chains (consumer electronics), and engineering-oriented value chains (computing and telecom equipment). This "schizophrenic" character of the high-tech industry drives a lot of the complexity, particularly for companies that span multiple sub-segments.

Upstream, high-tech companies also manage a high level of supply chain complexity, with supply and contract manufacturing frequently full partners in the business, including the design and manufacture of new products.

Downstream, high-tech companies must effectively manage complex sales channels — distributors, resellers, partners, direct to consumer — by finding ways to drive value-added sales activities; bringing products to market in a timely, effective way (flawless innovation delivery); and managing/prioritizing customer churn — both retaining the right customers and identifying/prioritizing profitable accounts.

Table 1 - High-Tech Industry Sub-Segments

Sub-Segment	Characteristics
Semiconductor	Shares attributes with asset-oriented value chains where manufacturing cadence is driven by heavy investment in property, plant, and equipment, namely foundries
Consumer electronics	Shares attributes with brand-oriented value chains where manufacturing cadence is driven by consumer demand and "fashion" over "form"
Contract Manufacturing	Shares attributes with engineering- oriented value chains where manufacturing cadence is driven by the engineering complexity of the product
Computing, telecom, and office equipment	Shares attributes with engineering- oriented value chains where manufacturing cadence is driven by the engineering complexity of the product

Source: IDC Manufacturing Insights, 2012



Revenue and Share Growth for U.S. High-Tech Manufacturers Will Come from Three Primary Sources

Slowly recovering global economic conditions have had a marked impact on high-tech companies that regularly face declining markets and shrinking margins. A critical success factor for companies planning to regenerate profitable growth will be the ability to take advantage of new revenue opportunities; however, revenue recovery in post-recession global markets has not been a matter of simply ramping up production and waiting for the customers with pent-up demand to come knocking on the door. This is particularly true for high-tech markets, where innovation-appeal routinely trumps brand or customer loyalty.





Three key areas have emerged as catalysts for gaining share and increasing profitability:

Targeted innovation

The number of new products introduced each year has been steadily increasing, yet success rates (achievement of expected market share) remain low. The objective must be to serve narrowing market niches with product variations. This is particularly true in consumer electronics where "fashion" often trumps form or technology.

Emerging markets

Even through the recent economic difficulties, the transition of China, India, South America, and Eastern Europe from lowcost countries to emerging economies continues to progress, and consumers/workers in those countries are increasingly demanding a globally fair wage. It is also notable to point out that emerging economies typically have a more modernoriented electronics market given the lack of comprehensive pre-existing infrastructure (i.e., the lack of a comprehensive wired telephone infrastructure results in faster mobile adoption). Consequently, demand continues to grow. Reaching and appealing to these markets will be essential to driving new revenue and growing share. For the supply chain, improving overseas in-market capabilities to drive sales performance is critical.

Complementary Services

High-tech companies are increasingly connecting key services (content management, service support) with their product platforms. Notable examples include Microsoft with Xbox and Xbox LIVE, Apple with iPod and iTunes, and Amazon with Kindle and ebook sales. These companies clearly recognize that they can drive as much or more revenue on what happens after the customer takes title to the asset than on the sale of the asset itself. In business-to-business relationships, key customers are demanding more managed services. Revenue growth for many companies will depend on their ability to offer value-added services on top of the products that they sell.

Strategic Imperatives

Globalization is Not Just a Fancy Word – The Importance of the Import/Export Process

Targeted innovation and complementary services are important, but in our discussions with United States-based high-tech manufacturers, the overwhelming view is that future growth performance will be tied to emerging market demand and the ability to navigate the complexities of import and export efficiently and effectively. Indeed, of the four segments that IDC Manufacturing Insights defines within the manufacturing industry, the high-tech segment has been the most aggressive in terms of adopting global operations and adapting to globalizing demand.

Indeed, the survey results indicate that companies believe the next two years will see more export growth than the past two years. Across the respondents, only 23% of companies have seen export growth since 2010, whereas 74% expect to see growth by 2014. Similarly, just 6% of the companies reported relying more on global suppliers over the past two years, with 55% expecting to rely more on these suppliers in the next two years.



Of U.S. high-tech executives plan to run more geographically diverse supply networks and rely more on global suppliers in the next 2 years.

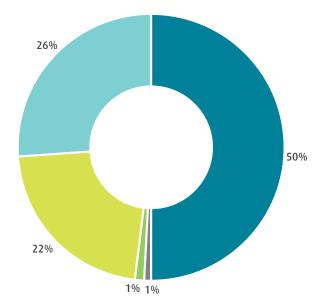
U.S. high-tech manufacturers are expecting to see long-term growth in exports; and given the critical role of the emerging market consumer in driving revenue and profitability gains in the high-tech industry, companies that excel in import/export are likely to capture more than their fair share of growth.



Figure 2 - High-Tech Companies' Capabilities in Import/Export

QUESTION

How would you characterize your company's capability in the area of import/export?



- We have good capability, but improvement opportunities remain
- We have very limited capabilities it is a major weakness
- Not applicable, we rarely import or export
- It is not a strength, and significant opportunities remain
- It is a core competency and we are best-in-class

n = 125

Source: IDC Manufacturing Insights' Change in the Chain Survey, 2012

Import/Export as a Core Competency

Given that the respondents to this survey believe that exports will grow significantly over the next couple of years, and given how important emerging market demand will be for U.S. hightech manufacturers, it is useful to get a sense of the level of competence these companies feel they have when importing and exporting. Therefore, we asked companies how they would characterize their capability in the area of import/export. The results are summarized in Figure 2.

We see companies in three broad groupings. Half of the respondents feel they have good capabilities in place but that they could be doing better; the other half is equally split between companies that feel they are best in class and those that feel significant opportunities remain. Looking at this question from the perspective of company size, we see a fairly strong correlation between import/export capability and the larger enterprises. This finding suggests that the greater resources available to the larger businesses are being allocated as required to necessary import/export capabilities but that a more aggressive outsourcing and/or partnering strategy is warranted for smaller businesses.

Thus, the imperative is clear: High-tech companies are expecting strong growth in exports, yet almost three-quarters of the companies surveyed have indicated that improvement opportunities remain — some significantly so. Many of the 1:1 interviews that we conducted to support the survey uncovered this same sentiment. One electronics component manufacturer stated, *"From my perspective, we are adequate, but I don't think we are best in class yet; we are doing what we can. Something I would like to get, for example, is better visibility of changes in legislation. Usually we find out about it when something happens, which is too late."*

If the ability to fully leverage global markets is as critical as the industry believes, a gap needs to be addressed. Given this situation, let's look at priorities and changes made.



Lead-Time Reduction as a Facilitator for the Responsive Global Enterprise

When we asked survey respondents about their top priorities, *reducing total supply chain import/export costs* was the number 1 response, which is consistent with our findings from other research with supply chain professionals. A strong second, however, was the desire to *reduce global supply chain lead times*, in terms of looking back two years and looking forward two years, with the attendant implications for agility and service delivery. While cost reduction seems fairly self-evident, the focus on reducing lead times is quite interesting. It has been the contention of IDC Manufacturing Insights for a few years now that manufacturers are not properly taking into account the "cost" of long lead times when assessing the implications of global sourcing, new product launch execution, and potential issues with supply interruptions.

Based on the stated supply chain priorities of high-tech companies for their import/export process (see Figure 3), it comes as no surprise that cost is identified as the top issue expected to drive change in the next three to five years. Certainly, one can interpret the desire to reduce lead times as related to cost, but in IDC Manufacturing Insights' conversations with high-tech companies, the issue of lead time almost always goes back to responsiveness and flexibility and the ability to deliver against service-level obligations. According to a computer accessory manufacturer we spoke with, "Sense and respond is critical; the actual manufacturing lead time is somewhat secondary to rapid sourcing and a flexible supply chain model."

In addition to asking broadly about issues driving change for importing and exporting, we asked specifically about pain points. Although there was no single, overwhelming response, Figure 4 illustrates the four responses that separated themselves from the pack. The issue of better inventory management links directly to the strategic goal of cost reduction, but in the in-depth interviews we conducted for this study, one executive talked about not just the overall level of inventory but also the quality — in other words, how well the overall inventory position supports the sales process by having the right inventory in the right place. The second- and third-ranked pain points, extended lead times and end-to-end visibility, link back strongly to the notion of responsiveness that we noted earlier and the notion of being able to react more quickly to both short-term and long-term changes in the marketplace. In fact, more manufacturers identified extended lead times as a pain point than any other issue — including cost! The computer accessory manufacturer quoted previously also made the point that variability in lead times is particularly problematic: "We can all deal with predictable and static lead times, but the variability is a real challenge."

Figure 3 - Issues Driving Change in the Import/Export Process over the Next Three to Five Years

QUESTION

Please rank the top three issues in terms of driving changes in your approach to import/export in the supply chain over the next three to five years. Please rank 1–3 from the following list, where 1 = top issue.

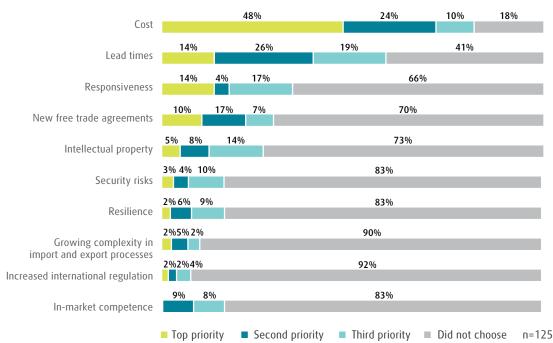
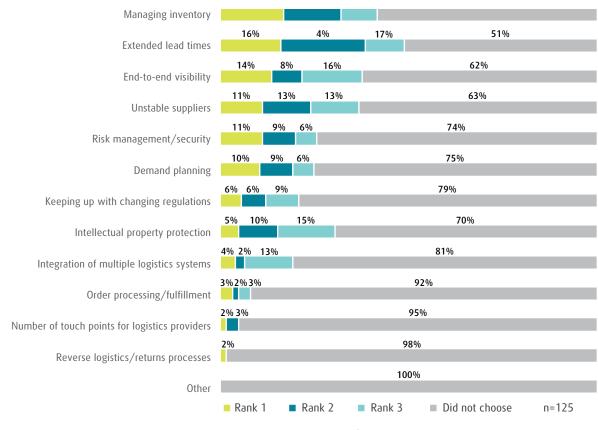


Figure 4 - Top Pain Points in the Import/Export Process

QUESTION

Which of the following are the top three "pain points" in your import/ export process? Please rank from 1 to 3.



Source: IDC Manufacturing Insights' Change in the Chain Survey, 2012

Before leaving the topic of pain points, we must note the persistent desire on the part of high-tech manufacturers to enable better responsiveness. This is the third successive year that IDC Manufacturing Insights has conducted the *Change in the Chain Survey*, and in both prior incarnations, responsiveness featured significantly for manufacturers:

- In the 2010 survey, responsiveness to customer needs was viewed as the top initiative expected to drive change in the high-tech supply chain.
- In the 2011 survey, which focused on Asia-based high-tech manufacturers, supply chain responsiveness was the thirdranked supply chain priority.

Clearly, as U.S. high-tech supply chains move aggressively into overseas markets, responsiveness becomes more important, and the limitations inherent in long lead times become more of a challenge.

The Diversification of Supply and Demand

As global demand demographics evolve and high-tech companies look to better meet the emerging demand, we see a dynamic shifting of both supply sourcing and demand fulfillment. The 2012 *Change in the Chain Survey* asked respondents to indicate where they source today and where they will source in the future, as well as where they fulfill today and where they will fulfill in the future. The responses to the questions represent not the percentage of supply or demand but the percentage of those countries where some level of product supply or demand is occurring or expected to occur. There are a number of reasons for this shift. On the supply side, it is about better balancing supply with demand, but the survey results also show that risk diversification (the response to the recent natural disasters in Japan and Thailand) and the desire to mitigate the effects of long lead times are contributing factors. On the demand side, it is primarily about the growing importance and influence of the emerging economy consumer, but the survey results also show that regulatory impacts (over 90% of companies felt that free trade agreements in Asia would lead them to import and/or export more than they do today) and infrastructure changes (widening of the Panama Canal) will have an effect.

In the discussion on risk management, and specifically the Japanese earthquake and subsequent tsunami, an aerospace and defense electronics manufacturer made a fascinating comment about supply diversity: "Our first reaction was relief. Then the second reaction was the fog lifts, and holy cow, [we] never thought so much of our supply chain diversity was so dependent on common elements. With regard to manufacturing capacity or raw materials, just because you work with multiple suppliers doesn't mean redundancy or insurance — those suppliers may be using common sub-tiers, which could be the weakest point in the chain if something went wrong."

Supply Sourcing

From a sourcing perspective (see Figure 5), we see a significantly larger number of companies expecting to source from India, Brazil, and all other APAC, with only a slight decline evident for North America. Clearly, United States-based high-tech companies are expecting to run a more geographically diverse supply network.

Figure 5 - Sourcing in the Supply Chain Today and in the Future

QUESTION	QUESTION		
Where do you source your product supply for now?	Where will you source your product supply in the future?		
Today	In 3-5 Years	Change	
North America90%		-4%	
China77%			
Korea61%			
All other APAC54%		14 %	
Japan54%	67%		
Western Europe			
India20%			
Brazil11%		14%	
All other South America 6%			
Eastern Europe4%			
Middle East, Africa	6%		
Other2%		0%	

n=125

Source: IDC Manufacturing Insights' Change in the Chain Survey, 2012

Demand Fulfillment

From a demand fulfillment perspective (see Figure 6), we see a similar story, although demand is projected to be even more diverse than supply. While North America is currently the largest market (97%) and is expected to remain so (90%) in the next three to five years, overall demand levels are declining. Demand is shifting to the "second platform" of emerging economy growth — BRIC and beyond.

Figure 6 - Product Demand Today and in the Future

QUESTION Where do you fulfill or sell your products now?		QUESTION Where will you fulfill or sell your products in the future?			
North America	7%		7%		
Japan	5%		1%		
Western Europe	4%				
China)%				
All other APAC	9%				
Korea	9%				
India	2%				
All other S. America	3%	77%			
Brazil	3%	76%			
Eastern Europe)%		15%		
Middle East, Africa	5%				
Other1	1%				

n=125

Source: IDC Manufacturing Insights' Change in the Chain Survey, 2012



Future Outlook

The past few years have been difficult for the U.S. hightech market, and while many challenges remain, there is an undercurrent of optimism that growth opportunities are returning — particularly in overseas markets.

Implications for Future Import and Export

Looking at the future expectations for supply and demand, as summarized in Figures 5 and 6, we see that overall supply networks will lag demand demographics for North Americabased high-tech manufacturers in terms of global diversification — particularly in the BRIC countries, where significant import/ export will be required. This supports the contention by 74% of the respondent companies that exports will grow over the next two years.

Furthermore, although IDC Manufacturing Insights sees a desire on the part of high-tech manufacturers to better balance global supply and demand demographics to manage supply network risk and mitigate lead times, our research suggests that this goal tends to be more regional than country specific — again, reinforcing the notion that import and export excellence will continue to be of paramount importance as demand diversifies.

Managing Long Lead Times in the Global Supply Network

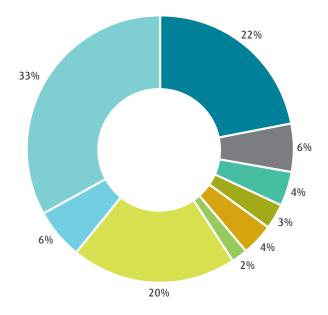
Because long lead times have become a topic of increasing interest in the dialogue IDC Manufacturing Insights has with high-tech manufacturers, we asked specifically in the survey how companies are looking to mitigate the effects — in terms of having to hold larger buffer inventories, the ability to recover from unanticipated disruption, or simply the need to be more flexible in dealing with customer changes. The responses to this question are detailed in Figure 7.

The majority of companies are pursuing one of three approaches: working to be more responsive (i.e., better inventory management/optimization, rapid planning, or postponement techniques) to changing market conditions, building some "slack" or excess capability into their supply operations (i.e., inventory, capacity, redundant suppliers), or, the most popular response, doing a better job of balancing geographic sourcing. One server manufacturer that we spoke with talked about how his company is looking to be more responsive by "working with third-party logistics providers, or other third parties, to implement appropriate inventory positions to mitigate lead time."

Figure 7 - Management of Long Lead Times

QUESTION

Many high-tech manufacturers manage global supply networks with long lead times that can increase supply risk. How does your company primarily manage this issue relative to the import/export process?



- Balance geographic sourcing
- Build some "slack" into the supply chain
- Utilize third-party logistics providers that specialize in speed
- Adjust buffer inventories
- Separate component supply from late-stage assembly
- Postponement to local market
- Merge in transit
- Be more responsive to changing market conditions
- Enabling rapid recovery from supply chain disruptions

n=125

Source: IDC Manufacturing Insights' Change in the Chain Survey, 2012

Engaging Third Parties in the Import/Export Process

As we close our discussion about the results of this survey, it seems appropriate to focus on the growing importance of the third-party provider in facilitating the import/export process for high-tech manufacturers. We've noted the expected growth in U.S. hightech exports, along with the related growth in outsourcing and global partners and the continued desire to engage with a thirdparty provider, but what are the drivers of those engagements?

Of the potential drivers, three emerged as most impactful. As Figure 8 illustrates, high-tech manufacturers are looking for cost efficiency, the opportunity to leverage industry best practices, and greater speed and responsiveness — in that order. In discussions with high-tech executives in the 1:1 in-depth interviews, there was a perspective that the opportunity to leverage industry best practices by engaging with a third-party import/export provider was extremely important — particularly for high-tech companies that are moving into an overseas market with which they have limited familiarity. Overseas knowledge, and specific market familiarity, consequently becomes critical.

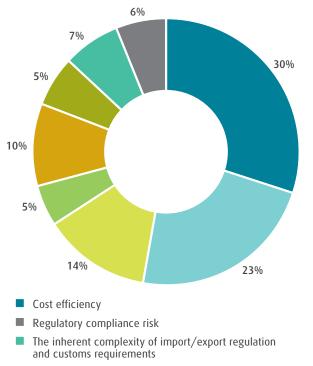
Looking at the drivers of third-party engagement by company size (see Table 4), we see a generally consistent view across the range of manufacturers. The overall top 3 drivers still hold, with small enterprise companies being the most likely to be primarily cost efficiency focused and large enterprise companies being the most likely to look for industry best practices from their existing or anticipated third-party providers.

Regardless of these slight differences, however, the primary value drivers that the third-party import/export provider delivers are cost efficiency and best practices.

Figure 8 - Drivers of Engagement with Third-Party Providers

QUESTION

Given the importance of logistics capability in the import/export process, what do you think is/has been the primary driver for your company to engage a third-party logistics provider to assist your company in managing the import/export process? (Select one.)



- Import/export is simply not a core competency for my company
- We do not currently use a third-party provider
- Visibility
- Speed and responsiveness
- The opportunity to leverage industry best practices

n=125

Source: IDC Manufacturing Insights' Change in the Chain Survey, 2012

Table 4 - Drivers of Third-Party Engagement by Company Size

	Total	\$1 Billion +	\$250 Million – \$1 Billion	Less than \$250 Million
Cost Efficiency	30%	28%	27%	34%
Leverage Industry Best Practices	23%	30%	15%	21%
Speed and Responsiveness	13%	9%	23%	19%

Source: IDC Manufacturing Insights

Conclusions

This white paper paints a positive picture for long-term growth in the U.S. high-tech marketplace. Three-quarters of the survey respondents expect to see growth in their company's exports over the next two years, and 85% think that the goal of doubling exports by 2014 is likely to be achieved.

These expectations suggest that the growth engine for the high-tech marketplace is poised to drive increases in imports and exports based on the critical importance of growth in emerging markets, pent-up demand, particularly from emerging market consumers, and recent regulatory and logistical improvements — free trade agreements and the planned widening of the Panama Canal.

Yet, this anticipated growth does not come without corresponding challenges. We've highlighted three challenges, based on findings from the survey and the supporting 1:1 interviews:

- The anticipated shifts in global supply and global demand over the next three to five years suggest that global demand demographics will be more diverse than the supporting supply networks, with significant implications for attendant import/export requirements.
- Despite the critical importance of emerging market growth to the delivery of business revenue and profit, only about a quarter of the companies identified themselves as having a core competency in import/export.
- Although cost remains the top priority, long lead times were identified as the next most important priority, both for the past two years and in terms of driving changes in the supply chain over the next three to five years, and as a significant pain point for the import/export process.

Each of these challenges provides an opportunity for United States-based high-tech manufacturers, and IDC Manufacturing Insights suggests that they consider the following points:

1. Import/export capability

- Is the process best in class? Does it need to be?
- If the process is deficient, is the best course of action to develop that capability in-house or in partnership with a third party?
- Does the import/export process expertise drive competitive differentiation?

2. Lead times within the business

- · How are they being addressed?
- Are they even a problem?
- · Is lead-time variability a problem?

3. Expectations for future sourcing and demand

- Is the business expecting dramatic growth in emerging regions?
- If so, will this growth be fulfilled through import/ export or through in-market sourcing?
- Has the supply network been assessed for risk and diversification?

How manufacturers answer these questions will reveal the level of inherent maturity in their import/export process as well as the key areas that require attention. As we mentioned at the outset of this paper, the "winners" in the high-tech marketplace will be companies that successfully leverage emerging market growth with strong products and import/export excellence.

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