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Scoring high on the supply chain maturity model – Mainland China perspectives on forward-planning supply chain processes
IBM Institute for Business Value

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*Scoring high on the supply chain maturity model – Mainland China perspectives on forward-planning supply chain processes*

**Executive summary**

Globally, leading companies have evolved and transformed their supply chains from static, isolated and internally-focused to externally collaborative. Many of them are further evolving toward an on-demand, customer-driven supply chain. According to previous value chain research by IBM, leading companies carry less inventory and have shorter product development cycle times and a lower maverick buying rate.¹

Mainland Chinese companies are striving to meet their supply chain objectives; however there is still room for improvement in virtually every process area, as will be explored in this report. In comparison to other regions, Mainland Chinese supply chains achieve good and leading results on certain supply chain management (SCM) key performance indicators (KPIs), such as total finished goods inventory turn rate.

Mainland Chinese respondents agree that profitability is the first objective of SCM, but do not feel it is as critical as those in markets like Taiwan and India or in mature markets like Japan and Northern America do. Companies in Mainland China recognize the importance of cost reduction for the success of SCM, even though they are not facing as much cost pressure as those in the Australian/New Zealand (ANZ), North American and Japanese markets. Quality improvement is viewed as very important in SCM, as compared to other countries or areas. According to the surveys across the globe in 2006, responsiveness has now taken the place of quality among the three top objectives in all markets except Mainland China and Taiwan.

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**Figure 1. Top three objectives (from a choice of eight) as rated by respondents in each of the Value Chain studies conducted in China, Taiwan, India, ANZ, North America, Western Europe and Japan.**

<table>
<thead>
<tr>
<th>Top three objectives</th>
<th>China</th>
<th>Taiwan</th>
<th>India</th>
<th>ANZ</th>
<th>North America</th>
<th>Western Europe</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased profitability</td>
<td>58%</td>
<td>75%</td>
<td>61%</td>
<td>47%</td>
<td>75%</td>
<td>56%</td>
<td>65%</td>
</tr>
<tr>
<td>Reduced cost</td>
<td>44%</td>
<td>41%</td>
<td>34%</td>
<td>56%</td>
<td>52%</td>
<td>38%</td>
<td>58%</td>
</tr>
<tr>
<td>Improved quality</td>
<td>40%</td>
<td>36%</td>
<td>41%</td>
<td>36%</td>
<td>36%</td>
<td>22%</td>
<td>36%</td>
</tr>
<tr>
<td>Increased responsiveness</td>
<td>39%</td>
<td>27%</td>
<td>63%</td>
<td>55%</td>
<td>41%</td>
<td>49%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Note: Highlighted cells are the top three objectives as rated by respondents in each of the geographies. Source: IBM Institute for Business Value 2005, 2006 and 2007 Value Chain studies.
What are the leaders doing?
Globally, the top supply chains appear to have a common trait: the ability to respond quickly to shifts in demand with innovative products and services, enabled by responsive processes and systems. These supply chains are better able to meet profitability, cost and quality objectives by adopting supply chain models that are strategically driven and aligned to their business environment (including products, markets, suppliers and customers). They are also consistently measuring their supply chain performance based on key indicators.

Over to you
Developing a top supply chain can be hard. Based on our analysis of the Mainland Chinese survey results, it is clear that supply chain management in Mainland China needs a comprehensive evaluation and improvement in the following areas:

- Appropriate SCM practices like supplier collaboration aligned with well-defined supply chain strategy
- Supply chain performance measures established against well-defined SCM targets and industry benchmarks, e.g., percentage of sales attributed to new products launched in the past year, customer lead-time or maverick buying rate
- Best practice and world-class processes leveraged for operational excellence
- Advanced SCM technologies adopted for process effectiveness and efficiency
- Internal functions and external relationships with customers, suppliers and partners highly integrated and collaborative for improved supply chain responsiveness.

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Introduction
The IBM Global Business Services 2007 Mainland China Value Chain Study examines the status of supply chain management of Mainland Chinese respondents across six key supply chain maturity areas:

- Synchronizing supply, managing demand: Customer-driven planning
- The perfect product launch: Product introduction and lifecycle management
- Global buying power through strategic sourcing: Dynamics of global sourcing and procurement implications
- Effective customer order management: Close connection to the customer
- Manufacturing as a foundation: A path to continuous improvement
- Logistics excellence for superior customer fulfillment: Perfect order attainment.

The study commenced in November 2006 and was completed by January 2007, with survey questionnaires administered to supply chain executives across Mainland China. It was structured into six separate surveys, one for each of the key supply chain areas. Each survey included 25 to 27 questions about overall business objectives, enabling technologies and current practices, as well as core performance data, such as level of resources (full-time equivalent), cycle times or efficiency rates. There were a total of 640 survey respondents, the majority of whom are in the industrial products, high technology and consumer products industries, with limited representation from retail, services, energy, distribution and transportation, agriculture and government.

This major research project was undertaken with support from the IBM Benchmarking program and the IBM Institute for Business Value to gain perspective on where global supply chain management is today and the direction in which it is evolving. This study aims to provide comparisons between Mainland China and other surveyed geographies and forms part of the global IBM value chain research program conducted progressively in North America, Western Europe, Japan, Australia and New Zealand, and India in 2005 and 2006.

This report highlights the key survey findings from the Mainland China Value Chain Study, focusing on the three key forward-planning supply chain functions of:

- Supply chain planning
- New product development
- Sourcing and procurement.

This report also aims to compare Mainland Chinese study findings with leading practices based on the IBM on demand supply chain maturity model. Key recommendations and improvement opportunities round out each process area. Another report from this study is available focusing on the supply chain fulfillment processes logistics, customer order management and manufacturing.

The IBM on demand supply chain maturity model is a tool that IBM designed for evaluation of how customer-driven and responsive a supply chain is. It describes how different organizations’ supply chains address the supply chain challenges for different supply chain process areas. The model groups supply chains into the following five categories of increasing integration, customer-orientation and responsiveness:

1. Static supply chain
2. Functional excellence
3. Horizontal integration
4. External collaboration
5. On demand supply chain.

Leaders understand that supply chain effectiveness must mean more than efficiency and low cost. Supply chains are also important drivers of revenue growth and profitability, as well as the primary source of responsiveness – or lack thereof. Top-performing supply chain executives are actively adopting leading management practices, such as:
• Synchronizing supply and demand through planning and forecasting
• Coordinating business functions horizontally across the supply chain
• Developing mutually beneficial outcomes to strengthen supply chain relationships
• Managing supply chain cycles – for example, for planning or for order-to-delivery
• Developing variable cost structures as alternatives to fixed costs
• Sharing information and risks with partners to reduce overall exposure
• Using realtime information to create responsive, customer-driven processes.

**Synchronizing supply, managing demand**
Understanding demand patterns and optimal planning of supply are the constant endeavors of supply chain planners. Responsive supply chains are characterized by an early understanding of demand signals with limited distortion of point of sales data, which should be provided on a realtime basis. Responsive supply chains have the ability and flexibility to respond to those demand signals in the most optimal manner. Synchronized supply chain planning can lead to a competitive advantage by providing superior customer service and reducing waste and losses due to suboptimal planning and inventory deployment. In a growing economy like Mainland China’s, fluctuations in demand and bottlenecks in infrastructure pose additional challenges to supply chain planning.

**Key survey findings**
Increasing consumer demand and competition require responsiveness to remain an area of continued focus in the future. Most respondents feel that they are rapidly responding to changes in market conditions. Additionally, respondent companies have yet to evolve to more mature risk-sharing across a network rather than concentrating in a single enterprise. Only 17 percent of respondents have widely adopted this practice by sharing information, resources and financials with others to reduce risks.

Companies are establishing continuous replenishment programs for customers. About 42 percent of the respondents indicated that they have extensive, dedicated programs to replenish products based on actual and forecasted product demand. About 33 percent of the respondents have adopted highly effective returns management / reverse logistics to optimize the end-to-end supply chain. Surveyed respondents also consider customer interaction with production employees as a very effective tool for supply planning, but only 10 percent have adopted this interaction extensively. An indicator of effective collaboration is the degree of adoption of realtime information transparency inside and outside the enterprise. Among Mainland Chinese respondents, only 12 percent have widely adopted realtime, electronic sharing of demand information (e.g., order status or demand projections) and inventory level data with supply chain partners, as compared to India (50 percent) and ANZ (21 percent).

Inventory planning and replenishment, warehouse management and production scheduling are the main functions supported by vendor packaged software.

Mainland China performs moderately on relevant supply chain KPIs as compared to other geographies surveyed. Only total finished goods inventory turn rate ranks as a leading practice, with an average 27 turns per year, compared to the global average performance of 23 turns per year.

Two-thirds of respondents report cash-to-cash cycle time longer than 30 days. Leading performers are India and Australia/NZ. Fifty-seven percent of Indian respondents and 49 percent of Australian respondents report cycle times less than 30 days.

Thirty-five percent of Mainland Chinese respondents have an on-time delivery rate (percent of orders delivered from door to door within the time frame requested by the customer) higher than 97 percent, while the leading performer is North America where 44 percent of respondents have an on-time delivery rate higher than 97 percent (see Figure 2).
The cost of quality as a percentage of cost of goods sold (COGS) for surveyed Mainland Chinese respondents has decreased in the last three years (2003-2006). In 2006, 31 percent of Mainland Chinese respondents have total quality costs greater than 5 percent. But this performance still lags behind Japan (26 percent), ANZ (16 percent) and Europe (13 percent).

**What the leaders are doing to achieve supply and demand synchronization**

As companies are moving up the maturity model toward an on demand supply chain (see Figure 3), leading companies are rapidly responding to changes in the marketplace by collaborating closely throughout the network. The initiatives they are undertaking include:

- Collaborative demand planning and forecasting with customers and suppliers
- Customer inventory planning and deployment programs, including continuous replenishment and shared management of inventory
- Integrated sales and operations planning among functions within the organization and the extended supply chain network
- Specialized and differentiated supply chain strategies based on customer segmentation, customized service levels and strategic planning.
who implement technology in sales and operations planning (S&OP), demand planning, and production and inventory/replenishment planning processes report significantly better supply chain performance on the following KPIs:

- Cash-to-cash cycle time
- Inventory turn rate
- Order cycle time
- Perfect order performance.

Forecast sharing with suppliers, weekly planning processes, system-generated supply and demand plans are further initiatives Mainland Chinese companies should implement to improve supply chain performance. Companies that are more mature under the Supply Chain Maturity model could enhance these initiatives by implementing daily planning processes.
Additionally, it is necessary to reinforce quality management strategies like total quality management (TQM) to improve quality and further reduce the cost of quality.

The perfect product launch
Successful innovation has become a key determinant of revenue growth, competitive margins and, in some cases, even survival. The ability to bring new products to market quickly, efficiently and ahead of the competition is becoming increasingly important. In Mainland China's competitive environment, the quality of goods and services has also become a winning factor. Thus, the top product development objectives of Mainland Chinese respondents are improved quality and increased profitability.

Key survey findings
Mainland China's greatest challenge in new product development (NPD) is also its key strategy for success: understanding customer requirements (see Figure 4). Being first to market is not yet a widespread major objective.

Although Mainland Chinese respondents rate best fit to customer requirements as the main strategy for development efforts, the practice of collaboration with customers is only extensively implemented by 18 percent of surveyed respondents (58 percent indicated some implementation in this area).

The most widely adopted practices – standardization of components for design and development, customer product configuration and specifications, and formal product/service development processes – also appear to be the most effective in improving the new product development process performance. However, integrated design and sourcing, reported as the most effective of NPD practices, has only been extensively adopted by 6 percent of surveyed respondents.

Twenty-four percent of Mainland Chinese respondents have at least 80 percent of their new products launched to market on time. The leading geography in this area is ANZ with 40 percent of its respondents achieving this objective.

Meanwhile, 39 percent of Mainland Chinese respondents have at least 80 percent of their new products launched to market on budget. India is the leading region, with 41 percent of its respondents in this category. Sixty-three percent of Mainland Chinese respondents rated on-budget launch as the leading measure of product development success (see Figure 5).

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**Figure 4. Mainland Chinese respondents’ most significant challenge also happens to be their primary strategy for NPD success.**

- **What are the most significant management challenges for your site’s new product development efforts?**
  - Correct identification of customer need: 54%
  - Increasing product innovation: 48%
  - Remaining competitive: 46%
  - Reducing time to market: 43%
  - Managing project overall cost: 36%
  - Proper allocation of project resources: 66%

- **What is the primary strategy for your site’s new product development efforts?** (Percent respondents)
  - 9% - First to market
  - 22% - Low product/service cost
  - 45% - Best fit to customer requirements
  - 24% - Innovative product/service features

*Source: IBM Institute for Business Value 2007 Mainland China Value Chain study.*
But Mainland China's good performance in the areas of on-time and on-budget new product launches is partly due to a comparatively lower percentage of new product introductions as a percentage of sales. Yet, only 5 percent of companies responded that more than 75 percent of new product developments succeed commercially each year. This level of perceived successful new product development is lower than that of India, where 47 percent of companies report a success rate of more than 75 percent.

Compared to other geographies, Mainland China has the highest instance (38 percent) of surveyed respondents who view new customer markets as the primary focus for generating new ideas. However, 54 percent of respondents are focused on existing product improvements or extensions. Only 8 percent of surveyed Mainland Chinese respondents focus on generating ideas for new product introductions. This is much lower than other geographies' rankings: Japan (49 percent), Western Europe (37 percent), India (35 percent), ANZ (34 percent) and North America (25 percent).

Mainland Chinese product developers have significantly reduced the average time-to-market over the last three years, from an average product development cycle time of 180 days in 2003 to 100 days in 2006. Formal development processes and greater collaboration with suppliers and customers are seen as key to reduce product development time-to-market.

Forty-nine percent of respondents attributed poorly defined customer needs as the primary reason for product launch delay or failure. Lack of clear business strategy (11 percent) and lack of executive-level support (19 percent) were also listed as primary reasons for product development launch delay / failure, which suggests that NPD's relevance to company success is not well-recognized at top management levels.

**What the leaders are doing to achieve the perfect product launch**

As companies evolve up the supply chain maturity model toward an on demand supply chain (see Figure 6), they realize that business performance is directly related to their ability to bring superior products and services to market in a cost-effective manner. Many of the leaders are implementing the following practices:
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• Collaborating with customers to explicitly define requirements
• Integrating with customers and supply chain service providers during design, development, production and service
• Using componentization and standards to develop variations on products at lower costs
• Outsourcing design and development activities for non-core products and/or components
• Measuring sales or profit contribution for individual products.

Key recommendations
To translate innovation into profitable growth, Mainland Chinese companies first need to recognize the strategic role that NPD plays in a competitive market. A realistic evaluation is critical for companies to commit the right resources, time and attention to the NPD process.

Secondly, greater collaboration with customers and more integration with suppliers is required to better understand and respond to customer needs. Companies should start with defining the customer requirements, discussing potential product improvements with suppliers for integrated design and sourcing, and introducing more new products for competitive positioning in new customer markets. Companies should integrate engineering with operations as well as establish cross-functional teams for design and planning.

Next, it is important for companies to extend their current NPD practices, such as standardization of components for design and development, customer product configuration and specifications, and formal product/service development processes, to bring more new products to market quickly and efficiently.

Figure 6. Perfect product launch – where are you on the supply chain maturity model ranking?

Traditional

Static supply chain

1. Ad hoc processes
2. Design specs “thrown over the wall”
3. Procurement and operations not involved in launch

Functional excellence

2. Formal processes, but vary by project/business unit
3. Dates/budgets often missed
4. Limited market research

Horizontal integration

3. Formal new product development procedures
4. Integration of engineering with operations
5. Cross-functional teams for design planning processes

External collaboration

5. Use of collaborative techniques
6. Componentized, reuse of design
7. Standardized components
8. Formal, integrated process with suppliers/providers

On demand supply chain

Source: IBM Institute for Business Value analysis.
Global buying power through strategic sourcing

Globally, sourcing patterns continue to shift dynamically in search of low-cost sources. These dynamics and the trend toward increased procurement spending and outsourcing (which can increase risk as well) are increasing procurement’s strategic impact on corporate performance. As the influence of procurement grows, performance in this key area will dictate the position of industry supply chain leaders and laggards.

Key survey findings

Among Mainland Chinese respondents, collaboration with suppliers and total cost of ownership are viewed as the key initiatives in procurement to achieve the supply chain objectives of increased profitability and reduced cost. Global sourcing of direct material and spend analysis follow (see Figure 7). In contrast, e-procurement and e-sourcing do not play major roles.

Seventy-one percent of respondents source more than 75 percent of their direct materials locally, but global sourcing is on the rise. Mainland Chinese companies are now sourcing more direct materials globally than they were three years ago. The percentage of companies that source from Europe increased from 30 percent (2003) to 42 percent (2006); those that source from North America increased from 36 percent (2003) to 45 percent (2006) and those that source from Asia (excluding Mainland China) increased from 30 percent (2003) to 56 percent (2006).

In Mainland China, more than 43 percent of respondents manage supplier relationships with a focus on quality, and 23 percent manage based on total cost. In Europe, North America and Japan, the relationship is focused mainly on price and total cost. North American and European respondents concentrate especially on total cost, 59 percent and 47 percent, respectively.

Although supplier collaboration and total cost of ownership were cited as key factors in meeting procurement objectives; technology investment plans in these areas do not mirror this response. Most respondents plan to or already invest in strategic sourcing tools like contract management and spend analysis (83 and 87 percent, respectively), however collaboration tools like electronic data interchange (EDI) and internal and external supply chain integration with trading partners are not as prevalent. Only 34 percent of respondents have invested in technology in support of internal supply chain integration, and only 17 percent have invested in external supply chain collaboration technology.

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Figure 7. What are the key factors (initiatives) to achieving these objectives?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percent Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier collaboration</td>
<td>56</td>
</tr>
<tr>
<td>Total cost of ownership</td>
<td>50</td>
</tr>
<tr>
<td>Global sourcing direct materials</td>
<td>44</td>
</tr>
<tr>
<td>Spend analysis</td>
<td>35</td>
</tr>
<tr>
<td>Contract compliance</td>
<td>30</td>
</tr>
<tr>
<td>Increased revenue</td>
<td>22</td>
</tr>
<tr>
<td>e-procurement/e-sourcing</td>
<td>14</td>
</tr>
<tr>
<td>Global sourcing indirect material</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: IBM Institute for Business Value 2007 Mainland China Value Chain study.
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An indicator of procurement performance is “maverick buying” as a percentage of annual purchases. A low maverick buying rate indicates good performance. Although there has been relatively high investment in strategic sourcing tools in Mainland China, the average maverick buying rate is still 19 percent. This mirrors the Australian and New Zealand situation, where the average maverick buying rate is also 19 percent. This is highest rate among all the surveyed countries. More than 70 percent of respondents indicated that average levels of maverick spending are greater than 5 percent. For Mainland Chinese companies, this suggests that effective spend analysis and contract compliance process initiatives are more important investments than spend analysis and contract compliance tools. While technology investment will help, the maverick buying problem stems foremost from the wrong behavior, not simply the wrong technology.

What the leaders are doing to achieve global buying power

As companies evolve up the supply chain maturity model toward an on demand supply chain (see Figure 8), they are increasing their buying power through strategic global sourcing, while creating virtual supplier networks. Many of the leaders are:

- Implementing proactive category management to create sustainable value
- Investing in fewer, deeper supplier relationships and developing collaborative supplier relationship management programs with mutual objectives and performance criteria
- Outsourcing operational procurement, payment and audit functions as a way to optimize the cost structure
- Driving adoption of total cost of ownership approaches through more strategic and complex value-based contracting.

Figure 8. Global buying power through strategic sourcing – where are you on the supply chain maturity model?

Source: IBM Institute for Business Value analysis.
**Key recommendations**

To effectively manage total procurement spend, Mainland Chinese companies need enterprisewide information visibility into purchasing performance, buying behavior patterns and inventory levels.

In order to reduce “maverick buying,” Mainland Chinese companies should consider setting up a centralized sourcing organization, implementing centrally managed and consolidated supplier management, as well as establishing master contracts for key suppliers. Mainland Chinese procurement officers should also improve the effectiveness of technology deployment and process execution in contract management and spend analysis to reduce “maverick buying.” Contract compliance is a fundamental building block of effective procurement – if it is not in place, further work on supplier management and contract development may be nullified. Executing contract compliance requires a combination of policy, sponsorship and measurement. Sometimes it involves radical cultural change.

More investment in and higher utilization of technology/systems are necessary not only to reduce “maverick buying,” but also to enable supplier collaboration and total cost of ownership management.

To identify further cost-reduction opportunities, Mainland Chinese companies will need closer supplier collaboration. This collaboration should allow companies to better address demand fluctuations and price increases.

Next, it is important to enhance supplier relationship management not only with a transaction-based focus on quality, but also by putting more emphasis on price and total cost, thereby improving procurement cost efficiency and, ultimately, margins.

Additionally, Mainland Chinese companies should develop performance measurement systems for the extended supply chain that cover the integrated supply network, global sourcing organizations and outsourced processes.

**Conclusion**

Over the last few years, execution of supply chain management has become a key driver of competitive advantage and offers great improvement opportunities for Mainland Chinese companies. Respondents are focusing on their top objectives of increased profitability, cost reduction and improved quality, and forward-thinkers are leveraging leading practices and advanced technologies in new product development, supply chain planning and procurement. Mainland Chinese companies have already defined SCM strategies aligned to the current market environment and customer needs, but the next step of transformation (“do the strategy”) is not being executed effectively. Business performance and growth are related to the ability to provide superior products and services to customers in a cost-effective manner. This needs to be supported by efficient NPD processes and integrated sales and operations planning processes, along with proactive category management that identifies additional cost-saving opportunities.

Defining the strategy is the first step. Translating strategic direction into action plans is the second one. In each of the process areas, advanced practices and processes like standardization, third-party integration (with customers, suppliers, etc.) and increased flexibility have to be implemented. In addition, Mainland Chinese companies should use technology more extensively to support SCM processes and leverage the know-how and capabilities of all partners involved in the supply chain to increase responsiveness and competitiveness.

The 2007 Mainland China Value Chain Survey indicates that many Mainland Chinese companies are well-informed and gearing up to meet the challenges and opportunities, but still have significant room for improvement in delivering high performance with increased responsiveness. This study presents the insight for them to follow the leaders, set new benchmarks and eventually lead the way.
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References

