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A Special Report from Vital Analysis

Machinery & Equipment Sector: *Sector Overview and SYSPRO Case Study*

Overview

The Duncan Toy Co. is famous for a children's toy they've made for approximately 80 years: the Yo-Yo. That product quite aptly describes the business climate in the machinery & equipment sector. This is a space that undergoes violent, large swings in demand. Makers of machinery & equipment must scale their capital intensive businesses up and down to meet the fickle demands of their industry. Their industry is highly dependent on the health of other industries not just that of their own. High interest rates, for example, can curtail new construction starts, plant expansions and other capital projects. When capital projects are in decline, orders for machinery and equipment fall. Likewise, when new automobile sales decline, sales of machinery and equipment drop as the part suppliers to that industry will not need as many replacement tools and equipment.

SYSPRO's offering in the machinery & equipment sector fits the bill well. It supports a variety of differing business needs in this space. More importantly, it helps all producers become operationally excellent while developing other key strategic competencies.

SMBs (small to medium sized businesses) have a difficult time finding solutions that are vertically relevant, functionally complete and competently implemented for their firms. SYSPRO's solutions appear to offer a very complete solution set for machinery & equipment firms. The company works with a number of implementation partners to ensure that users are more than satisfied – they must become reference customers. Our customer check indicates this product line may be a good value to firms in this vertical.

The Machinery & Equipment Industry

The makers of capital machinery & equipment provide the tools that power industry. A significant portion of the firms in this space also make replacement parts and provide maintenance/repair services for the equipment they produce.

The sector is quite broad and includes, at a minimum, companies in the following verticals:

- engines & turbines
- fluid power equipment
- pumps, compressors, taps and valves
- bearings and gears
- ovens, furnaces and burners
- lifting and handling equipment
- office machinery & equipment
- power-driven hand tools
- mining & oilfield equipment
- metal working and fabricated metal machinery
- agricultural machinery
- electrical transmission equipment
- industrial machinery
- materials handling equipment
- service industry machinery
- musical equipment
- food manufacturing equipment

Industry Challenges

Even in a robust economy, producers of machinery & equipment face a number of obstacles. These challenges include:

- a robust market for used equipment that can depress new equipment sales
- a growing global marketplace for machinery & equipment
- the need to provide customer financing for purchases
- dependency on a healthy and robust economy
- dependency on the health of related industrial sectors

Let's look at these briefly.

Machinery & equipment producers do not operate in a vacuum. They can only book new sales when their customers are experiencing growth. For example, makers of CNC machines struggle to sell to automotive suppliers if the automotive sector is in a slump. Likewise, producers of earth-moving, hand tools and others equipment struggle when new construction declines. These dependencies imply that machinery & equipment producers must have scalable, highly efficient businesses. The technology needed for this sector must be able to scale up and down while delivering very effective process results.

Capital, industrial and machinery equipment is, by and large, expensive. These purchases often require significant advance planning and engineering input before purchase. Buyers will negotiate these purchases, heavily, to get favorable pricing, timely payment terms, beneficial service, complete warranty terms and low cost financing. Machinery & equipment producers must operate at the widest possible margins to withstand the negotiations that occur in competitive deals. This implies that machinery & equipment producers must be operationally excellent at all times. Technologies to support this space must, along with other items within the cost structure of equipment producers, be affordable to license and use so as not to undermine the margins of these producers.

The long-lived nature of machinery & equipment creates an active re-sale market for used and/or refurbished equipment. An entire industry exists to auction, refurbish and broker second-hand equipment sales (see Figure 1).



Figure 1

When an active and vibrant re-sale market exists, it puts pressure on new equipment and machinery manufacturers to either control the spare parts and service ecosystems around their products or re-double their research and development efforts so that their firms continue to produce better, more cost effective and efficient machinery.

When innovation occurs, buyers will opt to retire obsolete equipment more frequently and acquire new (not used) products. Equipment and machinery producers that can design more environmentally friendly, energy-efficient products are finding more receptive buyers than those selling unchanged or antiquated solutions. Technology solutions for this vertical must provide support for research & development, product engineering, innovation, etc.

The market for capital equipment is truly a global space (see Figure 2) although the United States remains a dominant force for now. As certain nations continue to modernize (e.g., China and India), their consumption of machinery & equipment rises as

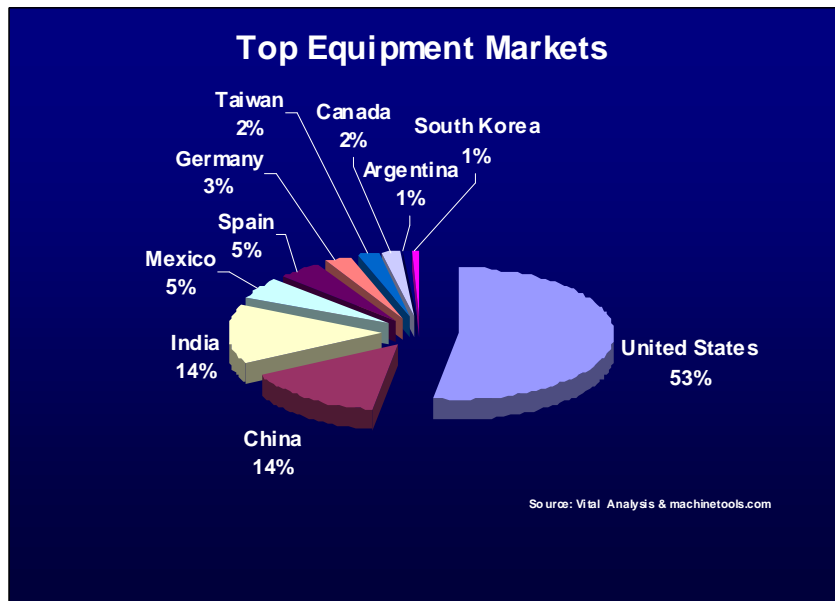


Figure 2

does their desire to develop native firms that make this machinery & equipment. While the overwhelming majority of machinery & equipment sub-verticals have globalized, some may never. Large mining excavators, for example, are too large to ship any material distance. These are usually made close to the point of need. Notwithstanding these exceptions, the market for machinery & equipment began its globalization in earnest in the 1980s.

Additionally, readers should note that the large install base of machinery & equipment in countries like the U.S. does not necessarily imply that these markets are robust and growing. Mature markets may be great markets for spare part sales, service and refurbishment work while new equipment sales may be stronger in developing markets/economies.

Rank	Country	GDP (millions of USD)
—	World	54,620,000
—	European Union	16,620,000
1	United States	13,840,000
2	Japan	4,384,000
3	Germany	3,322,000
4	China (PRC)	3,251,000
5	United Kingdom	2,773,000
6	France	2,560,000
7	Italy	2,105,000
8	Spain	1,439,000
9	Canada	1,432,000
10	Brazil	1,314,000
11	Russia	1,286,000
12	India	1,099,000
13	South Korea	957,100
14	Australia	908,800
15	Mexico	893,400

Figure 3

The sale of machinery and equipment tracks with the GDP (gross domestic product) of a nation. Figure 3 shows GDP for the top 15 economies of the world. Great equipment and machinery producers must have a presence in these markets to take advantage of the economic growth present there. Global capabilities are key to survival in this vertical.

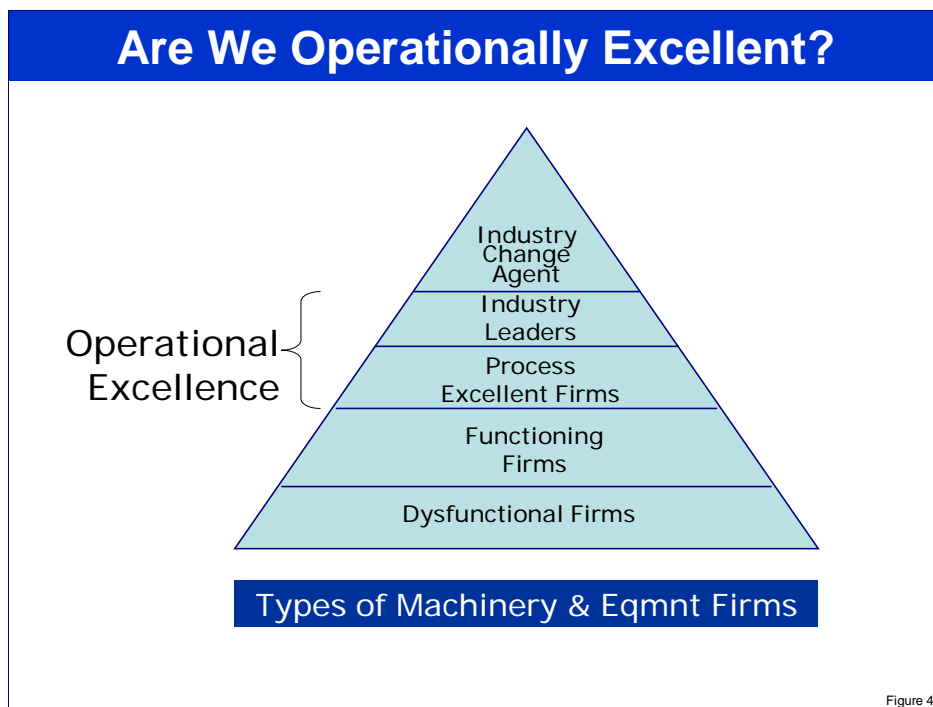
The implications for makers of machinery and equipment are:

- supply chains must be global to access low cost labor and component parts

- customers may be anywhere in the world but major economies may be the best markets for many of these goods
- technology to support equipment and machinery makers must possess strong global capabilities
- technology must support the totality of the equipment lifecycle: parts sourcing, manufacturing, repairs, spare parts, etc.

Successful Business Strategies for Machinery/Equipment Producers

In reviewing the machinery & equipment vertical, we see two material business imperatives emerge. **The first indicates that all machinery & equipment producers must be operationally excellent to exist for any period of time.** As we have previously discussed, an industry with thin margins, high capital costs, volatile business demand, global competition and tough sales negotiations cannot support firms that have sloppy, inefficient or expensive processes. Instead, these firms must operate as efficiently and effectively as possible. This business condition is not optional in this vertical – it is a business imperative. Operational excellence is the foundation competency that all machinery & equipment producers must possess.



So what does operational excellence mean (see Figure 4)? Obviously, your firm is not operationally excellent if it is dysfunctional or barely functioning. Sadly, all it takes for a firm to become dysfunctional is the loss of a bank credit line, a botched merger, a major divestiture, loss of key individuals or a failed systems project, to name a few. When a company is in the dysfunctional space, they need to recover fast as they are far from operationally excellent. In fact, if they don't get functional fast, they'll be history.

Functioning firms are getting the bills paid and products made but they aren't necessarily doing so in efficient and effective ways. If you benchmarked these firms, they'd likely be all over the map with regard to their processes. Processes could be anywhere from first to fourth quartile and with this comes sub-competitive market/financial performance.

Firms with great processes have tuned systems and methods that put their service levels at the top of their sector and their costs at the bottom. Their processes are very relevant to their business and business strategy. These processes are very efficient and effective. Process excellent firms are great competitors and the most profitable firms in a sector.

Industry leaders set the tempo and define the standards for the sector. They possess the cost structure, systems, processes and market presence that others envy. These firms are operationally excellent and others aspire to their market position.

Once a producer of machinery and equipment is operationally excellent, then the firm must develop one of three other business imperatives or core competencies (see Figure 5). The three business imperatives that a firm must choose from include:

- Product Innovation
- Customer Intimacy
- Low Cost Leadership

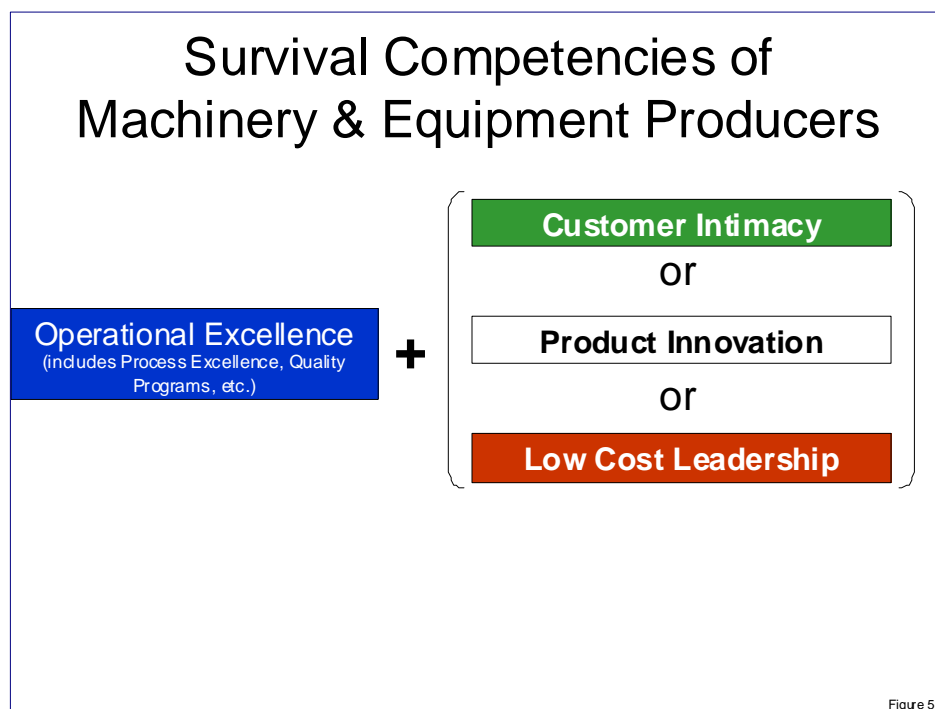


Figure 5

While our inspiration for this comes from Fred Wiersema's and Michael Treacy's "The Discipline of Market Leaders", we vary somewhat in guidance. We believe that companies must have excellent processes no matter what and that these processes must be aligned to one of the three primary core competencies. A low cost leader, for example, would have a different approach to customer service than a customer intimate firm would have. Each approach could be efficient and effective and yet be radically different in its approach. This is absolutely appropriate and expected. Operational excellence, therefore, is dependent on the strategies of the firm involved. It is not a one-size-fits-all concept and

must be adapted to the particulars of the firm. Nonetheless, to prosper, a machinery & equipment producer must be operationally excellent in a way that is aligned with the business's strategy and one of the three core competencies it uses to its market advantage.

We recently interviewed a firm that positions itself as a customer intimate heavy construction equipment firm. They personalize each product for each customer. Virtually all products are one-off creations and well-supported for the life of the product. Realizing that their customers and their reputation are key assets of the firm, the company even over-engineers each product so that their products require less maintenance and last much longer than competitors' products.

Customer intimate firms prosper when they pay attention to their customers, the products they have sold to them and the profitability/cost of each customer. The implication for technology here is clear. Technology must track a piece of equipment throughout the product's useful life and continuously capture the customer's level of satisfaction with the product, service and the manufacturer. Technology must maintain the service information, engineering data, repair information, production costs, etc. And, all of this information should be available in an instant for any worker in the machinery or equipment manufacturer. Whether the customer should contact their sales person, a repair technician or a clerk within accounts payable, the software should display relevant, timely data and analysis about this customer and their product on a display screen, a handheld device, a shop floor machine, cell phone or other relevant format/media.

Some firms will take the path of product innovation. They continue to improve existing products or create all new products and solutions. Innovations permit these firms to charge higher prices for these novel, inventive solutions. These firms use their engineering prowess, technology and attention to emerging customer needs to create ever better products. Some of these innovations help customers increase productivity, reduce operating costs and reduce emissions to name but a few potential value drivers. Innovative firms have fewer real competitors as they lead the market.

The technology implications for innovative machinery & equipment producers are clear. They need solutions that:

- track design changes throughout the life of a product/product line
- permit rapid communication and collaboration with critical suppliers and customers
- support rapid time-to-market for new products
- accurately capture development, rollout and other pre-production costs

Lastly, some firms strive to become the low-cost leader in their market. These businesses win market share via a ruthless attention to costs. They use all of their energies, buying power, etc. to create the volume and pricing leverage needed to get a competitive pricing lead over others' products. Low-cost leaders carefully prune their product lineup and customer lists to find those solutions that can be sold en masse, at volume pricing and production levels to customers that aren't too demanding. They exist to provide commodity solutions at low-unit pricing.

The technology implications for low-cost leaders are readily apparent. They need solutions with strong analytic and financial capabilities particularly in areas like cost

accounting, inventory and forecasting. They need products that support low-cost country sourcing and possess solid integration capabilities to connect with a rapidly changing array of global suppliers. They need functionally complete, integrated solutions that can be installed quickly, cheaply and provide value right out of the box.

The Needed ERP Solutions

While each of the different competencies above introduces some specific technology needs, we believe that some needs transcend all machinery & equipment producers. In research and primary interviews, we learned that these machinery & equipment companies:

- have very long lead times for key product components (e.g., power plant, imported steel, engines) yet customers are constantly pressing them for ever shorter delivery times.
- must produce most of their products on a make-to-order basis. The carrying costs associated with maintaining a finished goods inventory are too high or the uniqueness of each solution are too great to make standardized, off-the-shelf solutions.
- are embracing LEAN manufacturing principles. Parts/inventory is kept to an absolute minimum.
- can use traditional ERP solutions but need solutions that support make-to-order (not high volume, repetitive make-to-stock) production environments.
- must carefully track the manufacturing process. Their products are difficult to fabricate and assemble. Considerable expertise, specialized equipment and knowledge are required to complete the assembly of these products.
- must, for competitive reasons, use solutions that speed the time to market for all new products
- require global solutions to, at a minimum, procure components and serve global customers.

With these needs representing core requirements, we believe the following applications are essential to machinery & equipment producers:

- Advanced Planning & Scheduling – to manage the intricate parts scheduling, fabrication and assembly process of very unique items
- Financials – to help manage capital, track expenses, assess customer and product profitability, etc.
- EDI (electronic data interchange) – to accurately communicate with a bewildering array of global suppliers
- SOA (service oriented architecture) – to enable rapid integration of supplier's, customer's and other business partners' systems
- SCM (supply chain management) – to successfully orchestrate the movement of parts to support LEAN manufacturing, minimal inventory carrying costs, etc. Also, these systems must monitor supplier performance (e.g., per quality, timely delivery and price measures)

- Lot Traceability – to monitor performance of suppliers and to facilitate recalls, engineering changes and more
- Quality Control – to minimize reverse logistics, warranty repairs and other costs
- CRM (Customer Relationship Management) – to make transition from sales proposal to finished good to delivery a seamless, error-free process

In the solution architecture area, we believe that machinery & equipment firms should choose ERP products with a SOA (services oriented architecture) platform as the underpinnings of the product line. The importance of this capability was brought to light in an interview with a heavy equipment manufacturer. They need to place orders with major engine manufacturers as soon as they receive a new order for one of their products. Moreover, they need to monitor the status of this key supply item as lead-times may run as much as 18-20 months. They rely on frequent status communiqués with key suppliers to know when they can schedule the manufacture of other components. This firm cannot afford to tie up a lot of their expensive manufacturing shop floor with incomplete products that are awaiting components from suppliers. Tight integration with key suppliers saves them money, wasted effort, etc. SOA helps them connect easily and cheaply with third parties and other systems. SOA enables collaborative supply chains, inter-country collaboration, CPFPR (collaborative planning, forecasting and replenishment).

SYSPRO Alignment in Machinery & Equipment

We have been briefed on SYSPRO's vertical solution for machinery & equipment manufacturers. The SYSPRO product line is a very complete product line for this space. It possesses, front to back, a set of applications to manage the initial customer contact through order processing, manufacturing and post-production service. The product's discrete manufacturing functionality is a good fit to this space as many of the firms are just-in-time, LEAN, make-to-order manufacturers.

Standardized software solutions often have limited business value if they cannot be tailored or configured to the specific needs and unique idiosyncrasies of a customer's industry and business. When we spoke with one SYSPRO customer, we quickly realized that certain functions are not only essential to their business strategy but are fundamental to the methods with which they interact with customers. This customer relayed how they needed a solution that could be adapted to their business and not have the business adapt

Key SYSPRO Modules

Manufacturing

- Engineering Change Control
- Work in Progress
- Lot Traceability
- Quotation/Estimating
- Projects and Contracts
- Factory Scheduling
- Bill of Materials
- Requirements Planning
- Electronic Data Interchange

Financials

- General Ledger
- Accounts Payable
- Fixed Assets
- Accounts Receivable
- Cash Book
- Activity-Based Costing
- Electronic Funds Transfer

Distribution

- Inventory Control
- Sales Orders/Invoicing
- Purchase Orders
- Sales Analysis
- Landed Cost Tracking
- Forecasting & Inventory Optimization
- Product Configurator
- Blankets Sales Orders & Releases
- Return Merchandise Authorization
- Return to Vendor

Analytics

Customer Relationship Management

to the software. More specifically, users need solutions that permit fields to be moved, added or deleted to fit new process flows and business requirements. SYSPRO has created a number of capabilities that permit extensive and continuing user tailoring. These are marketed under the SYSPRO Power Tailoring Bundle moniker and come with six main capabilities:

- SYSPRO e.net solutions
- SYSPRO Document Flow Manager
- SYSPRO Fluid Interface Design
- SYSPRO Role-based User Interface (UI)
- SYSPRO Web Services
- SYSPRO Executive Views
- SYSPRO Reporting

Our quick check with SYSPRO and their users in the machinery & equipment space indicated a high degree of satisfaction with the solution. Not surprisingly, we found some users not using some modules as they do not require them for the kind of machinery that their firm produces or because of the specific competencies they possess. That is a good sign as it indicates the SYSPRO product line possesses more business model flexibility than some competitive or best-of-breed solutions may offer.

SYSPRO applications also possesses regulatory compliance functionality that may come in handy for smaller machinery & equipment firms that hope to go public or be acquired by a larger, publicly traded firm. The software supports Sarbanes-Oxley and other requirements out of the box.

Product functionality is only one part of the story though. The technology architecture that SYSPRO utilizes is a multilayered, .NET stack that provides significant connectivity and product flexibility. This is critical for machinery & equipment makers that need to interact with third parties and their systems. This is also significant in that it permits the integration of non-SYSPRO technologies, desktop applications, etc. should these be required.

Given the size of the company and the successes it has secured already in the space, we believe SYSPRO applications should be on the short list of many machinery & equipment technology selections.

Who is SYSPRO?

SYSPRO (www.syspro.com) was launched approximately 30 years ago. Their software products are in use in over 60 countries today. Total customer count for SYSPRO exceeds 14,000.



SYSPRO offers cross industry solutions (e.g., financial applications) as well as distinct solutions for several vertical sectors. Some of the other verticals that SYSPRO supports include: aerospace; automotive; chemicals; electronics; medical devices; and, food and beverage.

SYSPRO products are targeted for the small to midsize business market. These applications are sold primarily through a nationwide authorized and certified reseller network.

Summary

SYSPRO believes that its users are "pragmatic visionaries". In our review of four industry verticals using SYSPRO products, the producers of machinery & equipment may be the most pragmatic and visionary buyers in the SYSPRO customer base. They have to be. The enormity of the market swings that buffet these firms and the dependency this industry has other industries globally require these SYSPRO users to be brilliant at predicting market demand, monitoring customer and market behavior, innovating to meet emerging customer needs all while scaling up/down dramatically. Their margins do not permit them any room for error – they must either be pragmatic visionaries or perish.

Machinery & equipment firms must choose well when buying new application software. They need software that does the functions it needs well and cost-effectively (i.e., the pragmatic parts) but they also need a solution that bends, flexes and adapts to the chaotic, global business environment they operate within. They also need a solution that helps them become operationally excellent while also fulfilling another strategic competency (e.g., product innovation). If you are a machinery & equipment producer, then pick your solution well and pick one that supports your strategic needs.



Vital Analysis is a very different kind of technology research organization. We are the intersection set where exceptional technology market knowledge meets the executive suite. Where other 'analysts' replay vendor press releases, we give you the:

- impact new technologies will or won't have on your business
- reasons why you should or shouldn't care about specific emerging solutions
- business justifications why you may or may not want specific solutions

Vital Analysis was carved out of TechVentive, Inc. in 2007 as a new, but complementary business. As designed, Vital Analysis is the publishing, research and analytical arm of that company.

Our reach, like our blog readership, is truly global. We've consulted with top technology executives in Australia, Brazil, Canada, United Kingdom and the United States. We've been briefed by technology providers from virtually every corner of the planet.

About the Author

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