

Change in the Chain: Supply Chain Transformation in the Asia/Pacific High-Tech Industry

WHITE PAPER

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IDC MANUFACTURING INSIGHTS OPINION

High-tech companies operate in a complex supply chain environment where fragile inventory, complicated products, 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, with many companies experiencing double-digit sales declines and profit erosion. Although market recovery has been somewhat slower than anticipated, there is no question that the prospects for the high-tech industry are brighter in 2011 than they were in 2009. Now, almost 18 months past the consensus end of the global recession, it is interesting to take the pulse of the high-tech industry — this time with a focus on Asia. Based on the results of a recent IDC Manufacturing Insights survey of 248 Asian high-tech companies, there is certainly reason for optimism:

- Given the inability, at least in the short term to medium term, to materially affect demand and sales growth, many Asian high-tech companies have focused on successfully preserving their bottom lines with aggressive cost containment and capital preservation efforts.
- However, it is encouraging that, in the context of the past two years, Asian high-tech companies have done what they can to keep an eye on the customer/consumer with efforts to improve service levels. It is clear that these businesses recognize that while competing on cost is not going away anytime soon, they also must be service competitive.
- In terms of driving changes in the marketplace with new capabilities, sustainability has emerged as the top issue expected to drive change in the Asian high-tech supply chain. Asian high-tech respondents indicated it was first about improving the corporate image and then about customer mandates.

- Companies will also be investing more heavily in visibility to be more responsive to marketplace changes — particularly as it relates to risk management. Best-in-class companies that have greater transparency both upstream and downstream in the supply chain are better able to anticipate issues before they become major problems — managing proactively rather than reactively.
- In the discussion of future plans, we are left with the distinct impression that Asian high-tech companies are intent on getting their internal house in order, with a particular emphasis on continuing to achieve a better cost/service balance and becoming more globally relevant. At the same time, most Asian high-tech companies are anticipating greater intra-Asian trade and are focused on fulfilling demand growth in the region.
- Finally, it is interesting that the supply chain aspect most likely to contribute to future success is improving collaboration with upstream suppliers. Along with analytics/business intelligence, which was picked as the most impactful supply chain innovation over the past two years, this finding suggests that Asian high-tech companies recognize both the complexity and the lack of trust inherent in their customer and supply networks and are working actively to improve relationships and drive higher performance.

IN THIS WHITE PAPER

In this white paper, IDC Manufacturing Insights looks at the state of the Asian high-tech manufacturing industry, focusing on key lessons learned from the end of the economic downturn of 2008 and 2009, the subsequent industry recovery, and how those lessons will impact companies' business and supply chain priorities going forward to drive "change in the chain." To get the most current view possible, we recently surveyed high-tech companies in the Asia/Pacific region regarding their industry and company perspectives on the past two years and for the future.

Demographics

The survey that underpins this white paper was conducted in June and July 2011 and comprised 248 high-tech supply chain professionals across a number of high-tech market segments in China, India, Malaysia, Thailand, the Philippines, Singapore, Australia, New Zealand, and Japan.

The breadth of respondents across manufacturing and the supply chain provides a balanced functional perspective of both challenges and opportunities. The survey also includes respondents at multiple levels of the organization, from those who contribute to the executive strategy to those who execute the strategy, again providing a balanced

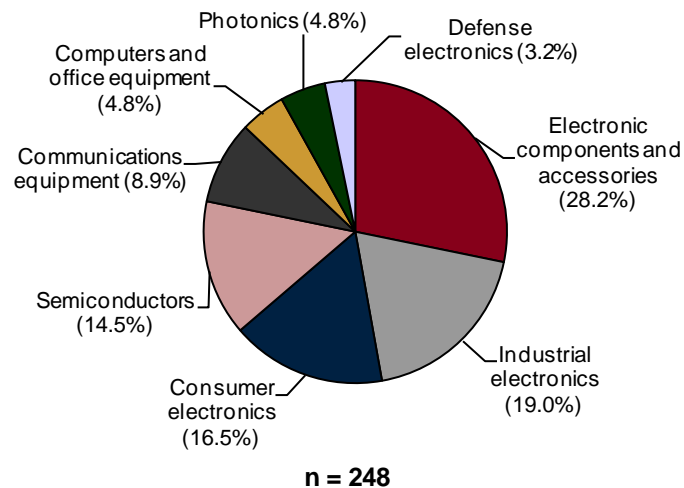
view of both challenges and opportunities. The specific areas of responsibility for the survey respondents are:

- Logistics and distribution — 48.7%
- Manufacturing operations — 27.3%
- Supply chain — 24%

The survey also covers a wide range of high-tech subsegments, including diverse businesses such as semiconductors, consumer electronics, and industrial electronics equipment. The industry segments surveyed are listed in Figure 1.

FIGURE 1

Industry Segments for Survey Respondents

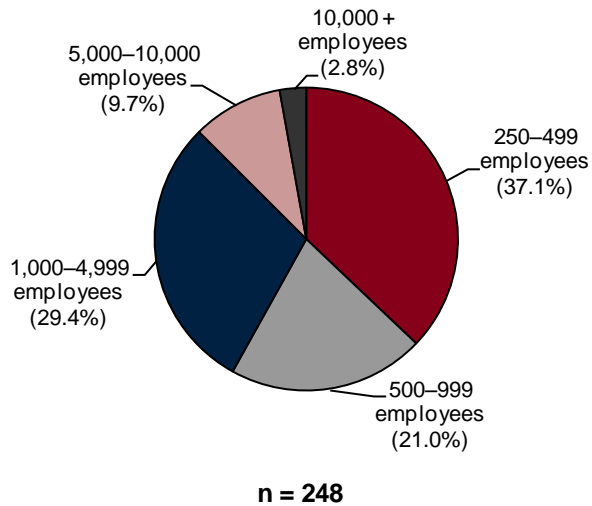


Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

The survey also spans a broad range of company sizes, as illustrated in Figure 2.

FIGURE 2

Survey Respondents by Company Size



Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Summary of Key Findings

The following are some of the key findings from our survey of 248 Asian high-tech companies:

- Despite the cost focus in high-tech supply chains, achieving higher service levels (i.e., on-time delivery, order fill rates, invoice accuracy) is both the most frequent change made over the past two years and the most anticipated change for the next two years.
- Sustainability is viewed as the top initiative expected to drive change in the high-tech supply chain, followed in order by cost and responsiveness.
- Increasing cost in China has seen companies looking at alternative supply sources in the rest of the region (also seeing some growth in North America sourcing for customized designs and complex products).
- Risk management emerges as a clear issue for high-tech supply chains.
- Business analytics/intelligence is clearly viewed as the most significant innovation for managing the supply chain.

METHODOLOGY

IDC conducted telephone surveys with supply chain stakeholders at 248 high-tech firms across nine Asian countries. Surveys were conducted in June and July 2011 and consisted of 22 closed questions. To be considered qualified respondents for the survey, individuals had to have responsibility for either manufacturing operations, logistics, or 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 250 full-time employees for study participants.

SITUATION OVERVIEW

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

The high-tech market can also be thought of in two distinct product flows. B2B products are geared toward the computing, communication, and office equipment needed to make business more productive. This market has matured to the point where growth tends to follow the overall economic trend, although there is reason for some optimism as companies have stretched equipment refresh rates dangerously long, and the release of the latest, apparently reliable, Microsoft operating system should combine to drive new corporate purchases.

The second flow is related to consumer electronics where fashion (mobile phone styles and colors), good-enough technology (Flip video camera), and services (iTunes) dominate buying considerations rather than the technology itself. Also, the growing dependence on devices in mature markets and the growing affluence of a young middle class in emerging markets shape demand.

Serving both of these value chains is a common supply base of electronic component companies as well as electronic manufacturing services providers. Together, these groups will resume spending on IT in 2011 (see Table 1). The emphasis of initiatives will be to improve the connectedness of key supply and demand partners to participate in product development, demand generation, and order fulfillment.

TABLE 1

IT Spending in the Asia/Pacific High-Tech Industry, 2010–2013 (US\$M)

	2010	2011	2012	2013	Growth (%)
High-tech equipment	2,176	2,344	2,548	2,769	9.1
High-tech components	4,358	4,654	5,020	5,411	8.1
High-tech other	1,014	1,091	1,188	1,294	9.2
Total	7,548	8,089	8,756	9,474	8.5

Source: IDC Manufacturing Insights, 2011

Technology-Oriented Value Chains and the Complexity of the Global High-Tech Industry

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 high tech are listed in Table 2.

TABLE 2

High-Tech Industry Subsegments

Subsegment	Characteristics
Semiconductors	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, 2011

While the fundamental nature of high tech is affected most by the rapid life cycles of technology, the disparate subsegments 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 high tech drives a lot of the complexity, particularly for companies that span multiple subsegments.

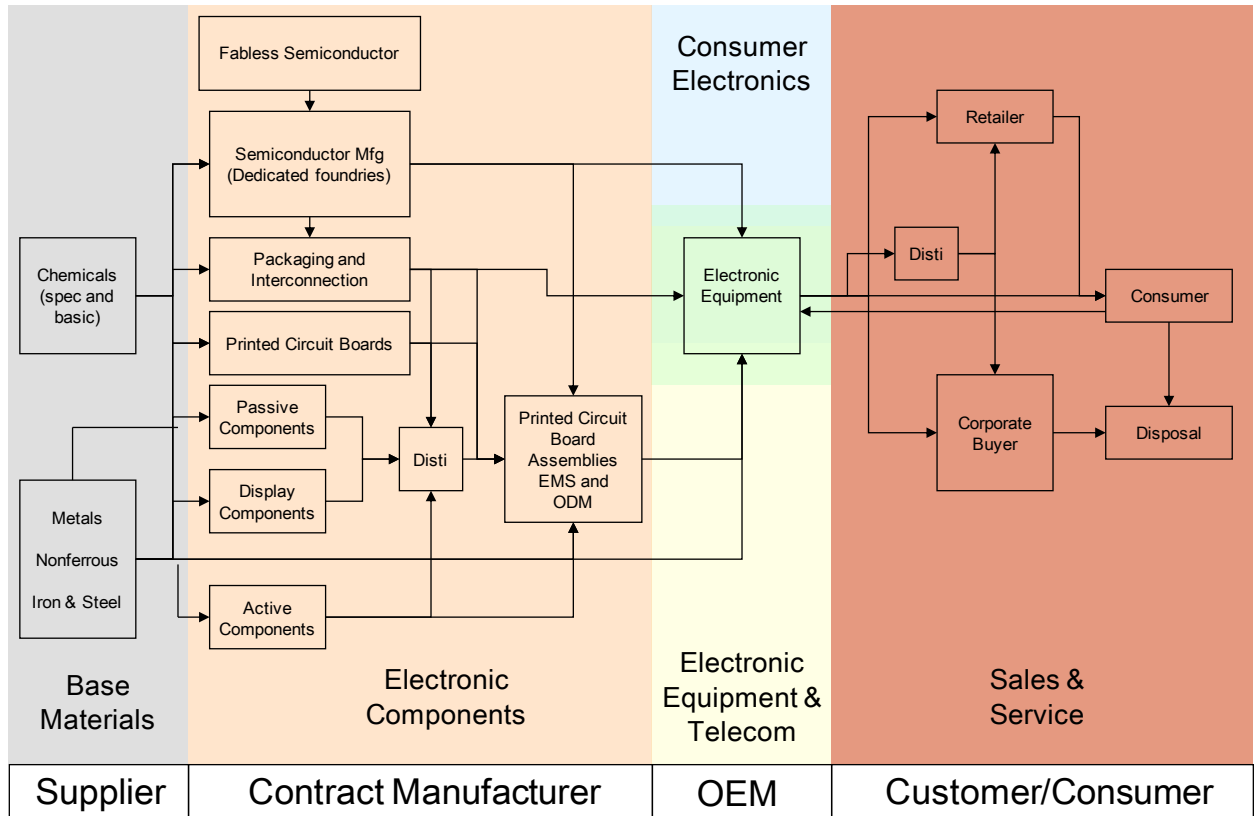
Upstream, high-tech companies also manage a high level of supply chain complexity, with supply and contract manufacturing frequently full partners in the business, including the design and manufacture of new products.

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.

Figure 3 illustrates the complexity of interactions both back into the supply side of the value chain and forward into the demand side.

FIGURE 3

Supply Chain Complexity in the High-Tech Industry



Source: IDC Manufacturing Insights, 2011

Revenue and Share Growth for Asian High-Tech Manufacturers Will Come from Four Sources

Slumping global economic conditions have had a severe impact on high-tech companies that face declining markets and shrinking margins. Short-term efforts to conserve capital and cut costs have helped manufacturers mitigate the impact of economic uncertainty and prepare for the inevitable recovery. A critical success factor for companies planning to regenerate profitable growth will be the ability to take advantage of new revenue opportunities; however, revenue growth in post-recession global markets will not be a matter of simply ramping up production and waiting for the customers with pent-up demand to coming knocking on your door. This is particularly true for high-tech markets, where innovation-appeal routinely trumps brand or customer loyalty.

Four key areas will resurface as catalysts for gaining share and increasing profitability:

1. **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.
2. **Emerging markets.** Even through the recent economic difficulties, the transition of China, India, South America, and Eastern Europe from low-cost 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 modern-oriented electronics market given the lack of comprehensive preexisting 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.
3. **A strong connection to 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.
4. **Business relationship managers as trusted advisor.** Retaining customers, particularly profitable and/or strategic customers, is critical to maintaining share in declining markets. Growing share and profitable revenue will be equally critical as high-tech markets recover. The "fickle" nature of the high-tech customer, where product or innovation stickiness may be low, puts enormous emphasis on the depth of the sales relationship and the role as trusted advisor.

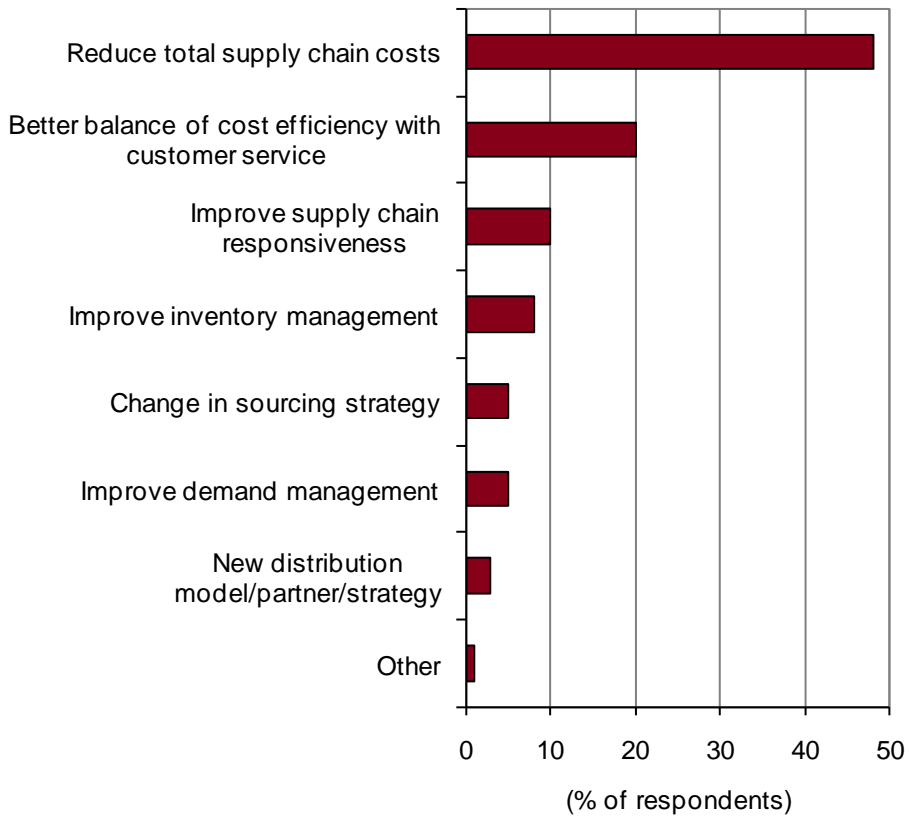
Change in the Chain: Supply Chain Priorities and Changes Made in the Past Two Years

Even though the global recession is now firmly in the rearview mirror, there is little question that the past couple of years have put enormous pressure on high-tech manufacturers, yet there is a consistent undercurrent of optimism about what the future will bring. Forward-looking companies used the economic downturn as an opportunity to reevaluate their business and how to best manage the recovery. Questions remain about the new baseline, but companies are being quite pragmatic about their priorities, and IT technology has proven to be a valuable enabler for these changes.

Our survey results show that at a regional level, the top priority for Asian high-tech companies has been to reduce total supply chain costs (see Figure 4). Given the inability, at least in the short term to medium term, to materially affect demand and sales growth, many companies have focused on successfully preserving their bottom lines with aggressive cost containment and capital preservation efforts. However, it is encouraging that, in the context of the past two years, Asian high-tech companies have done what they can to keep an eye on the customer/consumer with efforts to improve service levels. It seems clear that these businesses recognize that while competing on cost is not going away anytime soon, they also must be service competitive.

FIGURE 4

Top Supply Chain Priorities



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

We see a similar trend at the country level with regard to the top supply chain priority, as reducing total supply chain costs is the leading response in the countries shown in Table 3. A better balance of cost efficiency with customer service is consistently the second highest response.

TABLE 3

Top Supply Chain Priorities by Respondent Country (% of Respondents)

	China	Malaysia	Thailand	Singapore	Japan
Reduce total supply chain costs	50.0	45.0	60.0	33.3	68.9
Better balance of cost efficiency with customer service	25.0	5.0	13.3	26.7	15.6
Change in sourcing strategy	3.3	0.0	3.3	6.7	11.1
Improve demand management	6.7	5.0	3.3	6.7	2.2
Improve inventory management	5.0	20.0	6.7	10.0	2.2
New distribution model/partner/strategy	5.0	5.0	0.0	3.3	0.0
Improve supply chain responsiveness	5.0	15.0	13.3	13.3	0.0
Other	0.0	5.0	0.0	0.0	0.0

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Key findings in terms of the specific countries are as follows:

- China has changed dramatically over the past few years. The rapid growth of "the factory of the world," together with the large potential domestic market, has led many local and multinational firms to expand their Chinese operations. However, this continuous expansion is now leading to serious cost implications as wage growth is increasing rapidly. As a result, we are seeing Chinese manufacturers focus primarily on reducing costs in other areas of their operations to maintain price competitiveness.
- Japanese manufacturers are experiencing even more intense cost pressures as they are the most costly among the rest of the Asian countries. However, Japan has also been the most active and successful in the region in terms of driving productivity. Internal cost containment has probably reached its limit, thus the greater emphasis on changing the sourcing strategy to further identify savings. Lean manufacturing practices have seen many Japanese manufacturers localize their supply chain to "near sourcing" as a way to improve responsiveness and reduce inventory. However, the internal manufacturing cost gap between Japan and the rest of the region has reached a stage where it is better to source further and derive a significant cost benefit.

- Singapore, Malaysia, and Thailand belong to the mature Asia cluster of countries for the Asian high-tech industry. We are seeing the strongest growth in these countries — especially Thailand and Malaysia — because their cost base is becoming more competitive as China gets more expensive. The "productivity movement" is strong in these countries as manufacturers strive to further reduce their cost to stay competitive. Key supply chain strategies for these countries, to balance cost and service, are better inventory management and improved supply chain responsiveness.

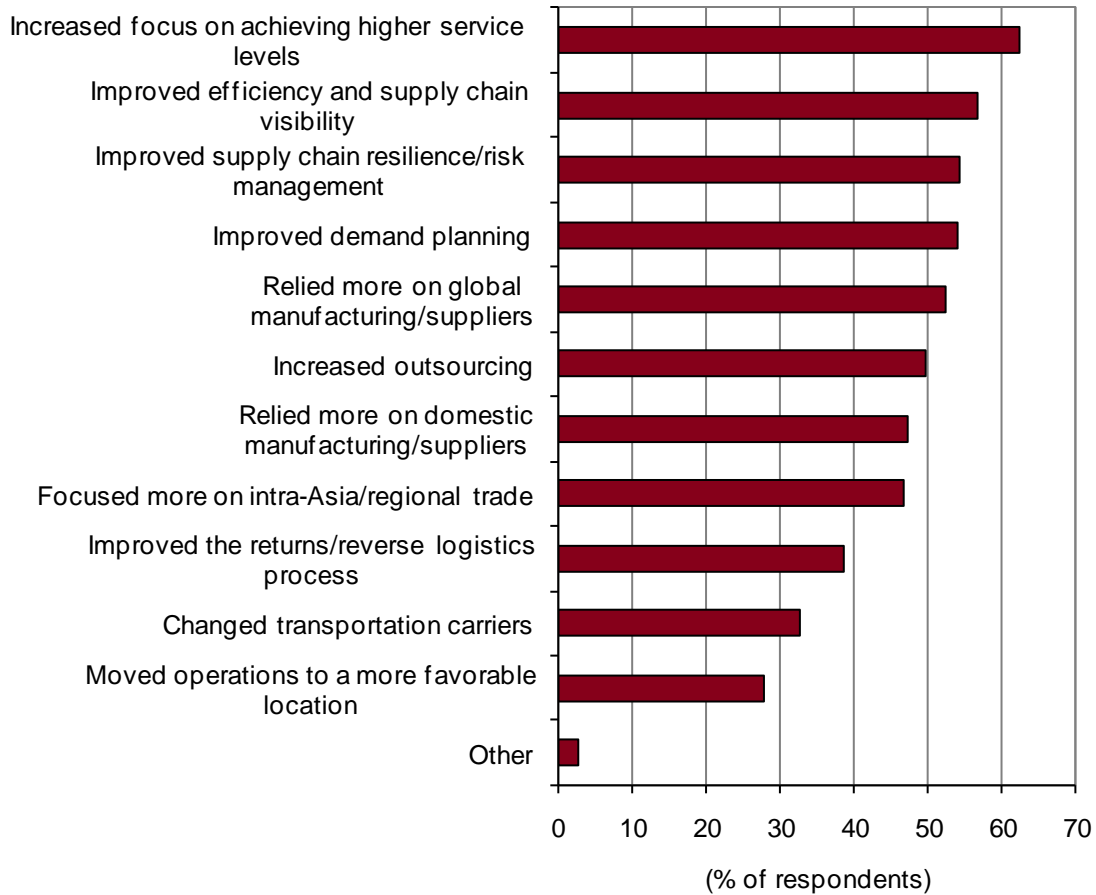
We asked a backward-looking question about the actual changes made within the supply chain over the past two years. The responses are illustrated in Figure 5.

It is interesting to note that of the changes made, driving higher levels of customer service topped the list. This response, in the context of intense scrutiny on costs (as both a business priority and a supply chain priority), speaks volumes about where Asian high-tech manufacturers must focus their efforts. Cost containment is critical — we pointed out earlier that for many companies it was about survival — yet the focus on the customer and on service levels is important as well, particularly as Asian high-tech companies broaden their appeal from "cost first" to a balance of cost and service.

FIGURE 5

Supply Chain Changes Made

Q. Please indicate whether your company has made any of the following changes in the supply chain during the past two years.



n = 248

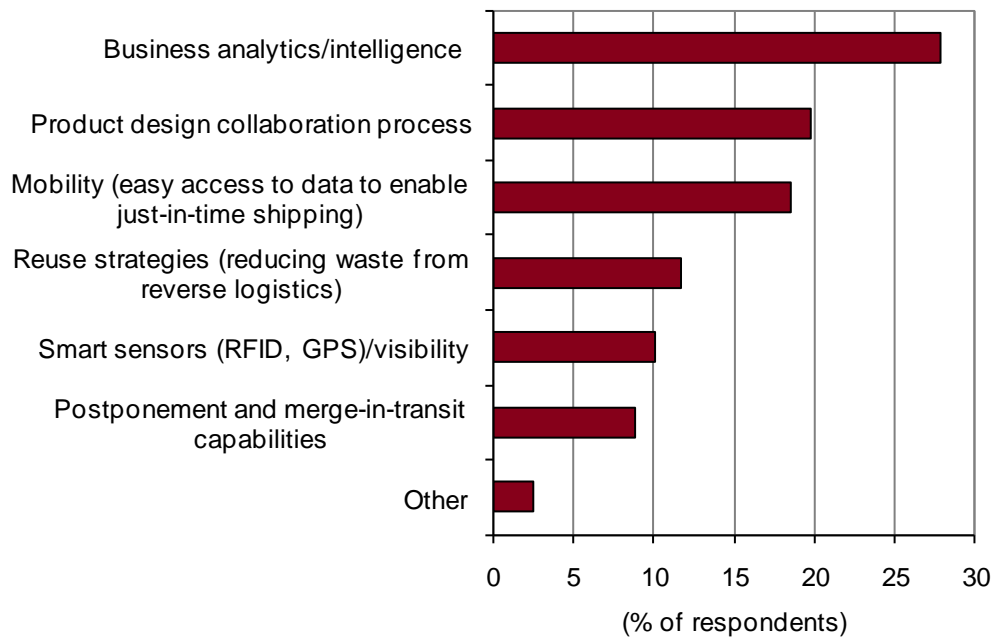
Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Another backward-looking question was about the most impactful or important innovation in the Asian high-tech industry over the past two years. The responses to that question are shown in Figure 6.

Given the focus on visibility and supply chain resilience/risk management, the ascendancy of analytics is not surprising here. It is interesting to note that mobility, almost always the top response in mature regions such as North America or Europe, is in third place in Asia. It speaks to the long-held view that mobility is more easily established in regions where there is no wired infrastructure to get in the way. In that context, it is simply the only way to conduct business.

FIGURE 6

Most Impactful Supply Chain Innovation



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

There were no significant surprises in the high-tech industry survey responses focusing on the past couple of years that we have not also seen in either broader manufacturing surveys or in conversations with high-tech clients. This survey further validates that Asian high-tech manufacturers continue to face the pressure of competing on cost — while input costs continue to climb — as well as beginning to look to differentiate themselves across a service dimension.

FUTURE OUTLOOK

The majority of the remaining survey questions focused on the future:

1. What are the key factors driving growth and change in the Asian high-tech business generally and in the supply chain specifically?
2. What are the challenges and pain points in the supply chain expected to be?
3. What are the objectives that the industry is considering for the post-recession supply chain?

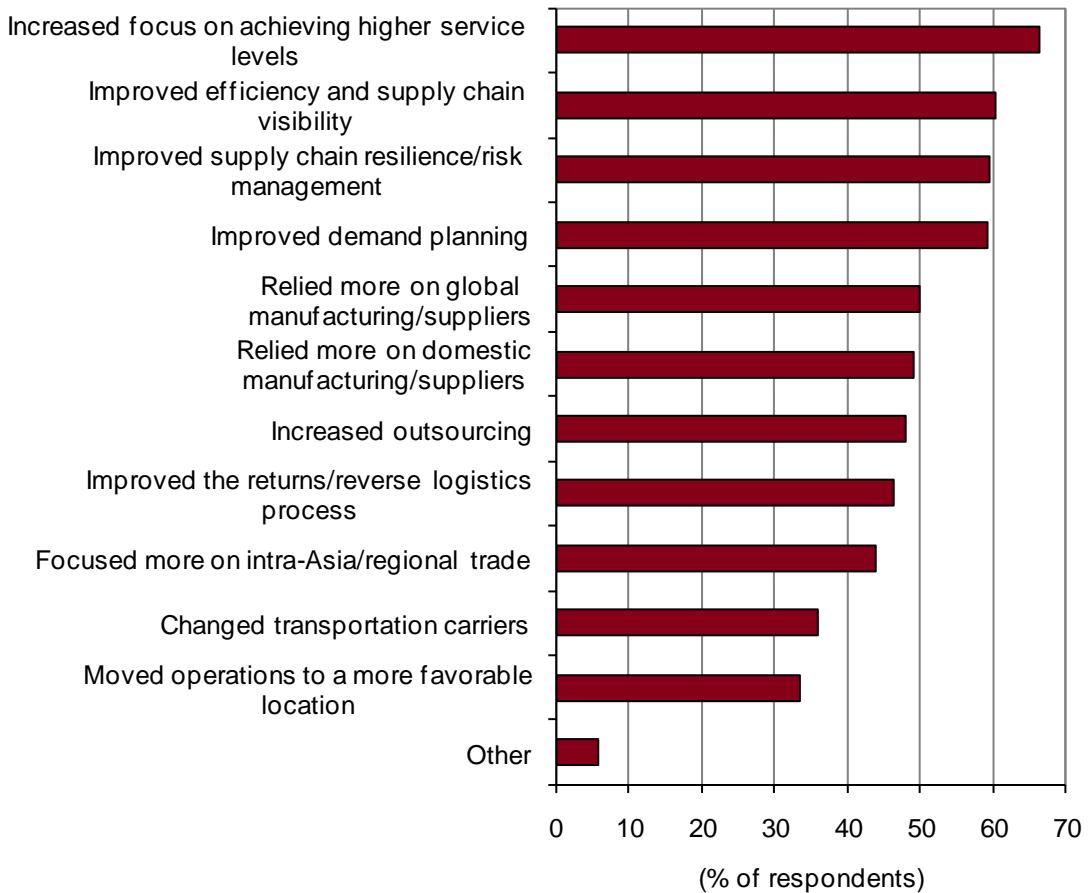
We explore each of these areas in this section.

Supply Chain Changes Expected to Be Made

First, we asked the high-tech companies to look at the responses listed in Figure 5 from the perspective of the next two years. Those responses are illustrated in Figure 7. Generally, the responses to "changes made" track well to those for "changes to be made."

FIGURE 7

Supply Chain Changes to Be Made



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

A comparison of Figure 5 and Figure 7 indicates that the biggest jumps occur for the reverse logistics process and for improving supply chain resilience/risk management, as shown in Table 4.

TABLE 4			
Supply Chain Changes Made Versus Changes to Be Made			
	Changes Made (% of Respondents)	Changes to Be Made (% of Respondents)	Change (%)
Improve the returns/reverse logistics process	39	46	7
Improve supply chain resilience/risk management	54	60	6
Improve demand planning	54	59	5
Move operations to a more favorable location	28	33	5
Focus on higher service levels	63	67	4

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

It is interesting that Asian high-tech companies have more of a focus on the reverse logistics process than their U.S. counterparts and that the focus is very much on ensuring good customer service. We explore this topic in greater depth later in this document.

Future Trend/Growth Areas

Issues Driving Change

Areas that are quite interesting to get a feel for are those that are driving future trends and to which high-tech manufacturers should be paying attention. Indeed, what exactly are the issues that will be driving changes in the Asian supply chain over the next three to five years and influencing both business capability and IT investment priorities? Table 5 lists the top 5 issues and the priority of responses.

TABLE 5

Issues Driving Change (% of Respondents)

	Picked as a Top 3 Issue	Top Response	Second Response	Third Response
Sustainability	45	24	12	9
Cost	60	21	17	22
Responsiveness	44	19	13	12
Customer	32	11	9	12
Innovation	34	8	12	16

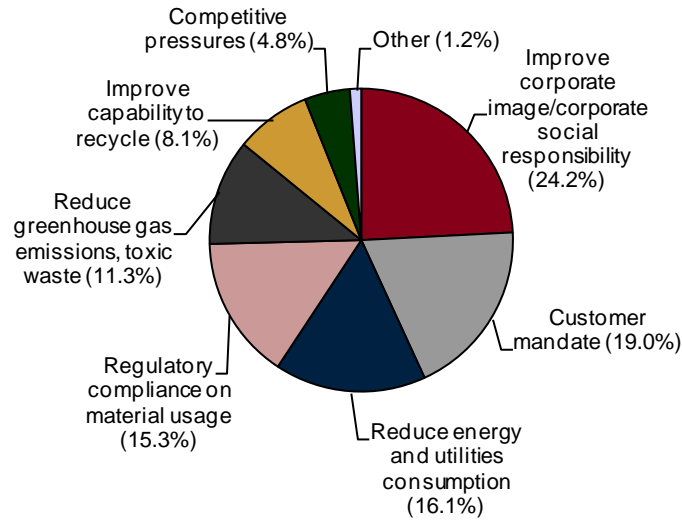
Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Although cost was more frequently selected as the top driver of change when the top, second, and third responses were aggregated, sustainability was most frequently selected as the top response, at 24%. Similar trends are exhibited across individual countries in the region, except Japan, where there is a greater emphasis on risk awareness and mitigation in the wake of the recent earthquake and tsunami that so devastated the country.

When we asked more pointed questions about the primary driver of considering sustainability within the context of supply chain decision making, Asian high-tech respondents indicated that it was first about improving the corporate image (24% of respondents) and then about their customers mandating it (19% of respondents). The remaining responses are illustrated in Figure 8.

FIGURE 8

Sustainability as a Focus Area



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Sourcing and Fulfillment

We also asked survey respondents about both where they source supply and where fulfillment occurs (i.e., where the product is "consumed"). Supply sourcing and product fulfillment survey results from the perspective of the overall Asia/Pacific region are detailed in Tables 6 and 7, respectively.

In Table 6, we see some interesting supply sourcing trends anticipated by Asian high-tech companies over the next half decade — including the expectation that North America will grow as a sourcing location.

TABLE 6

Supply Sourcing by Region

	Today (% of Respondents)	In Three to Five Years (% of Respondents)	Change (%)
North America	13.7	19.0	5.2
Europe	20.2	21.8	1.6
Middle East, Africa	2.0	4.4	2.4
South America	4.0	10.5	6.5
Emerging Asia/Pacific (Philippines and Vietnam)	15.7	23.8	8.1
Mature Asia/Pacific (Thailand, Malaysia, Hong Kong, and Singapore)	41.5	50.0	8.5
Korea	21.4	24.2	2.8
India	18.1	23.0	4.8
Japan	50.8	46.0	-4.8
China	65.7	64.1	-1.6
Taiwan	26.6	30.6	4.0
Other	3.2	4.4	1.2

n = 248

Note: Multiple responses were permitted.

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Both Japan and China are anticipated to decline as sourcing locations, while both emerging and mature Asia/Pacific, along with South America, are projected to grow. Based on the results of the survey, one can draw some broader initial conclusions:

- High-tech companies are feeling the cost pinch in China and are beginning to look for in-region alternatives.
- There seem to be some early signs of a return to the "make it where you sell it" philosophy.
- Asian high-tech companies are anticipating supply shifts within the region in support of demand growth changes.

In contrast, anticipated product fulfillment trends in Table 7 show a surprising level of stability. Responses show slight expected increases in demand for most countries/regions, except Japan, which shows a small decline.

TABLE 7

Product Fulfillment

	Today (% of Respondents)	In Three to Five Years (% of Respondents)	Change (%)
North America	31.9	32.3	0.4
Europe	35.5	37.9	2.4
Middle East, Africa	13.7	16.1	2.4
South America	12.9	17.3	4.4
Emerging Asia/Pacific (Philippines and Vietnam)	24.6	27.0	2.4
Mature Asia/Pacific (Thailand, Malaysia, Hong Kong, and Singapore)	41.9	44.0	2.0
Korea	24.2	25.0	0.8
India	30.6	33.9	3.2
Japan	47.2	45.2	-2.0
China	64.1	67.7	3.6
Taiwan	29.4	29.4	0.0
Other	6.5	6.5	0.0

n = 248

Note: Multiple responses were permitted.

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

There were no notable responses in the "Other" category for either supply sourcing or product fulfillment.

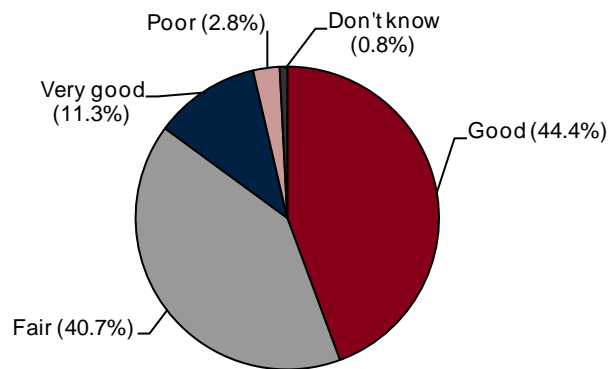
Supply Chain Resilience and Risk Management

The final areas that we explored in the survey relating to future trends and growth areas were risk management and supply chain resilience, in order to better understand the impact that supply uncertainty and demand volatility are having on the Asian high-tech industry. As a consequence of continuing globalization and the lengthening of supply chains, any global economic, political, or environmental event could have far-reaching effects on the performance of companies: How do high-tech companies rate themselves in terms of their ability to manage risk? What are the primary drivers of supply chain resilience and risk management?

For the overall region, companies reported a mixed bag in terms of their ability to manage risk. Although a few reported very good capabilities, the vast majority of companies reported their ability as either good or fair, as illustrated in Figure 9. As we see in the Barriers and Challenges section, risk management heads the list of weak links within respondents' supply chain organizations.

FIGURE 9

Ability to Manage Risk



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Companies have always had difficulty justifying capability investments in supply chain resilience and risk management. More often than not, financial scenario planning dictates where companies mitigate risk — or not! One recurring theme in the results of this survey, and indeed other regional and global surveys that IDC Manufacturing Insights has put into the field, is the growing concern

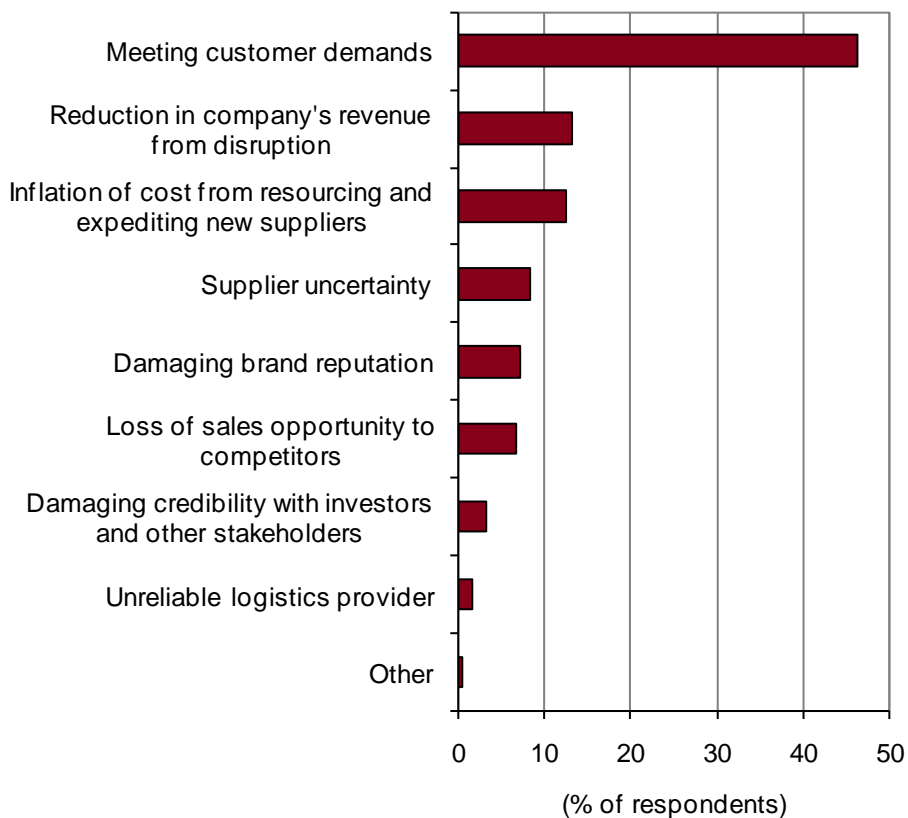
about risk management and the ability of supply chain organizations to react quickly to system shocks.

Consequently, we also asked Asian high-tech companies about the primary drivers for supply chain resilience/risk management improvements. In other words, what would it take to get companies to fundamentally rethink their approach to risk? The responses to this question are illustrated in Figure 10.

Once again, customer service rises to the top of the list, particularly the ability to recover quickly from supply chain disruptions and deliver against service commitments. Demand volatility is certainly a risk factor, but in other survey work we have done, supplier uncertainty is the driving factor.

FIGURE 10

Primary Drivers of Resilience Improvement



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

As discussed in the issues that drive future trends in supply chain management, Japanese manufacturers have exhibited a greater emphasis on risk awareness and mitigation than manufacturers in the rest of the region. This effect is also reflected by the fact that no Japanese manufacturers reported that they have very good capability to mitigate risk. Because Japan is the country where the recent disasters struck, the impact was clearly felt there the most; and it is the view of IDC Manufacturing insights that many, if not most, manufacturers in the rest of the region are overly optimistic about their ability to manage supply chain disruption.

In terms of future trends, high-tech companies clearly are feeling the sting of the past couple of years where the recession's impact on their business has been somewhat slow to recover. As a result, the capabilities that will most shape the agenda over the next few years proved to be shortcomings in 2008 and 2009, namely service delivery, responsiveness, cost containment, and resilience.

Barriers and Challenges

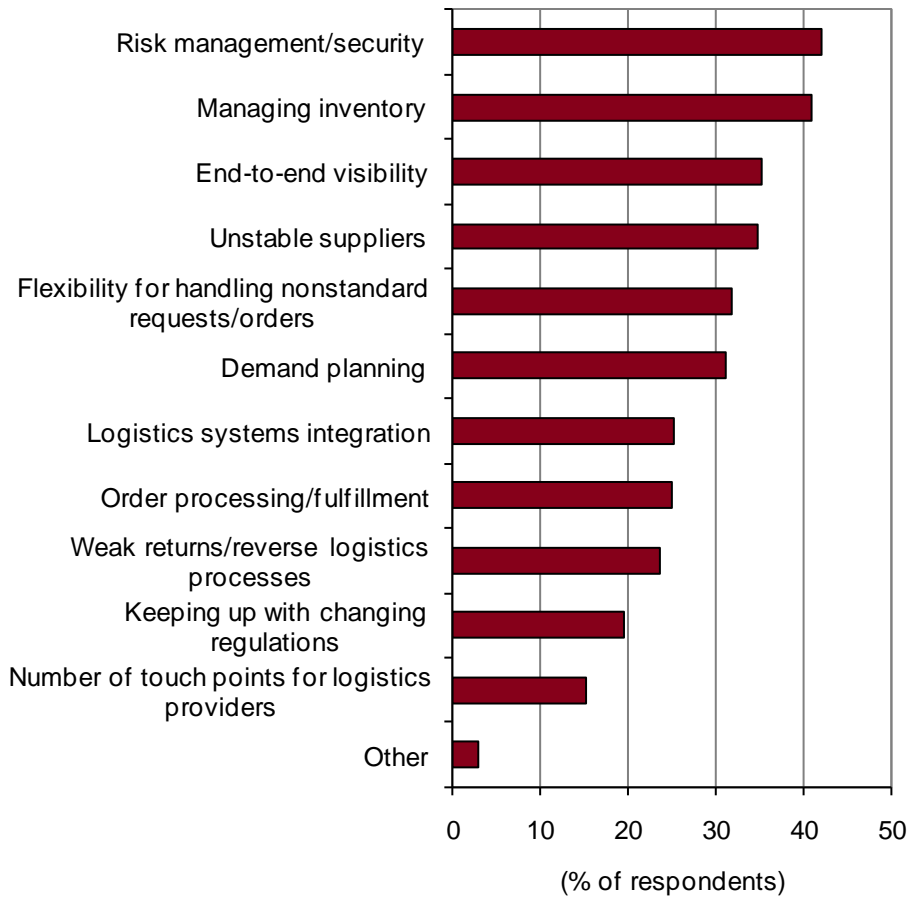
Asian high-tech supply chains do many things well, but they also have opportunities for improvement. Earlier in the document, we discussed some areas where companies feel they need to focus. Yet, we have not explicitly talked about barriers and challenges — particularly those that go a bit beyond the broader "my costs are too high to be competitive" problems. So, we asked the survey respondents about a handful of topics that either have historically been or are expected to be problematic in the future.

Supply Chain Weak Links

Most supply chain professionals are happy to tell you the things that their organization does well, but they are also quite realistic about those things their company does not do so well. When respondents were asked about weak links or persistent pain points in their supply chains, risk management, managing inventory, and end-to-end visibility were listed most frequently. The full range of responses to this question is detailed in Figure 11.

FIGURE 11

Supply Chain Weak Links



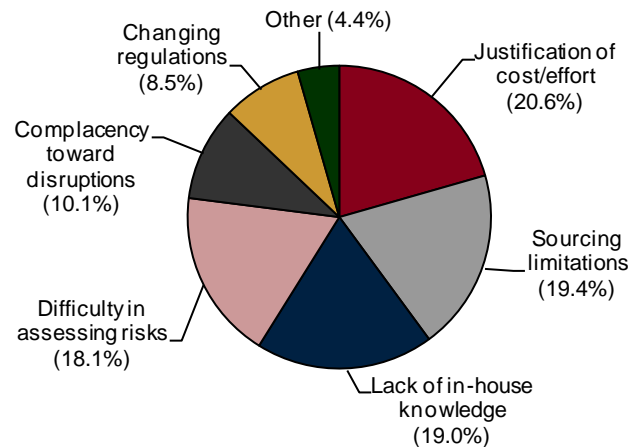
n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

We discussed risk management in the previous section; suffice it to say that it is a major problem for many companies. But what is preventing Asian high-tech companies from putting more comprehensive capabilities into place? The responses to this question are shown in Figure 12.

FIGURE 12

Risk Management Challenges



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

There is no dominant reason cited for challenges in implementing a robust risk management program. Cost justification is certainly in the mix, as are sourcing limitations, complacency, and lack of in-house knowledge, but companies have to better manage this area or they will find themselves on the wrong end of a significant supply problem.

Other areas of weakness for supply chains are many of the "usual suspects":

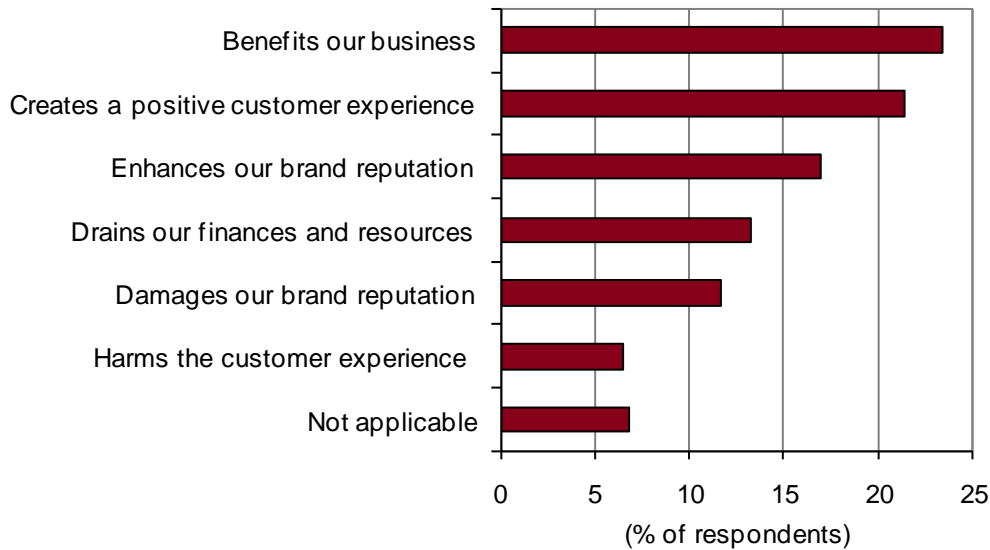
- Inventory is often poorly managed — either there is far too much across the extended supply chain or it performs poorly (the wrong things in the wrong places, or significant obsolete stock).
- Visibility remains elusive for most companies, usually because it has been viewed as a non-cost-justifiable blue-sky vision. Recent progress across manufacturing has been made by viewing visibility in the context of specific use cases such as supply chain traceability or supply interruptions.
- Unstable suppliers emerged as a major concern during the global recession when many companies experienced the unexpected demise of a key supplier. Concern has muted somewhat in the intervening 18 months, but it remains an issue for high tech, and we are seeing the effect in service-level agreements with suppliers.

Reverse Logistics

The reverse logistics process (product returns, recalls, repairs, etc.) can be a point of differentiation for high-tech companies, in either a good way or a bad way. We asked about both the business rationale for the performance of the reverse logistics process and the biggest execution challenges faced in the supply chain. Figure 13 illustrates the business rationale for the reverse logistics process among Asian high-tech manufacturers.

FIGURE 13

Business Rationale for Reverse Logistics Process



n = 248

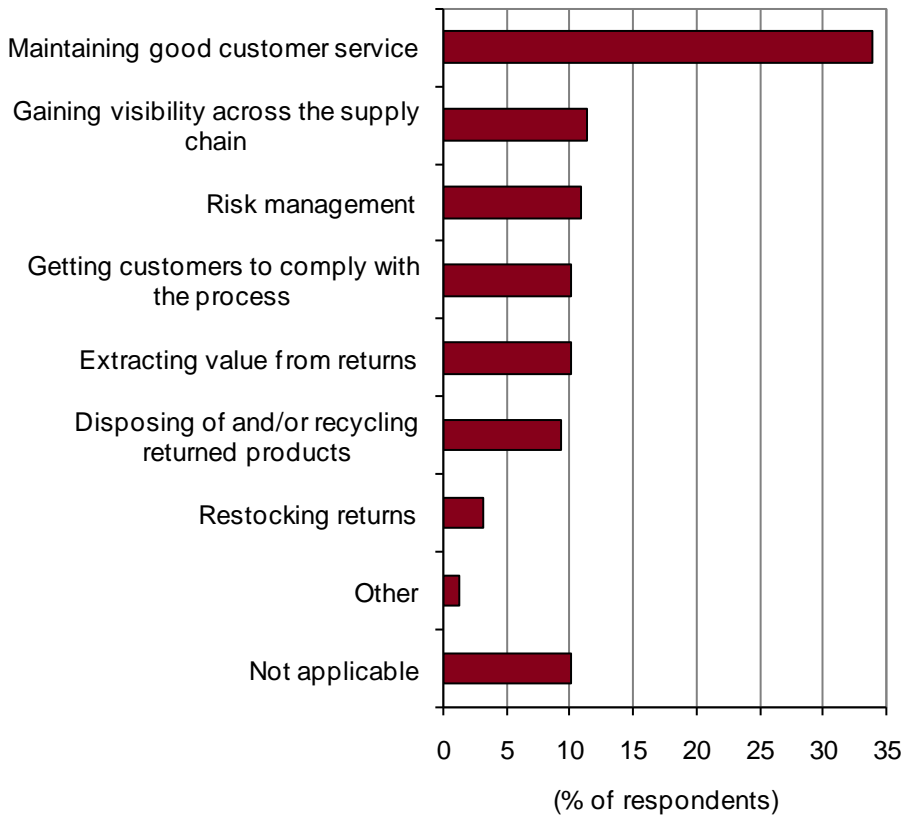
Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Again, we return to the notion of customer service and the ability to "create a positive customer experience" when considering the business rationale for the reverse logistics process. Clearly, Asian high-tech manufacturers understand the concept, but as is true for high-tech manufacturers in other regions, things get a bit "sticky" in the execution.

When asked about the supply chain challenges, respondents overwhelmingly decried their ability to maintain acceptable service levels, as illustrated in Figure 14.

FIGURE 14

Supply Chain Challenges in the Reverse Logistics Process



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

The remaining responses are quite fragmented, led by the difficulty in "gaining visibility across the supply chain." Interestingly, "getting customers to comply with the process," at 10%, is significantly less of a challenge than we have seen in prior surveys. Many high-tech companies outsource the reverse logistics process to a third-party provider, which certainly can help facilitate a more efficient process.

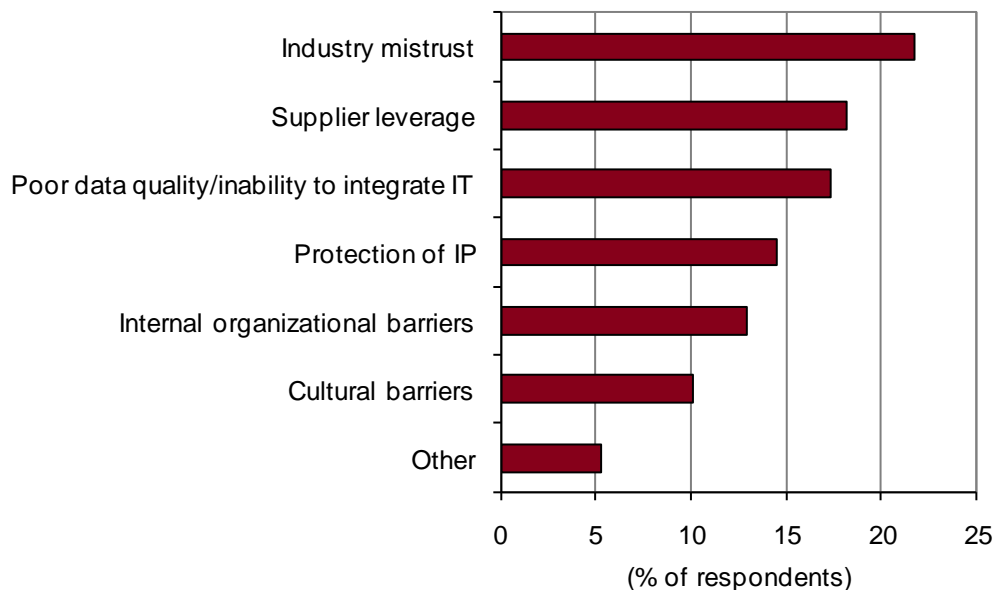
Collaboration

The final area that was explored in the survey relating to barriers and challenges was collaboration. It remains a particularly interesting area for Asian high-tech companies because the high-tech industry is so fragmented and distributed — indeed, there are already levels of collaboration in areas such as innovation development that put other manufacturing segments to shame. Yet, in conversations that IDC Manufacturing Insights has had with high-tech clients, there remains the

view that collaboration has plenty of room for improvement. What is particularly interesting, although perhaps not terribly surprising, is the fact that IP protection is only fourth among Asian high-tech manufacturers as a barrier to collaboration, as shown in Figure 15. In surveys conducted in mature regions, IP protection is always the top response.

FIGURE 15

Barriers to Collaboration



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

The topics that head the list for Asian high-tech manufacturers — "industry mistrust" and "supplier leverage" — speak to intercompany challenges that tend to arise in markets where cost competition is most fierce. The other interesting thing to note is that internal barriers are far less problematic among Asian high-tech manufacturers, although this is influenced by a higher population of smaller, inherently less complex companies in this survey.

In terms of barriers and challenges, no one issue dominated for Asian high-tech manufacturers. There are a handful of areas, however, where there is a clear opportunity for improvement: risk management, inventory management, end-to-end visibility, better management of unstable suppliers, and demand planning. Reverse logistics and collaboration remain "works in progress," and while significant progress has been made in the industry, opportunities still persist.

Looking Ahead

The final area of the survey explored the type of objectives and priorities Asian high-tech companies are considering over the next few years. We asked about future business priorities, the key drivers of future supply chain success, and how the recent earthquake/tsunami in Japan is likely to change the way companies manage the supply chain.

Future Business Priorities

For the region, given the overall business conditions of the past two years, future trends, and challenges, what are the top business priorities for Asian high-tech manufacturers in 2011 and 2012? We asked survey respondents to rank their top business priorities for the next 18 months. Their responses are detailed in Table 8.

TABLE 8

Future Business Priorities (% of Respondents)

	Picked as a Top 3 Issue	Top Response	Second Response	Third Response
Operate more efficiently/reduce costs	63.4	35.1	17.3	10.9
Improve margins	51.7	18.5	23.0	10.1
Invest in new product development/keep up with customer demand	43.2	11.3	14.9	17.0
Expand into new global markets/locations	33.9	10.5	10.1	13.4
Take advantage of market opportunity due to weakened competition	31.5	9.3	10.9	11.3
Collaborate more with supply partners on new products	29.5	4.0	7.7	17.8
Improve supply chain resilience to manage disruption and change	25.8	9.3	9.7	6.9
Improve corporate image/corporate social responsibility	18.6	1.6	6.0	10.9
Other	2.4	0.4	0.4	1.6

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Similar themes emerge. Reducing costs and driving improved margins are the top 2 responses, followed by investing in new products/keeping up with customer demand. Although recent supply chain disruptions in the region have raised the profile of risk management/supply chain resilience, as a business priority, it still lags in the hierarchy.

We see a similar trend at the country level with regard to the top priority, as reducing costs is the leading response among the countries shown in Table 9, except Japan, where better margins is the top priority. Overall, competition is intensifying in the region as manufacturers get "smarter" about the way they manage their operations to drive productivity and efficiency.

TABLE 9

Top Future Business Priorities by Respondent Country (% of Respondents)

	China	Malaysia	Thailand	Singapore	Japan
Operate more efficiently/reduce costs	26.7	40.0	53.3	53.3	22.2
Improve margins	20.0	25.0	3.3	20.0	31.1
Invest in new product development/keep up with customer demand	16.7	5.0	20.0	6.7	0.0
Expand into new global markets/locations	11.7	5.0	0.0	0.0	24.4
Take advantage of market opportunity due to weakened competition	10.0	10.0	6.7	10.0	6.7
Collaborate more with supply partners on new products	6.7	0.0	3.3	3.3	4.4
Improve supply chain resilience to manage disruption and change	5.0	10.0	13.3	6.7	11.1
Improve corporate image/corporate social responsibility	3.3	0.0	0.0	0.0	0.0
Other	0.0	5.0	0.0	0.0	0.0

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

Supply Chain Secret Weapon

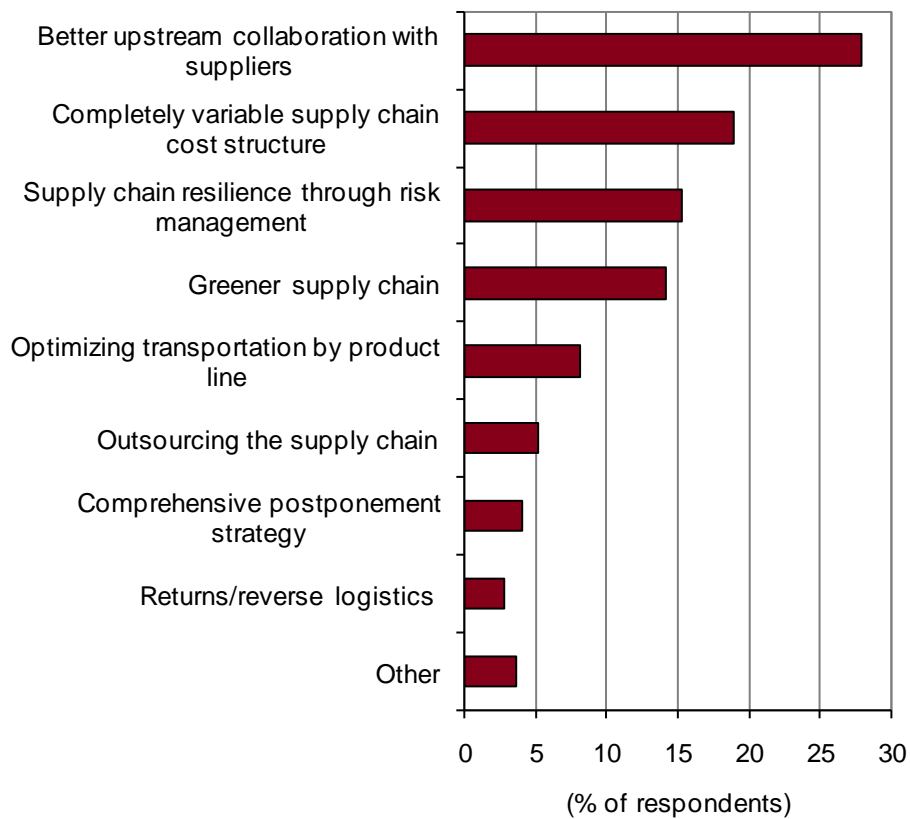
Given these business priorities for 2011 and 2012, we also asked respondents about the supply chain "secret weapon" that would contribute to their company's success in the future. At a regional level, the responses to that question are detailed in Figure 16. The fact that the most popular response was "better upstream collaboration with

suppliers" is not a surprise — given the responses around industry mistrust when we asked specifically about the barriers to more effective collaboration. Driving toward a more variable supply chain tracks against results from almost all surveys we have conducted in the past couple of years, and, once again, we see the importance of supply chain resilience and risk management.

It is also interesting that the "greening" of the supply chain did not rate more highly — particularly given the importance of sustainability to Asian high-tech manufacturers. It certainly suggests that while sustainability is important, it is one of a group of key capabilities expected to drive future success.

FIGURE 16

Supply Chain Secret Weapon



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

The Impact of Supply Disruptions in Japan

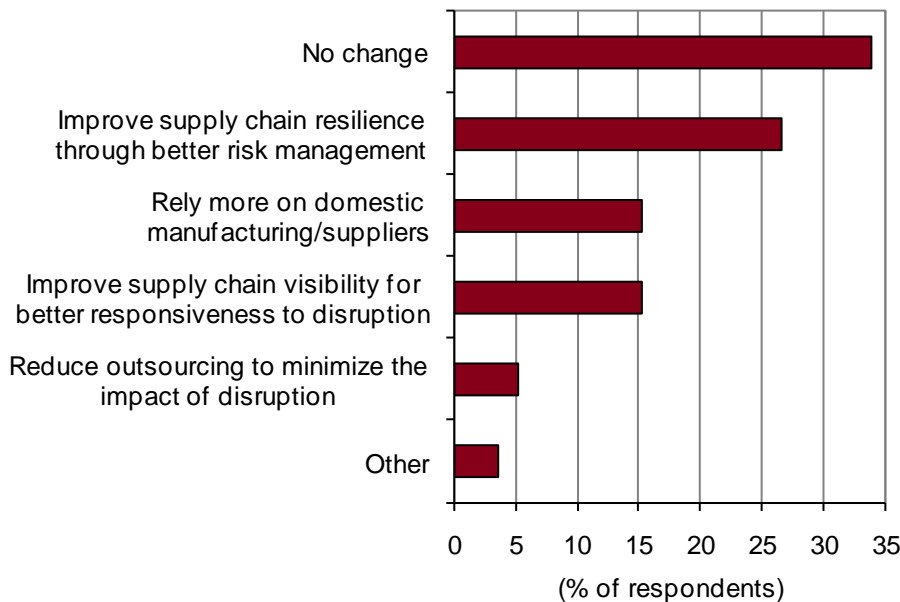
We asked a number of questions about the impact of the Japanese earthquake and tsunami on regional trade. Given the level of coverage in the various media outlets, the results of this survey are quite illuminating. When we asked respondents about the business impact, we received the following responses:

- 46% reported they were not affected at all.
- 21% reported some supply disruption but no adverse financial impact.
- 23% reported either service or financial impact.

Further, 67% of respondents felt that their company either was no longer feeling the effects or expected the effects to last less than one year from the original events. Perhaps even more interesting, given the future-looking view here, are the resultant changes anticipated by Asian high-tech manufacturers. The results are illustrated in Figure 17.

FIGURE 17

Supply Chain Changes as a Result of the Supply Disruptions in Japan



n = 248

Source: IDC Manufacturing Insights' *Change in the Chain Survey*, June 2011

While the second through fourth responses make perfect sense, it is fascinating to see that "no change" is the top response. This finding suggests that the reporting of supply impacts has been oversensationalized, and while many companies have been affected, a good number have not. In conversations IDC Manufacturing Insights has had with Asian high-tech companies, some that were not overly affected felt it was as much "dumb luck" as risk planning, prompting them to still consider enhancement to the supply chain resilience and risk mitigation efforts already in place.

In the discussion of future plans, we are left with the distinct impression that Asian high-tech companies are focused on continuing to drive out unnecessary cost while prioritizing evolving capabilities such as better collaboration and supply chain resilience that they believe will drive future business success.

CONCLUSIONS

The survey of 248 Asian high-tech manufacturers that is the subject of this white paper comes at an interesting time. The recovery from the global recession of 2008 and 2009 has been slow, and from a regional perspective, it has been further retarded by the events occurring in Japan. It is certainly no surprise, therefore, that given the inability, at least in the short term to medium term, to materially affect demand and sales growth, companies have focused on successfully preserving their bottom lines with aggressive cost containment and capital preservation efforts. The survey results clearly reflect this behavior. The rest of the document highlights the key takeaways for each of the major sections of the survey.

Business Environment

- Unsurprisingly, cost containment has been the top supply chain priority over the past two years as many Asian high-tech companies attempt to offset sales declines.
- Despite this cost focus, Asian high-tech companies have not lost sight of their customers; the importance of the customer relationship is increasingly "top of mind" for supply chain professionals.
- Achieving higher service levels is both the most frequent change made over the past two years and the most anticipated change for the next two years. In the context of the growing importance of CRM in high tech, this is very encouraging.
- Improved supply chain visibility and improved supply chain resilience/risk management are the two most important "new" capabilities for the next two years.

Trend/Growth Areas

- Sustainability was most frequently selected as the top driver of change in the Asian high-tech supply chain over the next three to five years, although cost was selected more frequently when adding up aggregate responses across the top 3 drivers of change.
- Beyond sustainability and cost, responsiveness is viewed as the next area expected to drive change in the high-tech supply chain. Both "responsiveness" and "resilience" speak to the need for supply chains to be better at reacting to unpredictability ("forecasting versus responding").
- Although anticipated demand shifts within the Asia/Pacific region are viewed as being quite modest, high-tech companies are anticipating some sizable shifts in supply sourcing. It is notable that supply from China is expected to decline slightly as increasing costs there cause companies to look for alternatives in the region.
- The importance of sustainability to Asian high-tech manufacturers is first and foremost about the customer relationship: improving the corporate social image and meeting customer mandates.
- Supply chain resilience/risk management is also primarily about meeting customer demands, although there is underlying concern about revenue and profit disruptions.

Barriers and Challenges

- Risk management/supply chain security has emerged as a clear issue for Asian high-tech supply chains.
- Inventory management and visibility are challenges for high-tech supply chains given the complexity in the supplier-to-customer network.
- Supplier instability has been a problem; however, companies are now considering financial viability more closely in both the evaluation process and the service-level agreement process.
- Reverse logistics is more important to Asian companies, with a particular focus on maintaining good customer service throughout the process.
- The top barrier to collaboration is industry mistrust, reflecting poor communication across the high-tech supply chain. IP protection is far less of an issue for Asian high-tech manufacturers than it is for manufacturers in mature regions.

Looking Ahead

- Reducing costs and improving margins are the top business priorities moving forward.
- Recent supply chain disruptions have raised the importance of supply chain resilience/risk management.
- Revenue growth through new markets and products will also be a focus.
- The supply chain "secret weapon" expected to be most impactful for Asian high-tech companies is better upstream collaboration with suppliers.
- Asian high-tech companies — and manufacturers in general — are looking to shed fixed costs wherever they can.
- Asian high-tech companies seem to have been affected less than anticipated by the earthquake and tsunami in Japan, prompting a good percentage of companies to expect to make no resulting changes. At the same time, companies recognize that their risk management capabilities are lacking and must be improved.
- Business analytics/intelligence is clearly viewed as the most significant innovation for managing the supply chain. This is in line with recent trends showing prevalent use of business analytics/intelligence to make sense of the extensive data that exists in organizations for business improvement.
- Mobility is rated much lower in Asia/Pacific than in other regions.

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