Feet on the Ground, Eyes on the Horizon: A Transformational Roadmap for the Heavy Equipment Industry

To stay relevant and overcome growth impediments in the dynamic global economy, industrial companies must focus on five business imperatives: operational excellence, lean technologies, supply chain visibility, customer centricity and performance analytics.

Executive Summary

The heavy equipment market is undergoing dynamic change. We classify these forces into three major areas:

- **From an industry perspective**, companies face demand uncertainty, fluctuations in commodity prices and a lack of clarity in government policies and global trade agreements. With strong growth projected for emerging economies, there is a need to build robust supply chain networks. As global competition increases, many companies are exploring opportunities to reduce costs and stay relevant.

- **From a customer perspective**, the pressure is on to innovate and develop products quickly to meet market-specific needs.

- **From a digital perspective**, new approaches to doing business are changing the way customers buy products and consume services. With the rise of social media, commercial customers can now access unprecedented information about products and the competitive landscape, as well as learn from users’ past experience with specific equipment, before making a purchase decision.

- Underpinning these macro changes is the impact of new technologies that have transformed business. The Internet of Things (IoT) has introduced numerous opportunities for companies to change their business models and digitize their value chains, distorting boundaries between the digital and physical worlds. Smart, interconnected systems now seamlessly support activities along the entire industrial value chain. This translates into reduced costs, improved efficiencies, greater speed and scale, and smarter products and services.

This white paper presents a plethora of opportunities for companies to re-examine their existing business processes and tackle these challenges head-on. Wherever your organization is on its transformation journey, this white paper offers five thematic starting points:

- **Operational excellence**: Through best-in-class supply chain and operations, companies can mitigate operational risks and reduce costs, thereby creating sustainable, competitive advantage.
• **Lean technology landscape:** Having a lean technology landscape from an IT perspective can increase employee productivity, improve business processes and reduce costs.

• **Global supply chain visibility:** With better visibility, companies can track sales, products and components up to the final destination through availability of real-time data.

• **Customer-centric innovation:** This will be driven through implementation of systems that enrich the customer experience through customer process-driven innovation.

• **Performance and analytics:** A strong analytics backbone can help companies identify opportunities to not only strengthen their decision-making capabilities but also improve partner and supplier performance effectiveness.

The Heavy Equipment Marketplace

The heavy equipment market comprises three industries: agricultural machinery (sized at about $126 billion in 2013), construction equipment (valued at $138.5 billion in 2012) and mining equipment (valued at $71 billion in 2012).

Global demand for agricultural equipment is forecast to expand 6.9% annually through 2018, to $208 billion. The Asia/Pacific region, which accounted for almost half (46%) of agricultural equipment demand worldwide in 2013, according to the latest figures available, represents the largest and fastest growing regional market. In more developed markets, such as the U.S. and Western Europe, growth in agricultural equipment demand will be driven by efforts to reduce inputs and maximize production capabilities through the use of increasingly advanced high-value precision farming technologies, such as global positioning systems and yield monitors.

**Forces Impacting the Industry**

Industry advances are being propelled by the growth of developing economies, government support, access to capital and increasing mechanization of farming operations in developing countries, with particularly sizable gains anticipated in China, India and Brazil.

Ongoing economic expansion, population growth and rising per capita calorie intake in these and other developing nations is boosting demand for food. This will not only place greater pressure on agricultural sectors to boost efficiency and productivity, but it will also increase farm incomes, thus creating additional opportunities for equipment sales. New technologies are driving demand for equipment replacement, as the enhanced efficiency often increases the economic feasibility of more frequent replacement of equipment.

We believe the following imperatives are needed for heavy equipment companies to successfully respond to these market forces.

• **Focus on growth through emerging markets:** With countries such as China and India exhibiting steady economic growth, industrial equipment makers need to provide customized solutions to smaller farmers and provide them with attractive finance schemes to increase equipment affordability.

• **Build a world-class distribution network:** To enter emerging markets, it is essential for companies to understand their supply chains and build a strong distribution network, customized to specific regions. Measures must also be in place to mitigate risk and ensure order fulfillment capabilities across locations.

• **Sell smart products and services:** Customers want to optimize their resources and maximize their returns. Therefore, companies need to offer solutions that remotely monitor equipment performance and usage patterns, as well as generate reports that will provide customers with real-time visibility into their daily activities and assist them in running their business more efficiently.

• **Develop a 360-degree customer perspective:** Companies must understand customers holistically by gathering local data, ensuring and sustaining customer engagement through quality content and addressing their issues immediately by putting early-warning systems in place. This will boost customer confidence and the company’s reputation.

**Competitive View**

The global market is dominated by large multinational players, such as Caterpillar, CNH, Deere & Co., Komatsu, AGCO, Kubota, etc. These players have large, diversified business portfolios, selling products and services in construction and agriculture. Business diversification helps these companies mitigate market risk and ensure they are not overly dependent on one specific industry. All these companies have a global focus, and some sell their equipment under different brand names and with a specific regional and product focus.
To understand how the market performed, we analyzed the key efficiency ratios for the past 10 years of multinational players such as John Deere, Komatsu, CNH, AGCO and Caterpillar. Our observation is that the industry growth has tilted to the negative side of the ledger; in fact growth has been significantly lower for companies with mining exposure such as CAT. Competition has also impacted profit margins, while revenues remained flat for 2013-2014. From our below analysis, we have observed trends in certain areas, indicating opportunities for improved operations and efficiencies.

- **Cash conversion cycle**: This has exponentially increased for multiple companies over the years, indicating that cash is tied up in the business, impacting the bottom line. For example, Deere’s cash conversion ratio has risen about 2,000% since 2005.

- **Days in inventory**: An increase in days in inventory indicates a company is taking more time to convert its finished goods into sales. For example, Komatsu’s days in inventory has risen by almost 60% since 2004.

- **Asset turnover ratio**: All companies studied have generated less revenue per dollar of asset, with the ratio deteriorating between 2011 and 2014. This signifies excess production and poor inventory management. Stagnating sales growth over the past few years has also negatively impacted these ratios. For example, CAT has seen a 20% reduction in asset turnover since 2005.

These trends could be primarily attributed to deceleration in the U.S. and EU markets, and a slow shift of focus from mature markets to emerging markets. They also highlight the need for effective distribution networks that can aggressively enter new markets, increase customer focus and provide customized solutions that add value to client relationships. Inventory levels have also built up over the years, indicating the potential to improve supply chain management.

**Correlating Business Mandates with Needs**

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<th>IMPERATIVES</th>
<th>CAPABILITIES</th>
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<td><strong>Industry view</strong></td>
<td><strong>Operational excellence</strong> Achieve operational excellence through best-in-class supply chain and operations.</td>
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<tr>
<td>- Focus on cost reduction and maintaining competitiveness.</td>
<td><strong>Lean technology landscape</strong> Make the existing technology landscape lean and mean.</td>
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<td>- Accelerated emphasis on global growth through emerging markets.</td>
<td><strong>Global supply chain visibility</strong> Build global visibility capabilities to stay on top of operations.</td>
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<td>- Focus on exceptional quality and innovative products to capture market share.</td>
<td><strong>Customer-centric innovation</strong> Use innovation to improve customer touchpoints.</td>
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<td>- Utilize innovative ways of working to gain better business and customer insights.</td>
<td><strong>Performance and analytics</strong> Build a strong analytics backbone designed for the future.</td>
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| Digital technology view | **Operational excellence** Achieve operational excellence through best-in-class supply chain and operations. |
| - Digitization of value chain through IoT, thereby transforming operations processes. | **Lean technology landscape** Make the existing technology landscape lean and mean. |
| - Smarter connected products – telematics and remote diagnostics. | **Global supply chain visibility** Build global visibility capabilities to stay on top of operations. |
| - Rise of technology platforms, mobile devices and social media offering real-time information to customers. | **Customer-centric innovation** Use innovation to improve customer touchpoints. |

| Customer view | **Performance and analytics** Build a strong analytics backbone designed for the future. |
| - Shift in customer need from products and services to outcomes. | **Operational excellence** Achieve operational excellence through best-in-class supply chain and operations. |
| - Need for customized online content to manage sentiment and enrich user experience. | **Lean technology landscape** Make the existing technology landscape lean and mean. |
| - Need for intelligent products that reduce TCO and provide quick ROI. | **Global supply chain visibility** Build global visibility capabilities to stay on top of operations. |

Figure 1
about farms, machines, equipment health monitoring, fleet management and area harvested. Platforms such as MyJohnDeere provide the blueprint for how companies will forge new value chains on the fly to build, connect and deliver applications specific to industry problems.

With Internet access exploding exponentially, particularly across undeveloped markets, and with the rise of mobile devices, businesses are now shifting their focus to creating online marketing content. Relative to cloud-based transformation, companies are either creating their own ecosystem (e.g., AGCO’s Open Approach, which is built on the company’s Fuse technology platform) or partnering with companies on public platforms (e.g., CNH as an active member of Open Ag Data Alliance) to share cross-industry information and improve business processes.

With increased use of social media, industrial equipment companies need to find the right balance of managing reach and content; online reputation is key, as sentiments in different channels play an important top-line role. On the mobile front, only a few customers use mobile apps for agriculture management. This indicates that companies lack a modern strategy for understanding customers and their product preferences and need to encourage more use of the mobile platform.

**Key Takeaways**

Given the industry’s historical performance, there are many lessons to learn from companies in other industries.

- **Deeper contextual understanding** of customers helps capture greater revenue and improves operational effectiveness. Managing big data will help businesses gain insights.
- **Seamless integration** of digital and physical supply chains can deliver comprehensive solutions for customers.
- **Cross-industry collaboration** and integrated partners in the supply chain will help advance business process improvement and decision-making.
- **Smart products and the IoT** can be leveraged for performance monitoring across the value chain to improve customer relationships and conduct remote diagnostics or aftermarket services.

**Capabilities Surfaced by an Effective Transformation Roadmap**

Based on the aforementioned trends, it is clear that the industry needs to increase its focus on growth and efficiency imperatives. Figure 1 (previous page) highlights five capabilities that are essential to streamlining operations, reducing costs, understanding customer needs, driving sales growth and sustaining leadership.

**Capability #1: Operational Excellence**

This is a key capability that industrial equipment players must adopt to execute their business strategy with consistency and reliability. Through best-in-class supply chain and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies, companies can mitigate risk and operational strategies.

**Attaining Operational Excellence (continued on next page)**

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<tr>
<td>Procurement risk management</td>
<td>Helps standardize supplier risk assessments and contract management processes; enables creation of a single online repository for vendor and supplier due diligence and contracts.</td>
<td>In March 2015, AGCO was awarded for actualizing innovation in e-procurement by rolling out a global procurement transformation effort in its materials and supplier management function. The company enabled global commodity managers and buyers to pool their experiences and activities to make decisions based on greater visibility into supplier performance, as well as identify and assess economic, geopolitical and other risks.</td>
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Figure 2
Attaining Operational Excellence (continued)

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<td>Dealer sales incentive management</td>
<td>Provides a one-stop solution for all sales incentive management tracking by enabling incentive planning, execution (e.g., marketing campaigns, promotions) and collaboration.</td>
<td>Caterpillar wants its dealers to move more customers into equipment management solutions. By installing cameras, sensors and satellite-based positioning control and guidance systems on its machines, Caterpillar believes its dealers can use this information to increase parts and service sales, and help customers manage their fleets more efficiently.22</td>
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<td>Global availability to promise (GATP)</td>
<td>Accurately estimates order fulfillment across locations and enables companies to “make anywhere” and “sell anywhere.”</td>
<td>Example: Texas-based Commercial Metals Company (CMC) implemented GATP in its U.S. and international operations, eliminating duplicate work in its fabrication shops when it comes to logistics and inventory management. GATP allowed the company to allocate inventory among different customers, protect inventory for priority customers and react to unforeseen changes in demand.23</td>
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Figure 2

Capability #2: Lean Technology Landscape
Having a lean technology landscape from an IT perspective can increase employee productivity, improve business processes and reduce costs. Figure 3 offers ideas on how to implement lean.

Implementing Lean

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<td>App store</td>
<td>Provides an app store-based approach to delivering employee services; on-demand data provisioning can be made easily available at the click of a button.</td>
<td>We have implemented an enterprise-wide app store (One Cognizant) approach that allows employees to access multiple apps and other related content from one location to perform their jobs better; the store’s social design encourages collaboration and sharing with others performing the same task.</td>
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<td>Paperless back office</td>
<td>Digitizes back-office processes (finance, HR, admin) through electronic workflow management and approvals, digital signatures and on-demand reports, reducing use of paper and boosting efficiency and productivity.</td>
<td>Volvo in the Netherlands has implemented e-invoicing solutions to digitize workflows, improve financial reporting and increase the speed of reporting, thereby supporting faster decision-making.24</td>
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Figure 3
Capability #3: Global Supply Chain Visibility
As supply-demand networks become increasingly complex and data is available in real time, global supply chain visibility will allow companies to more effectively track sales, products and components through the final destination. Figure 4 details ways for industrial equipment companies to move quickly and mitigate risk, thereby allowing them to stay on top of operations.

Enabling Supply Chain Visibility

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<td><strong>Retail POS visibility</strong></td>
<td>Provides last-mile retail point-of-sale visibility for original equipment and parts.</td>
<td>Craftworks has implemented software that allows managers and staff to easily navigate POS data and inventory at-a-glance. The company is now able to gather business intelligence on new and existing locations and compare theoretical vs. actual costs and their impact on the bottom line.25</td>
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<tr>
<td><strong>Global order and inventory visibility</strong></td>
<td>Provides a “control tower,” or a central hub within the supply chain, that collects real-time data and provides visibility into supply chain activities to improve organizational decision-making. This functionality can provide near-real-time global visibility of dealer orders and supply chain inventory, as well as predictive alerts that identify supply and demand bottlenecks based on available-to-promise (ATP) capabilities.</td>
<td>CNH has implemented transportation management software that has enhanced the efficiency of inbound and outbound transportation, optimized processes and enabled complete visibility into the supply chain through analytics that help the company monitor and track supply chain metrics and identify issues.26</td>
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<tr>
<td><strong>Dealer inventory visibility</strong></td>
<td>Provides global visibility of inventory stock across the network, as well as suggestions on order fulfillment for pending customer orders.</td>
<td>John Deere’s consumer and construction equipment division has successfully implemented inventory management software to improve distribution network responsiveness, reduce order lead times and increase network efficiency through warehouse consolidation, inventory reduction and cost reduction.27</td>
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**Capability #4: Customer-Centric Innovation**

To add value to customer relationships, it is essential to understand customer needs and implement systems that support customer-centric innovation. Figure 5 suggests key transformational ideas in this space.

### Focusing on the Customer

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<td><strong>Digital channel management</strong></td>
<td>Enriches customer experience through digital storefronts and virtual showrooms. Moreover, interactive services can enrich product content on the Web.</td>
<td>AGCO and Mutual Mobile have formed a strategic relationship to improve the user experience and help consumers find the right product through mobile devices and Web interfaces.</td>
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<td><strong>Big data service personalization</strong></td>
<td>Collects vast amounts of employee and customer interaction data (consumption habits, preferences, etc.) and provides targeted solutions based on big data analytics.</td>
<td>John Deere collects and processes massive amounts of farm data and leverages this data into the FarmSight™ platform to remotely monitor machines and ensure preventive maintenance, optimize fuel consumption and output performance, and deliver agronomic information to farmers for better decision-making.</td>
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<tr>
<td><strong>Social media analytics</strong></td>
<td>Analyzes customer sentiment to understand attitudes, opinions and trends, and identifies primary influencers within specific social networks to manage online reputation.</td>
<td>Among the key initiatives of Caterpillar’s social media strategy is a social listening platform (managed by its information analytics group) that provides the business with insights into customer sentiment about industry trends, the company and its competitors. This data is also used to develop a 360-degree view of customers.</td>
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<tr>
<td><strong>Connected products</strong></td>
<td>Enables remote monitoring of equipment usage patterns, conditions and breakdowns through a centralized dashboard.</td>
<td>John Deere and AGCO are beginning to connect not only farm equipment but also irrigation systems and soil and nutrient sources with information on weather, crop prices and commodity futures to optimize overall farm performance.</td>
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Figure 5

**Capability #5: Performance and Analytics**

By developing a strong analytics backbone, industrial equipment companies can identify opportunities to not only improve their decision-making but also increase partner and supplier performance effectiveness. See Figure 6 (next page) for ideas on how to develop this capability.

Figure 6
The Way Forward

Heavy equipment suppliers have many opportunities to transform their business, especially in the areas of inventory management, asset management and customer insights. By adopting new capabilities in operational excellence, lean technology and global supply chain visibility, these companies can boost process efficiency, improve product delivery, reduce costs and mitigate risk.

Establishing new approaches to customer centrality, meanwhile, will enable these companies to gain insight into customer buying behavior, attitudes and trends, and help them develop holistic view of customers, thereby speeding innovation. Analytics capabilities will further improve organizational effectiveness and support faster decision-making. And finally, all these areas of the business can learn from one another by examining best practices in the industry.

Studying the five key capabilities outlined in this paper will enable industrial equipment companies to support global expansion, create a customer-centric focus and prepare for unfavorable and uncertain market situations, thereby ensuring business relevance and continued viability.

Footnotes


Ibid.

Ibid.

“Ibid.


Ibid.

Ibid.


Cognizant analysis of key financial ratios based on data from “Morningstar” for companies such as Deere, CNH, CAT, Komatsu, AGCO.

Ibid.

Ibid.


Open Ag Data Alliance website, http://openag.io/about-us/.


“A Supply Chain Overhaul That Delivers It All to Deere & Co.,” Supply Chain Brain, http://www.supplychainbrain.com/content/research-analysis/supply-chain-innovation-awards/single-article-page/article/a-supply-chain-overhaul-that-delivers-it-all-to-deere-co/.


35 Ibid.

About the Authors

Ganesh Iyer is a Senior Manager within Cognizant Business Consulting’s Manufacturing and Logistics Consulting Practice. His primary areas of expertise include supply chain management and business process harmonization. He can be reached at Ganesh.Iyer@cognizant.com.

Arun Krishnan is a Director in Cognizant Business Consulting, where he leads the consulting practice for discrete manufacturing industries. He has over 20 years of experience across industry and consulting. He can be reached at Arun.Krishnan2@cognizant.com.

Suraj Subramoniam is a Senior Consultant within Cognizant Business Consulting’s Manufacturing and Logistics Practice. His area of expertise is in operations and project management across the manufacturing space, spanning value chain optimization through strategy development. He can be reached at Suraj.Subramoniam@cognizant.com.

About the Authors

Ganesh Iyer is a Senior Manager within Cognizant Business Consulting’s Manufacturing and Logistics Consulting Practice. His primary areas of expertise include supply chain management and business process harmonization. He can be reached at Ganesh.Iyer@cognizant.com.

Arun Krishnan is a Director in Cognizant Business Consulting, where he leads the consulting practice for discrete manufacturing industries. He has over 20 years of experience across industry and consulting. He can be reached at Arun.Krishnan2@cognizant.com.

Suraj Subramoniam is a Senior Consultant within Cognizant Business Consulting’s Manufacturing and Logistics Practice. His area of expertise is in operations and project management across the manufacturing space, spanning value chain optimization through strategy development. He can be reached at Suraj.Subramoniam@cognizant.com.

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