

Tech-Clarity

**Tech-Clarity Perspective:
Best Practices for Factory
Adaptability**

***Top Performers Implement
Change Faster and More
Confidently***

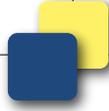


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***This summary is an abbreviated version of the report and does not contain the full content. A link to download the full report is available on the Tech-Clarity website, www.tech-clarity.com.**

If you have difficulty obtaining a copy of the report, please contact the author at jim.brown@tech-clarity.com.



Executive Overview

Manufacturers must adapt quickly to compete in today's fast-moving, competitive, global markets. They must be agile to take advantage of opportunities and sidestep competitive threats. They have to be able to confidently implement quality, efficiency, and cost improvements resulting from Lean Manufacturing initiatives.

There are a multitude of business drivers that demand change in the factory, ranging from tactical "tweaks" to strategic, market-facing overhauls like introducing new products or product lines. Unfortunately, the old adage that "change is hard" is very true in the factory. Manufacturers face numerous challenges adapting to change. These difficulties result in significant, negative business impacts, including:

- **Project impacts** including cost overruns, unplanned labor, and missed due dates
- **Outcome-related impacts** including poor product quality and low productivity

Changing the factory is complex and brings a lot of risk and uncertainty, but it is essential for survival. Change is simultaneously a harsh reality to deal with and the source of adaptability to differentiate and compete. It's important for manufacturers to make change management a core competency to avoid disruption while adapting to achieve intended benefits.

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To determine best practices to manage change, Tech-Clarity analyzed survey responses from over 250 manufacturers to understand how they approach change in the factory. The analysis separated respondents into two performance bands based on their ability to hit targets for five change-related metrics. The "Top Performers" were identified as those that are able to meet project budgets, deadlines, resulting production rates, resulting quality, and agility (measured as time to implement changes) better than their competitors. Then, researchers analyzed the processes, organizational structure, capabilities, and enabling software used in order to determine what the Top Performers do differently than "Others."

Top Performers are in better control of their change management process and can implement changes faster and more confidently.

The research shows that Top Performers are able to implement change more predictably. They are better at hitting target budgets and due dates on their change initiatives, and are better at achieving the desired outcome of their change. Specifically they come 25% closer to hitting their target production volume. Although they are still subject to risk and



uncertainty, the Top Performers are in better control of their change management process and can implement changes faster and more confidently. This is particularly true for larger changes (Figure 5), where “getting it right” up front is critical because brute force can’t make up for poor planning. How do they do this? Three themes emerged from reviewing their responses:

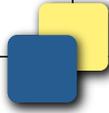
- Top Performers are much better at **understanding the full scope and impact of changes during the planning phase**. To achieve this, they leverage processes and technologies that allow them to determine the impact of planned changes, simulate changes before they are implemented, and use some emerging capabilities including reality capture and electronically visualizing changes in the context of the existing factory
- Top Performers **communicate and collaborate more effectively**, sharing processes and information across departments. They accomplish this through organizational approaches such as cross-functional teams and change control boards (CCB), processes to share status and information, and technologies that provide online collaboration and a central repository for manufacturing and project information including BIM, PLM, and project management
- Top performers adhere to **more formal processes**, including formal change management processes, six sigma for change, and formal requirements and impact analysis

Conclusion

Manufacturers have to be agile and lean to compete in today’s challenging, global markets. To compete, manufacturers must make change management in the factory a core competency to effectively adapt to market needs and implement quality and efficiency improvements such as those from Lean Manufacturing initiatives.

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Companies change their manufacturing factories frequently, making a variety of sizes of changes. They change for a number of reasons, including tactical measures driving quality, cost, and efficiency to improving competitiveness, but also strategic reasons such as introducing new products and responding to the market. They must make these changes quickly and with the confidence that they can get it right the first time. As Issue in Focus: Digital Prototyping in the Plant reported, “Speed is critical, and agility is the key to profitability. Now, more than ever, manufacturers need be able to make changes in their plants quickly.” This makes executing factory changes critical to business performance.



Change is a very challenging process that introduces risk and uncertainty into the factory. This is particularly true for large changes. Put simply, change is hard. Most companies experience project-oriented issues such as missed due dates, overtime, and cost overruns. Factory changes also result in impacts like quality problems, reduced production efficiency, and other negative outcome-oriented impacts that become new, ongoing problems that may themselves require a change.

Top Performers make changes more predictably, better meeting their targets for budgets, due dates, and resulting production volumes.

Fortunately, it is possible to improve change management performance. Some companies do it much better than others, those identified as the Top Performers in this report. They make changes faster, particularly for larger changes that are typically higher risk. Top Performers also make changes more predictably, better meeting their targets for budgets, due dates, and resulting production volumes.

What do the Top Performers do differently? Top Performers employ processes and tools that help them:

- Better understand the full scope and impact of change in advance to avoid late surprises
- Communicate, collaborate, and share information to work as a team more effectively
- Adhere to more formal change management processes

Others can follow the example set by the top performers, adhering to more formal change management processes, implementing known best practices for change management, and supporting their change processes with technology that allows them to collaborate, communicate and share information across departments, and simulate changes before they are implemented. They can also leverage emerging best practices such as reality capture using laser scanning and virtual commissioning. Overall there is good reason to focus on improving change management and the processes and tools are available to do so, as Top Performers use their better processes and tools to create a competitive advantage by having more adaptable factories.

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Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

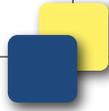
- Implement and adhere to formal change management processes
- Follow known best practices such as change control boards, cross-functional change teams, and formal impact analysis
- Leverage processes and tools to improve communication, collaboration, and information sharing including enterprise tools such as BIM and PLM as well as project management
- Adopt processes and software to simulate material flow, operators, and equipment to understand the full scope and impact of changes, optimize resulting performance, identify issues early, reduce risk, and get changes right the first time
- Consider adopting reality capture technology such as laser scanning and overlaying intended changes on top of an accurate “as-is” model

About the Author

Jim Brown is the President of Tech-Clarity, an independent research and consulting firm that specializes in analyzing the business value of software technology and services. Jim has over 20 years of experience in software for the manufacturing industries. He has a broad background including roles in industry, management consulting, the software industry, and research. His experience spans enterprise applications including PLM, ERP, quality management, service lifecycle management, manufacturing, supply chain management, and more. Jim is passionate about improving product innovation, product development, and engineering performance through the use of software technology.

Jim is an experienced researcher, author, and public speaker and enjoys the opportunity to speak at conferences or anywhere that he can engage with people with a passion to improve business performance through software technology.

Jim can be reached at jim.brown@tech-clarity.com. You can read additional research, watch Tech-Clarity TV, or join Jim’s *Clarity on PLM* blog at www.tech-clarity.com. You can also follow Jim on Twitter at [@jim_techclarity](https://twitter.com/@jim_techclarity), watch him as a “dueling analyst” in the [Tech4PD web show on Engineering.com](http://Tech4PD.web.show.on.Engineering.com), or find Tech-Clarity on Facebook as TechClarity.inc.



About the Research

Tech-Clarity collected data via an online survey for this report. Respondents were recruited through direct outreach, social media, and in partnership with Penton Media. Tech-Clarity also partnered with Business Advantage who conducted phone interviews across the globe. A total of 256 qualified respondents answered the survey, of which 226 provided enough information to classify them into performance bands as “Top Performers” or “Others.”

The respondents were comprised of companies that receive 10% or more of their revenue from a mix of industries. The industries represented are primarily discrete manufacturing businesses, including 45% Industrial Machinery, 35% Auto, 23% Durable Consumer Goods, and others from Aerospace, Building Products, High & Electronics, and others. Note that the percentages total over 100% because respondents were allowed to indicate they served multiple industries.

Survey respondents reported producing their products in factories in a wide variety of locations, representing a strong global respondent base. Geographies where they produce 10% or more of their products include 41% Western Europe, 40% China, 30% North America, 21% Japan, 18% Korea, 15% Eastern Europe, 11% India, 9% Latin America, 9% Australia, and 7% Africa. Note that the percentages total over 100% because many companies manufacture in multiple geographies and were asked to report any they produced 10% or more of their products.

The survey also represents companies that include a good distribution of different sizes of manufacturers. Specifically responding companies have 1-100 employees (23%), 101-500 employees (23%), 501-1,000 employees (11%), 1,001 - 5,000 employees (20%), 5,001-10,000 employees (11%), or over 10,000 employees (13%).

Responses include a strong representation from the managerial level. Specifically respondents were Executive, “C-level”, including titles of CEO, CFO, COO, and others (10%), Vice President level (4%), Director level (21%), Manager level (57%), Non-manager, staff, individual contributor (7%), or Other (1%).

Finally, the survey responses came from a good representation of people involved in managing change in the factory, including a variety of departments/functions with a high concentration in Manufacturing (25%) and Engineering (38% in total, represented by different functions including Industrial / Manufacturing Engineering (18%), Design Engineering (16%), and Factory/Facilities Engineering (4%)). Respondents also represented included Information Technology (9%), General Management (7%) and others including Sales and Marketing, Quality, Accounting and Finance, Supply Chain / Logistics, Procurement, and others.