



**MHI**

| BURCHETTE & ASSOCIATES, INC.



# TRANSFORMATION AGE

SHAPING YOUR FUTURE

MHI Roadmap Series

Transformation Age: Shaping Your Future, the third publication in the MHI Roadmap Series, is intended to provide material handling, logistics and supply chain industry professionals insights into trends impacting success in the next 10 to 20 years.

TRANSFORMATION AGE

# FIRM OF THE FUTURE

Success in the coming decade will be marked by significant changes in the workforce, workplace and business approaches. Change will be iterative, abounding with opportunities for entrepreneurial initiatives.

A NEW LOOK

WORKFORCE

WORKPLACE

BUSINESS APPROACHES



# FIRM OF THE FUTURE

## A NEW LOOK

Looking out ten years, the vision for the firm of the future is clear. There is no doubt: the environment will be much different than what we experience today.

Leaders and their teams will be younger and steeped in technology. The workforce will be diverse, dispersed and highly skilled.

Warehouses and factory floors at leading companies will be highly automated and flexible to accommodate shifting priorities and demands.

The technology focus will embody human needs, making the shift to man + machine rather than emphasis on one to the exclusion of the other.

Education and training will be a career-long activity with both education institutions and companies utilizing advanced technology to speed and enhance the effectiveness of the learning process.

Collaboration and partnerships will bring together competitors and peers to leverage industry opportunities in new and exciting ways.

Industry consolidation will create new powerhouses, while entrepreneurial activity will abound in specialty areas.

## **Beyond 2030, change will not slow.**

Continued commercialization of new technologies and enhancements of tools will emerge in waves of development throughout the following decade out to 2040.

### INSIGHTS

- LEADERS AND TEAMS WILL BE YOUNGER AND STEEPED IN TECHNOLOGY.
- THE WORKFORCE WILL BE DIVERSE, DISPERSED AND HIGHLY SKILLED.
- UTILIZE A FLEXIBLE BUSINESS MODEL.
- MOVE TO AN INTEGRATED, COLLABORATIVE ECOSYSTEM.
- USE SMART AUTOMATION, DIGITAL TOOLS AND FLEXIBLE WORK ENVIRONMENTS TO ACCOMMODATE DYNAMIC PRIORITIES.
- SHIFT TECHNOLOGY FOCUS TO MAN + MACHINE.
- ENHANCE STRATEGIES FOR MANAGING RISK, SUSTAINABILITY, BRAND, MARKETING AND SALES.

# FIRM OF THE FUTURE

## WORKFORCE

### Leadership Transition

Today, top executives of most material handling and logistics companies are over 55. Many are over 60 and a fair number are approaching 70. The mix at the executive team table reflects experience, success and a good bit of gray hair.

The next decade promises to see a significant number of leadership positions transition to younger executives. The demographic shifts from older Baby Boomers to younger Baby Boomers, mixed with emerging Gen X and Millennial executives will bring new skills, perspectives and approaches to the industry.

### Aging Demographic Groups by Decade

Demographic Groups	2020	2030	2040
Gen Alpha*	1-10	5-20	15-30
Generation Z	8-23	18-33	28-43
Millennial	24-39	34-49	44-59
Generation X	40-55	50-65	60-75
Baby Boomer	56-74	66-84	76-94

\*Gen Alpha includes births from 2010 - 2025

Source: U.S. Census Bureau data. Graphic by Burchette & Associates.

These demographic shifts bring more than just age changes to the top ranks. Decision-making styles, risk tolerances, technology knowledge, global perspectives and comfort levels with change differ in this group from their predecessors. Members of the emerging group are comfortable with a higher degree of uncertainty, an environment most have experienced throughout their lives.

While some senior leaders will continue to lead through the next decade, others will elect retirement. Across the board, a lot of change at the top will happen throughout the industry. With that change comes loss of legacy knowledge, experience and valuable peer networks.

A concern commonly voiced among a number of younger executives is the potential loss of legacy information and expertise held by those retiring – information that is not widely known or well documented in some companies. Younger executives recognize the Importance of this key and sometimes proprietary knowledge and are seeking ways to capture these intangible assets as older executives retire. Companies would fare well by focusing greater attention on this information transfer.

**Kevin O'Neill**  
President, Steele Solutions



“We need to pair younger executives with senior leaders to retain valuable knowledge and expertise as transitions occur.”

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These emerging leaders enjoy learning from their company's executives and look forward to contributing to the future success of the organization. Their perspectives reflect a strategic view that will continue the strengths of their predecessors's approaches and build on those with new technologies and processes. The combined result will arm their companies with knowledge and expertise vital in the Transformation Age.

## Living with Change

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In recent in-depth interviews with seasoned supply chain industry leaders, top executives describe the industry as undergoing significant and rapid change. They are focused on making needed investments in facilities, equipment, processes, technology and workforce skills. Their view of the next 10-20 years is unanimous: the pace of change will accelerate as innovation and technology drive new approaches and capabilities.

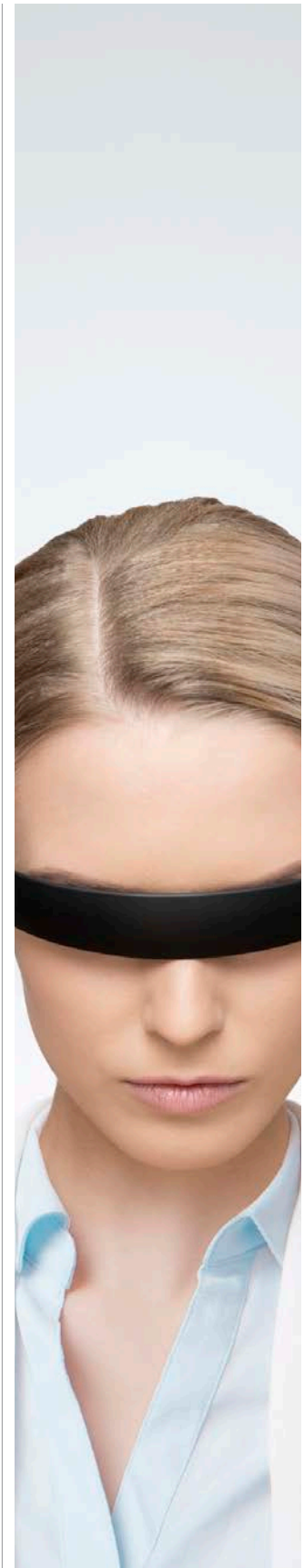
Many have strategically positioned younger executives throughout their company to bring new ideas and skills to key operations. Technology knowledge is often cited by top executives as the area they look to younger executives to understand, navigate and lead.

Today's leaders acknowledge the pace of change will increase throughout the next two decades, but they remain uncertain about the timing and scope of impact various trends may exert. Many view this uncertainty as unsettling while others are invigorated by the excitement of new frontiers.

Younger executives view change as a ubiquitous marketplace and competitive factor, and see technology as a valuable enabler of new levels of efficiency, speed-to-market and profitability. Technology is also viewed as the means for meeting increasing customer demands for customization.

Those under 50 are familiar with a wide range of digital, automation and engineering technologies. But just as their senior executives do, they rely on technology and engineering specialists in their company, integrators, and service and product partners to select and execute new platforms, equipment and processes. As a group, they tend to have a higher level of comfort than their predecessors in guiding their company directionally without having mastery knowledge of the technical tools required for successful execution.

In viewing the future, both groups believe advances in technological, engineering and data decisioning tools will drive continued improvements in safety, efficiency, time to market, and business partnerships and collaboration. They also share beliefs that consumer demand for customization and immediacy of delivery will continue to shape material handling and logistics in the future.



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## Industry Networking

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As a time-honored tradition, industry leaders actively pursue networking opportunities to examine and share ideas related to industry trends and changes. For many, their long-held friendships with company and industry colleagues represent important ties enabling productive collaborations and partnerships.

Younger executives are seeking meaningful industry networking opportunities. They view these opportunities as one of the most vital ways they can learn from other industry executives as well as global trend experts. They highly value inclusion in industry and association meetings and events, describing these opportunities as key to their continued professional growth and development.

## Generation Z Workers

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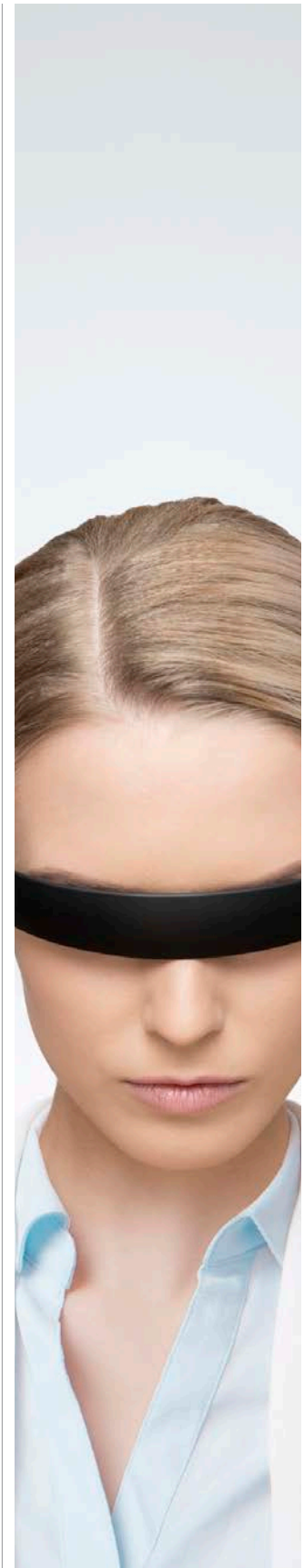
By 2030, the younger Gen Z employee group will bring another wave of new work styles, skills, preferences and expectations to the workforce. Their leadership styles will be impacted by the Gen X and Millennial group they encounter in their first decade of working, but they will equally impact corporate cultures and leadership models by the sheer size of their generation and their strong convictions and belief systems.

While a lot of attention is focused on meeting the needs of Millennial workers in 2020, companies need to prepare now for this next influx into the workforce. Representing a group larger in size than Millennials, numbering roughly 65 million in the U.S. and 2.47 billion worldwide, this generation will impact the industry from both within as employees and without as customers. <sup>1</sup>

By 2030, older members of this group will be emerging as young professionals. This group is already known for high expectations for workplace diversity, inclusiveness and technological savvy. <sup>2</sup>

Due to their lifelong exposure and use of technology, this group actively uses a variety of technological tools in their personal and work lives. <sup>3</sup> They look to technology rather than people as the first stop for information, whether that is to learn something new such as a game or a process, or to communicate among peers and co-workers.

The timing of Gen Z emergence in the workplace aligns well with the increasing prevalence of smart technologies, data decisioning tools, and geographically dispersed workplace locations.





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## Gen Alpha

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The youngest generation emerged in 2010. The children of Millennials and GenZ will be entering the workforce by 2030, bringing with them a new reality of the world. Theirs is truly a viewpoint shaped by a technology lens and a global perspective.

Growing up with digital platforms, this group is already influencing families and institutions. 4 In the workplace, this generation promises to be the one that is skilled and prepared for innovation of thought and execution of new ideas. The grandchildren of Baby Boomers and Gen X , Gen Alpha employees will realize the dreams of industry leaders who are pioneering change in the dawning years of The Transformation Age.

**The grandchildren of Baby Boomers and Gen X, Gen Alpha employees will realize the dreams of industry leaders who are pioneering change in the dawning years of The Transformation Age.**

Gen Alpha are growing up with technology and digital platforms shaping their life experiences. Artificial Intelligence will power many of their choices and decisions, from clothing to careers. Augmented reality and virtual reality games and tools will prepare them for a workplace that manifests an environment of change measured in seconds not days or years.

Raised in environments customized and personalized for family and individual preferences, employers will have to deliver workplaces that mirror the context of individual uses.

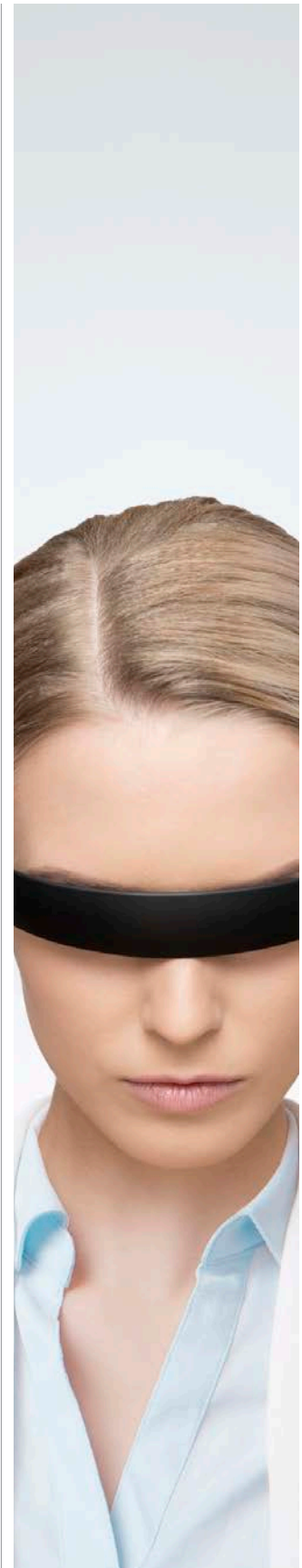
It is not too early for the industry to address how this generation is educated and trained. Courses, content and delivery channels beginning with toddler toys can impact adult workforce readiness skills.

## Diversity

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The Gen X and Millennial groups will bring greater diversity to leadership and broader workforce participation in the industry in the coming decade. Today's industry leaders welcome greater participation by these groups evidenced by their support of industry and company initiatives to recruit and hire qualified candidates across the board. Global diversity initiatives in STEM education over the last decade are reaping an increasing number of diverse candidates for the industry.

In recent interviews, industry executives voice beliefs that having more women and members of various ethnic groups in leadership positions will help evolve industry practices related to Human Resources and contribute to greater understanding and improved relationships across supply chain participants.





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Industry executives' recognition of the need and their willingness to pursue greater diversity in the workforce are already helping the material handling, logistics and supply chain industry attract more women and more people from varied ethnic groups. Many industry firms participate in local education collaboratives to attract high school students in all demographic groups to careers in the field. A number are now advocating for more involvement with schools and students in primary grades to ensure skills are developed and interests nurtured well before secondary education courses and degrees are selected.

In the 2030-2040 timeframe, greater diversity in the industry will be shaped strongly by the Generation Z group that demands inclusiveness in real terms, not just numbers. Their collaborative nature will impact the development of work groups and shared accountability systems that will increasingly drive integrated processes throughout the Transformation Age. One can expect the same impact from Gen Alpha. Age, gender, sexual identity, religious preferences, and even national citizenship will become less important than workplace credentials, with expertise and skills becoming the true differentiators. The proverbial "A Team" will become a respected, highly diverse group of individuals who work collaboratively across corporate ecosystems of employees, suppliers, and customers.

New technologies such as smart automation, robotics and augmented reality will enable older men, women and physically challenged individuals of all ages to participate in job classes previously less attractive to them due to physical labor requirements. As these technologies replace physical labor, and job requirements shift to intellectual capital, more individuals will qualify and be attracted to a larger field of jobs. This growing diversity will be present throughout the supply chain and have attendant impacts on related company cultures, policies and procedures.

## Organizational Culture

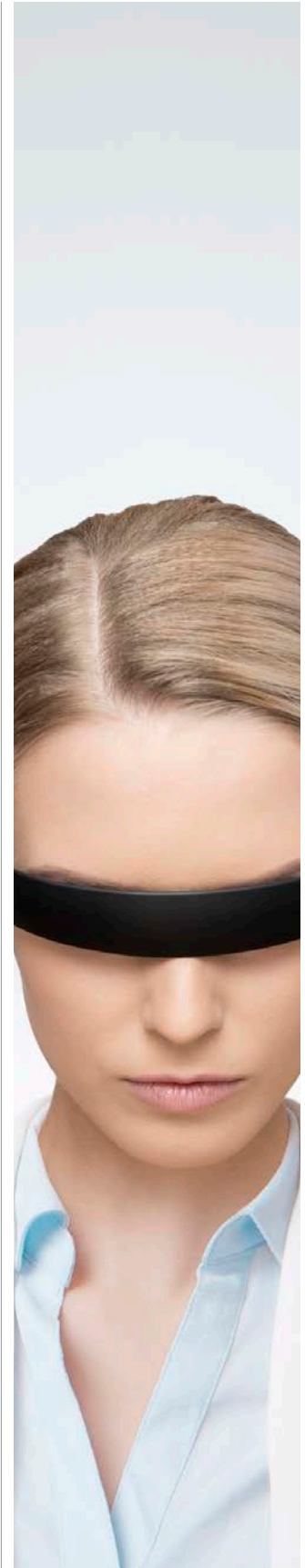
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Shifts in the organizational culture within supply chain industry companies began in earnest in the last five years. Success in the coming decade warrants a more significant evolution, one that literally transforms the Human Resources department's functional scope to encompass all facets of Employee Experience (EX), and builds a climate supportive of innovation and discovery, collaboration and integration of functions, and career-long learning.

This dynamic requires attention now as expertise in these areas becomes as important as investments in smart automation and digital technologies.

Companies will need to increase funding for human resource initiatives over the next five to ten years in order to prepare, create and sustain the environment required for success in the Transformation Age. These investments are in addition to those needed for technical training. Additionally, existing management and leadership curricula will need to be retooled or developed anew to support the evolving environment.

While younger workers may come aboard with more finely honed technical expertise, communication skills for successful collaboration across the enterprise will be an area of increased need.



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Industry firms need to become learning institutions and employees need to become active learners. A culture of career-long learning will differentiate leading companies and characterize industry champions.

## Labor Force Shortages

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Coming into 2020, the single greatest labor force challenge reported across the industry is finding and retaining qualified skilled workers. The outlook for the next decade and beyond brings no relief to that situation absent significant changes in the utilization of smart automation equipment and processes. Hence the evolving scenario, where the situation is not solved but rather changed by new approaches.

Both seasonal and permanent labor shortages abound. This situation already demands changes in recruiting, salaries, training and retention practices. Enhanced strategies in these areas will serve companies well in the future, as shortages and churn in the labor force are expected to continue. Projected demographic, education and training trends do not support an adequate solution to this labor shortage in the coming decade. Automation of jobs is viewed as the single greatest opportunity for relief.

The race to solve this issue is moving quickly. Companies that are able to marshal the financial resources to address their labor shortage through smart automation as soon as possible will reap significant financial benefits over the next 20 years while enhancing their speed to market and competitive positioning. Those who cannot make such investments in the next five years may lag behind at best or cease to operate or be acquired by larger organizations by the end of the decade.

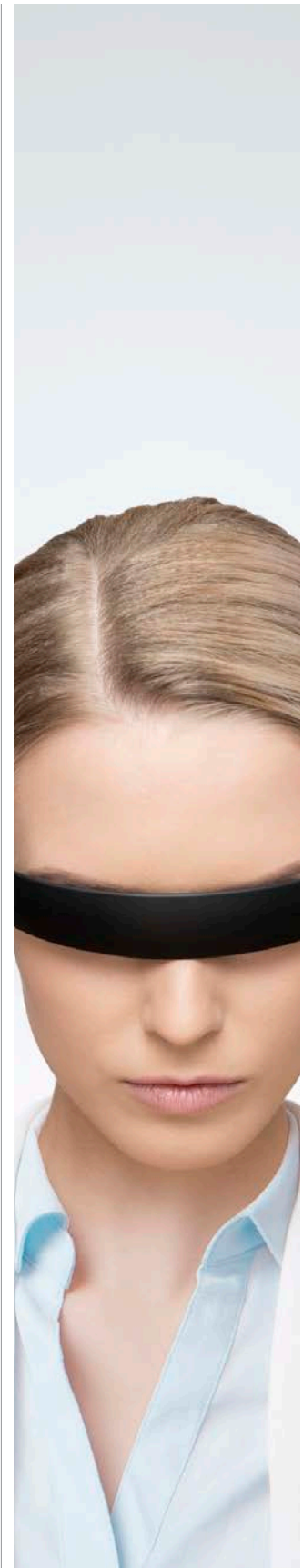
## Automation of Jobs

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Industry leaders expect continued growth in automation of jobs, resulting in significant loss of people in some job categories. With this view comes the positive expectation for an increase in safety, efficiency, time to market, customization capabilities and competitive positioning.

Executives who have invested in new smart automation technologies and processes in the last 24 months report a good experience, a positive ROI for most investments in fewer than 12 months, and a belief that continued automation will benefit their company over the next decade. Some are accelerating their plans for additional investments in transforming their equipment and processes, which will result in increased job losses over the coming decade. The ripple effect of these job losses across the industry will in turn create economic market impacts over the next two decades.

While equipment and technical investments increased in late 2018 and early 2019, some slowing occurred in the latter half of 2019. Economists differ in their forecasts for 2020 through 2025, but industry business owners and leaders indicate a desire to continue investments in smart automation and emerging technologies in the coming years. The pace of the investment remains the question.



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Current struggles with finding and retaining people with specialized skills fuel the belief that when those jobs are automated in the future, companies will experience less risk and lower costs related to the labor force.

Most companies that have moved forward with smart automation believe the challenge is one of skilling-up and leveraging the potential of Man + Machine.

Some industry integrators report their clients are uncomfortable with reducing their labor force headcount even as they implement new automation. The concept of hiring fewer people, especially during peak periods, creates concern for those who are not yet fully automated. This represents a short-term challenge in adapting to change.

Bottom line, executives at all levels share a view of the future that includes fewer employees and increased use of automation. There is no debate about the result, just differing time frames based on the size of the company and the financial resources available to implement new processes.

## A New Mix of Workers

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The vision for the workforce in 2030 and beyond is one that looks very different from what exists today. The relative number of physical labor jobs will decrease significantly, being replaced by automation, robotics and innovative processes.

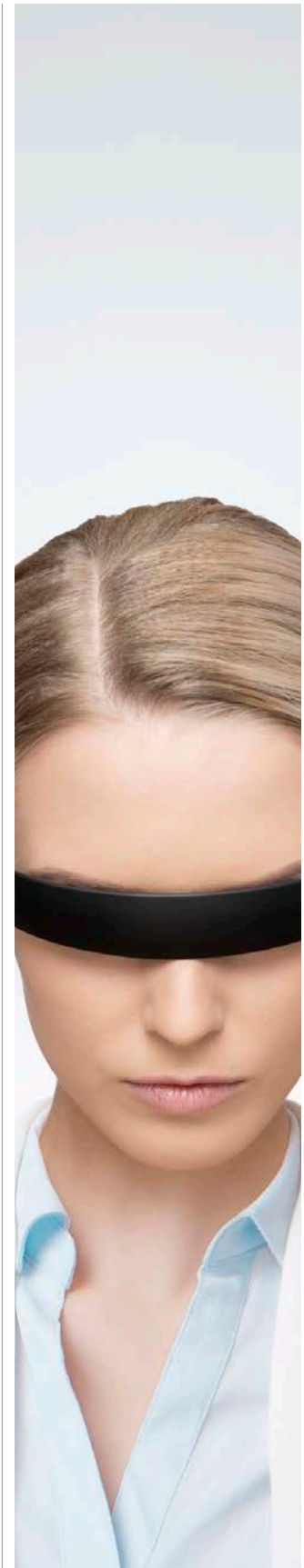
Jobs requiring technical expertise in data management, data analytics, sensors, robotics, artificial intelligence (AI), and augmented reality (AR) will increase. Management jobs will place greater value on critical thinking, problem solving, creativity, and risk management. Technology skills will become a ubiquitous element of leadership and management resumes.

Leadership positions will require a working knowledge of a variety of digital software and hardware platforms and data decisioning tools in order to develop, execute and effectively measure operational models and business strategies.

The demographics and psychographics of the labor force will shift significantly by 2030 and continue to evolve through 2040. These changes, combined with shifts in job roles, will provide a work fabric and culture that is fluid, collaborative, diverse and smart.

Some but not all companies will increase the number of outsourced employees used for specific jobs, including “gig workers.” Those who elect this route will be challenged in managing company, brand and technical value belief systems across an employee base that is not fully engaged within a single corporate structure.

A growing element of human-automation interfaces will increase productivity while changing the very nature of the work environment, especially in manufacturing and distribution facilities. By 2030 advances in robotics, AI, AR, sensors and telematics will allow industry players to leverage workforce capabilities well beyond today's operating levels.



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## Education and Training

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Corporate needs for a skilled workforce are expected to increase over the next 20 years, requiring added focus on this topic, investment in at least collaborative solutions if not in-house delivery, and expectations for continued training of employees throughout their careers.

The skill sets required for success in the material handling and logistics industry in the Transformation Age fall into two large categories: (1) highly technical skills related to smart automation, data decisioning tools, and new technologies, and (2) cognitive skills related to critical thinking, innovation, problem solving and business process management. A significant overlap between the two areas involves knowledge and use of technology.

In 2020, company leaders report that education institutions and private training programs are not filling their need for qualified employees in either category, and are especially lacking in the area of technical skills. In some part, the lack of people interested in the skilled job categories is to blame.

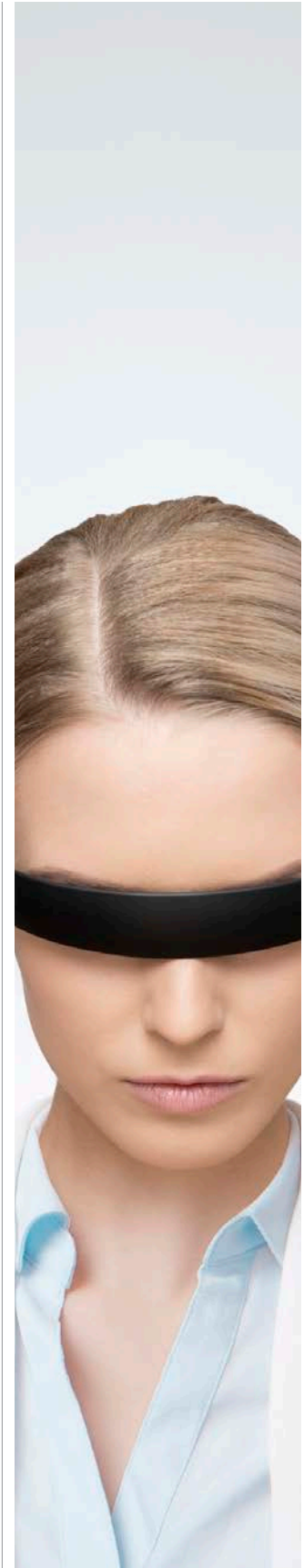
Some companies are expanding their in-house training capabilities or partnering with universities to develop customized offerings to enhance employees' knowledge and skills. The projected trend calling for life-long learning and skills enhancement is adding cost stresses to company budgets, a reality not expected to be abated in the coming decade.

Promising approaches include augmented reality enhanced training and customized programs developed and delivered collaboratively by employers, universities, community colleges, private training/education companies and equipment manufacturers. The mix of online and in-person curricula to deliver training has become well accepted and increasingly adopted. Remote, digitally delivered training is rapidly becoming the norm.

Industry initiatives for collaborative and networked training on topics of noncompetitive skills and issues represent an opportunity for cost savings and development time efficiency. Other industries such as financial services and legal and accounting professions have successfully leveraged pooled resources for education and training as they have undergone significant and continuing growth and transformation.

The concept of incremental academic or training courses leading to a degree or certification coupled with work experience, or "experiential education" as it is sometimes known, represents a path forward for many students who otherwise could not bridge the gap between education and a career in material handling and logistics. Companies benefit from this approach as well, as employers have the opportunity to work with students during internships and apprenticeships. 6

A growing cost factor for industry players is the need to invest in training to support the use of new technologies and digital tools across their workforce. This training is vital for the successful execution of an integrated information-based culture and for collaborative initiatives reaching across an enterprise and beyond to industry suppliers, partners, and customers. Increasing training budgets to support this growing workforce requirement is imperative for success over the coming decade. Without this ongoing education and training, the full benefits of investments in new smart automation and digital processes will not be realized.



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Managers and leaders in the industry would benefit from programs addressing cognitive skills related to critical thinking, problem solving, creativity, innovation and discovery. Expertise in these areas as well as management approaches to risk management, flexibility, and resilience will be market differentiators in the years to come.

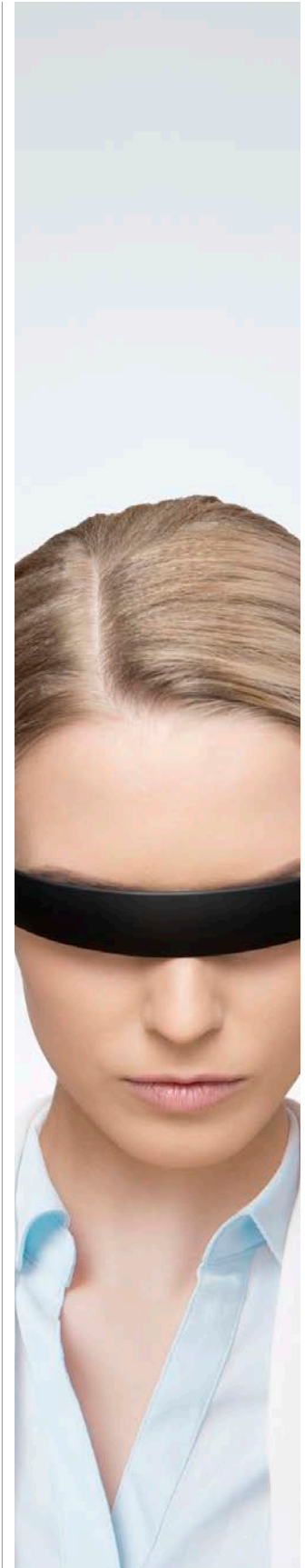
Training to prepare companies to deal with change management is something every industry player should be utilizing given the rapid change environment that exists today. From the board room to the factory floor, openness to change, mindset and skills for adapting to new approaches, mental flexibility and resilience are critical success factors that need to be taught, practiced, modeled and nurtured.

Another growing need in industry training is programs to address new types and styles of communication and management practices across an increasingly dispersed workforce. Cultural business values and expectations will have to be conveyed and practiced by individuals and work groups who often may not be in the same physical location. Remote working is expected to expand significantly by 2030, requiring tools and training to support this new work culture to be developed and launched within the next two years.

Expectations for continued consolidation in the industry bring with it the need for training to facilitate rapid integration of people and processes post mergers and acquisitions. The financial services industry learned quickly during the massive bank merger spree in the 1980s that financial benefits expected from mergers were impacted significantly by not just systems integration but the degree to which company cultures, brand promises and customer experiences were integrated and aligned. In fact, banks often found that systems integration could be delayed but people alignment could not.

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## WORKPLACE

Just as today, one size will not fit all operations in 2030. But by that time, the leading and even average performing industry players will have changed their environments to accommodate and leverage new processes, equipment and technology. By 2040, these environments will be further enhanced with developments not even under discussion today.

Industry experts paint a picture of 2030 and beyond that is a highly automated, productive, scalable and flexible environment. Technologies commercialized in the last decade will be further enhanced by 2025 and new innovations and capabilities will be in use by 2030. By 2040 the landscape will be truly transformed.

A critical key for success will be having the right environment in place to optimize performance. Leadership vision, a flexible, collaborative operating model, and supporting business strategies and processes will be required to inform and leverage workplace automation and digital tools in a highly integrated ecosystem. Without that approach, companies will miss opportunities to optimize earnings and competitive positioning.

## Facilities

Manufacturing plants will range from those with a small number of human workers to facilities that are truly “dark factories” running 24/7 and managed through digital interfaces with technical managers located onsite or hundreds of miles away.

**Flexible “pop-up” mobile facilities and equipment** will be utilized to enable rapid deployment of processes to meet seasonal or special market demands. Everything from mobile conveyer belts to packaging equipment will be modular and enabled to plug and play with permanent resources. Key design challenges will need to be addressed to achieve the speed and efficiency of today’s embedded equipment.

**Distribution centers** will range in size from large structures suited to service Panamax ships to small and geographically dispersed facilities located close to customer delivery points in urban settings. Loading platforms will be automated for robotic loading onto electric delivery vehicles

**Retrofitting old plants with new equipment** may become a significant challenge for some companies. Many of today’s manufacturing facilities cannot easily incorporate robotics and other innovative equipment solutions due to space constraints. Equipment manufacturers are addressing these issues today with plans for hybrid and smaller-sized solutions in the works. Over the coming decade, companies will have more choices from which to select as they implement new or additional equipment.

**Urban designers and transportation experts** predict a growing number of parking facilities, once overflowing with cars in urban areas, will be underutilized by 2030 and vacant by 2040. These spaces will be retooled to house manufacturing and distribution companies in major cities.

**George Prest**  
CEO, MHI



“The physical environment for material handling will transform over the coming decade. Smart technologies will improve operating efficiencies and advanced digital decisioning tools will enable scenario planning for adapting to dynamic market conditions. “

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**Malls and large retail box facilities** will be converted and used as distribution centers. Some retail space will be retained for consumers to experience products such as large home furnishings, automobiles, music and TV systems. Studio experiences will showcase and teach skills ranging from gardening and cooking to sports. The lines between product sales, personal experience and experimentation, and art will be blurred.

**Rural areas** with good access to transportation networks will become attractive for some highly automated manufacturing sites and regional distribution facilities due to lower land costs, lack of need for a large labor force, and good access to other rural customer delivery centers. Improvements in broadband infrastructure in rural areas will be critical as an economic development asset required for entry to industry participation.

As in homes, **ambient computing** will be located throughout industrial and commercial facilities. Virtual assistants will facilitate tasks. Architectural surfaces will double as touch screens and other environmental features will include sense-sensitive technology – making “with the wave of a hand” a meaningful gesture.

**Investments in data security and corporate and personal privacy** within the workplace will increase as these issues gain more focus with the proliferation of digital tools and platforms.

**Onsite solar and wind generation** will be used to replace or augment public utility electric generation, reducing or eliminating the power bill and thereby freeing up cash for other facility expenses.

**Electric vehicle fleets**, made up of a mixture of autonomous and human-driven models, will ferry materials between facilities.

**Autonomous vehicles** will be incorporated into a variety of freight and passenger uses. Enhancements in visual and spatial capabilities will enable safety and speed. These vehicles will operate in the same space as human-driven vehicles, requiring more sophisticated vision and anti-collision systems than the robots and forklifts operating inside facilities.

**Drones** will monitor inside and outside environments, structures, people and processes. 1 Light-weight supplies, components and goods will be moved between facilities and inside facilities with specialized robotic drones. By 2040, passenger drones will be part of the Urban Air Mobility system ferrying people among facilities and short-distance stops. 2

## Smart Automation and Digital Tools

Supply chain business facilities will be characterized by high levels of smart automation, digital tools and environments that facilitate and protect those tools.

**Edge computing** will be prevalent, leveraging proximity to data collection, cloud computing capacity and 5G or higher bandwidth. These digital capabilities will optimize functions ranging from product design, inventory control, and scenario planning, to production cycle management and freight delivery. This digital strategy will also allow large sectors of the supply chain, and more functions within each, to be simultaneously optimized.

**Daniel R. Alexander**  
Director of Operations, Anovotek®



Digital Tools Help Rural Business Fight 'Retail Apocalypse'

## Unlocking the Digital Potential of Rural America





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A **quantum computing** capability, accessed on a shared network platform, will provide Individual companies digital speed and capacity well beyond their infrastructure and allow businesses of all sizes to compete with powerful data and analyses. Companies will be able to solve a variety of supply chain functional challenges, synthesizing solutions into a deployable enterprise strategy.

Technology requirements will be enabled by **new telecommunication networks and satellite constellations**, locally located edge devices, cloud computing, 5G and higher broadband capacity, innovative screens, wearables and ubiquitous computing devices and terminals. New configurations for office and operational areas to accommodate these technologies will be achieved without significant new construction requirements, but may require new HVAC considerations for temperature and humidity control.

**Standardized industrial software** will enable digital connections and collaboration throughout the manufacturing and distribution processes and the broader supply chain components. Increased open architecture and standardization of software will facilitate installation of equipment and speed investments across functions and facilities.

**Industrial software** and specialized apps will multiply over the coming decade, increasing customizable options for specialty manufacturing and packaging.

**Satellite constellations** coupled with 5G and later broadband will increase digital speeds, reduce latency, open new markets and expand access to new customers.

**Artificial Intelligence** will empower most digital functions and many management processes. AI becomes a predominant feature by 2025 and ubiquitous by 2030.

**Augmented reality platforms** will enable new forms of collaboration and engagement across physical space and time. AR technology will be incorporated into many functions, from equipment operators to delivery workers. Virtual reality platforms will be utilized for training and sales and marketing initiatives. Consumer uses will speed development and use of industrial applications. Both AR and VR applications will multiply in 2020 and continue to spread throughout the next ten years. By 2030 these technologies will be embedded in a broad variety of operating devices as standard features.

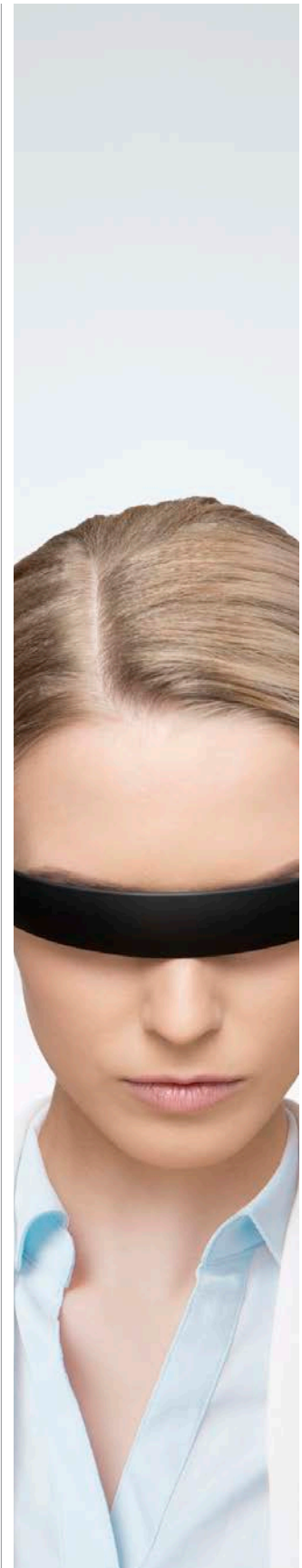
**Autonomous mobile robots and smart telematic forklifts** will be ubiquitous. Early struggles in adapting the workforce and workplace for robotics will be resolved by 2030, facilitating a more rapid and pervasive adoption over the following decade.

For more on workplace tools, go to TOOLS section of this report.

## People at Work

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Geographic disbursement of employees, a trend gaining ground in 2020, will continue to grow over the next two decades. Companies in all parts of the supply chain will employ workers at all levels who work from home, from satellite offices or shared public work spaces. Digital interaction among workers will increase versus face-to-face interactions.



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As use of gig and full-service contract workers increases between 2020 and 2030, facility requirements for touch-down work space and secure guest digital access will increase.

People will work collaboratively in teams more than ever before, and that team work will be conducted face to face and over digital interfaces. Job descriptions will not speak to command and control as much as to skill sets, with more communication occurring across multiple levels of seniority. The need for collaborative work environments will change the look of factory, warehouse and office spaces to support group and individual tasks as well as communication across the room and across the globe.

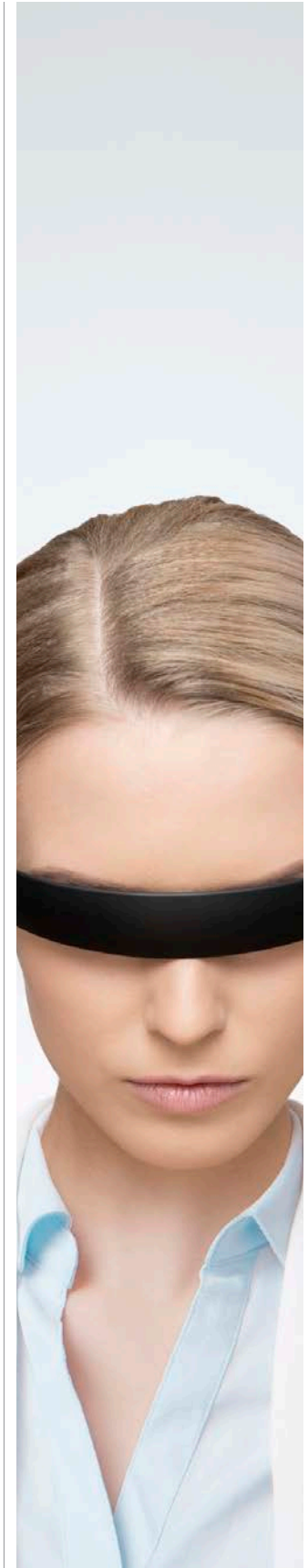
Wearable, wired clothing and devices will be ubiquitous by 2030. Some of the technology will be personal devices, while others will be corporate assets used by team members while at work.

Recurring investments in facility and equipment upgrades will be required to provide cybersecurity as well as privacy and security of the workforce.

Go to [WORKFORCE](#) section of this report for more in-depth discussion on workforce topics.

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# FIRM OF THE FUTURE

## BUSINESS APPROACHES

### Risk Management

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Risk management and the resilience to adapt quickly to changing conditions and needs will be key market differentiators in the next 10 years. Both require planning, revised business approaches and new tools.

Good news for industry businesses is the significant increase in AI and digital modeling capabilities that have emerged in recent years. These scenario planning tools enable risk taking with guard rails. Multiple options can be tested, including changes in competitive positioning, market conditions and significant events and opportunities. Different risk tolerances can be set, guiding tactical execution as events unfold.

The more difficult challenge may be to align mindsets of leadership teams, board of directors, investors and other key stakeholders.

Taking steps now to create a consensus around adaptability and agree on actions to be taken under a variety of scenarios will serve leaders well in this dynamic environment. The pace of industry and market changes is only going to increase, making this competency a vital success factor in the years ahead.

“Moving forward, more emphasis will need to be placed on a variety of factors such as human capital risk, third-party management risk and cybersecurity,” says Shawn King, senior vice president of strategic execution and operations at Wells Fargo and a former chief executive of an industrial manufacturing firm.

King cautions that planning for change needs to include risk assessment and prevention for initiatives such as implementation of new equipment and technologies. “New factors such as workers operating new equipment but using old equipment knowledge and experience can lead to errors and failure to reap the full benefits of new technologies.”

Another risk analysis need King expects to grow in the future is assessment of third-party contracts.

**“As outsourced services increase, the number and types of risks introduced through third-party personnel, systems and processes will grow.”**

**Shawn King, SVP, Strategic Execution and Operations, Wells Fargo**

King agrees with supply chain leaders' expectation that cybersecurity will continue to be a significant risk factor in the future. But she believes cybersecurity specialty firms are better positioned to assess company risk than internal teams in many cases. “A cybersecurity risk audit is best performed by professionals outside of the firm, bringing specialized tools and threat information that most internal staffs would not have.”

The coming decade will bring traditional business and industry risks, as well as a number of new risk factors. King and other risk management experts recommend plans that incorporate a broad variety of topics:

**Shawn King**  
Sr. V.P., Strategic Execution and Operations, Wells Fargo



Trend Expert

**“Risk management should be a key factor in managing any business at any time. But the pace of change is accelerating and I expect risks will multiply and take on different profiles. A key will be to identify the sources of potential risks and then develop a plan to manage those issues within acceptable tolerances.”**

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# FIRM OF THE FUTURE

## Brand, Marketing and Sales Management

Organizations approach brand management, marketing and sales in a myriad of ways. For the coming decade, a number of principles and practices are critical for success.

**Strategy is key:** Strategic thinking and problem solving will be key assets in these functions. Much like in operational areas, scenario planning will be needed to underpin resilience to changing competitive forces.

**Scenario planning will be needed to underpin resilience to changing competitive forces.**

Market segmentation, research and measurement will be critical strategic tools and data analytics will fuel tactical execution.

**User Experience Rules:** The outlook for the decade promises a strong focus on customer experience – also known as user experience (UX) – beginning with purchase needs and considerations and extending through shipping, usage and disposal or re-use.

This concept describes all aspects of interaction between a customer and a brand or company, including all of the organization's services and products. User experience is a broad concept, one that incorporates experiences across the spectrum from word-of-mouth references to social media commentary and personal use of products.

When someone calls for a replacement part, they have a user experience. When they operate equipment, open a shipping box, or visit a website, that's user experience.

All forms of interaction – real and virtual – will be critical in customer purchase decisions, sales transactions, usage, service delivery and brand loyalty. Even a customer's anticipation of what something like a robotic process might be can come into play.

In support of this perspective, brand managers must champion a customer-centric environment throughout the company. Everything from product design to delivery channels should be driven from a user experience point of view.

User Experience is broader than the more familiar concept of customer service or the digital reference to User Interface (UI).

UX is at the core of customer expectations for brands, companies, product and services. It reflects the customer's valuation of many factors, from access, ease of use, and friction of return processes to navigation of a website and brick and mortar shopping. It can include sensory experiences such as the fragrance in the air of a retail shop or a brand sound element in an advertisement. It's the whole spectrum of experience.

**UX is the essence of what the firm of the future should be built around to meet customer expectations, to drive value and to reap profits in the Transformation Age.**

**Ashish Shah**  
Senior Director, User Experience, GEP



Trend Expert

**User Experience: Providing Customer Value Nets Big Rewards**

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**Omni-Channel Marketing:** Omni-channel marketing approaches will be needed to address all facets of user experience.

This approach provides customers with seamless and integrated shopping with a unified message, voice and brand value proposition.

The number and type of communication channels will increase and the interrelationships among them will be complex.

Voice search and controls, video on new smart surfaces, holograms and true three-dimensional images – technically referred to as “3d free-space volumetric images”-- will be added to the marketing communications. This spectrum was broadened significantly in the last decade with the power of social media and alternative media formats.

Brand and marketing elements will need to be refined. How should your brand “voice” sound; how should your brand be personified? How many seconds will you have to engage a prospect with your message before they move on to something else? How will you incorporate the voice of the customer and convert voice search to sales?

To be successful, omni-channel marketing requires significant collaboration and information sharing across the business enterprise, as well as integrated customer information systems that yield actionable, timely information.

This decade will see the art and science of marketing become merged more than ever before.

**Digital Approach:** Increases in smart automation will produce corresponding increases in data on market conditions, customer profiles, product usage and competitive factors. The key will be to create meaningful, actionable information to drive business processes and meet customer expectations.

How should you utilize equipment maintenance data to manage customer relationships or create sales opportunities? Are your edge systems in manufacturing plants or distribution centers interfacing with marketing systems to capture opportunities? Are your customers reacting differently to robotic processes than human interactions?

Investments in new data management, analytics and system interfaces will be needed to leverage new computing capabilities and create greater value for marketing and sales purposes and for the enterprise overall.

In many cases, investments in new systems will be more cost effective than trying to tie together legacy systems. For example, legacy systems may require an inordinate amount of time for retrieving and cleaning data by analytics staff. Newer systems and approaches will free these experts to spend time on creating actionable strategies from information gleaned across multiple systems. Outside providers should be considered as they may provide significant leverage and cost efficiencies to the processes required for updating marketing information systems and capabilities.

*Brand managers must champion a customer-centric environment throughout the company.*

*Scenario planning will be needed to underpin resilience to changing competitive forces.*

*Brand managers must champion a customer-centric environment throughout the company.*

*The number and type of communication channels will increase and the interrelationships among them will be complex.*

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**Collaboration:** Leaders in brand, marketing and sales management will need to collaborate with each other and with other functional departments across the enterprise. Never before has such collaboration been more important to the success of business. The collaboration needs to be active and supported with transparent, shared information systems and decision-making processes.

Finance, risk management, product design, information technology, manufacturing, warehousing and distribution are all key marketing and sales partners who have critical information and who drive processes that impact customers in some way. Shared insights can lead to innovation and even small improvements that benefit the customer and ultimately the bottom line.

**Relationship Management:** While data and digital tools will be critical information sources, personal relationship management of key prospects and customers will continue to bring added value. In this highly digital world, people crave personal interactions for what they view as key purchases and significant service issues.

The same is true for transactional touch points for all customers. Employees need to be empowered with information and processes that allow them to provide customers with quick, expedient solutions, whether online, on the phone or in a retail store. To this end all business functions must work together to support first line employees' customer interactions.

## Leading with Vision

The decade ahead requires vision, leadership and innovation from brand, marketing and sales leaders. Success in retaining customers and winning new business depends on a unified corporate vision with flexible means to accommodate a rapid pace of change.

Market and customer insights must be embedded in the corporate strategy and risk management scenarios.

Brand positioning should be defined and managed for the user experience across every element of the company, including the employee experience.

Rapid change strategies for branding, marketing and sales must be developed to address dynamic market and competitive conditions.

The art of communication must be amped and adjusted with the science of data analytics.

Graphic design will need to accommodate diverse and new delivery channels and devices.

Collaboration with other company leaders can lead to shared insights and discovery.

Brand, marketing and sales functions will have a critical role to play in the coming decade as leaders of change, creators of customer value and contributors to corporate financial success.

**Brand, marketing and sales functions will have a critical role to play in the coming decade as leaders of change, creators of customer value and contributors to corporate financial success.**

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# FIRM OF THE FUTURE

## Sustainability

In 2020, sustainability is no longer viewed by most companies or people as a special initiative, but rather as a critical responsibility and accountability. This perspective will prevail throughout the decade.

Pressure from investors, employees and customers will not abate on this topic in the coming years. Expectations will remain high and stakeholders will expect to be able to confirm brands, companies and their supply chains are fulfilling their promises. Transparent views of compliance with sustainable practices will be a requirement.

A heightened interest in health and ecology by consumers along with companies' deep sustainability commitments will drive purchase choices and usage behaviors on both consumer and commercial fronts.

Products and processes that support sustainable practices will be marketed for differentiated positioning. All features and benefits of products, from packaging and component parts to end-uses, can be promoted around sustainable value.

End-use of products and packaging will rise in importance, supporting growth of new businesses for disposal, recycling, and secondary markets.

Government policies and regulations related to sustainability will continue to shift, driven by political motivations and scientific debates. Industry leaders note compliance is growing as a cost of business, with variable impacts as regulations change.

Reverse logistics will gain increasing attention and added risk over the decade, says David Franchina, head of the environmental practice at McGuire Woods.

**“As interest builds around sustainability in the supply chain, added risk points related to compliance are emerging.”**

Franchina notes that some products considered safe for shipping to retail outlets or direct to consumers can be reclassified as hazardous waste when put into the supply chain for returns. Examples include items with ingredients such as nicotine, pesticides and pharmaceuticals. “Once classified as hazardous, these products must be stored, labeled and shipped in specific ways, Franchina says. “Hefty penalties are already being meted out and will mount for this issue. Companies need to retool their supply chain practices to account for these types of regulations.”

On a broader front, Franchina points out consumers are now recognizing more contaminants in every day life – from straws to Styrofoam – and making purchasing decisions based in part on companies' sustainability practices, or the lack thereof. “These impacts will drive product development and supply chain practices in multiple industries, with billions of dollars at stake.”

**David Franchina**  
Partner, McGuire Woods



Trend Expert

**Technology Advances and Business Trends Combine To Create Positive Environmental Impacts in The Transformation Age**

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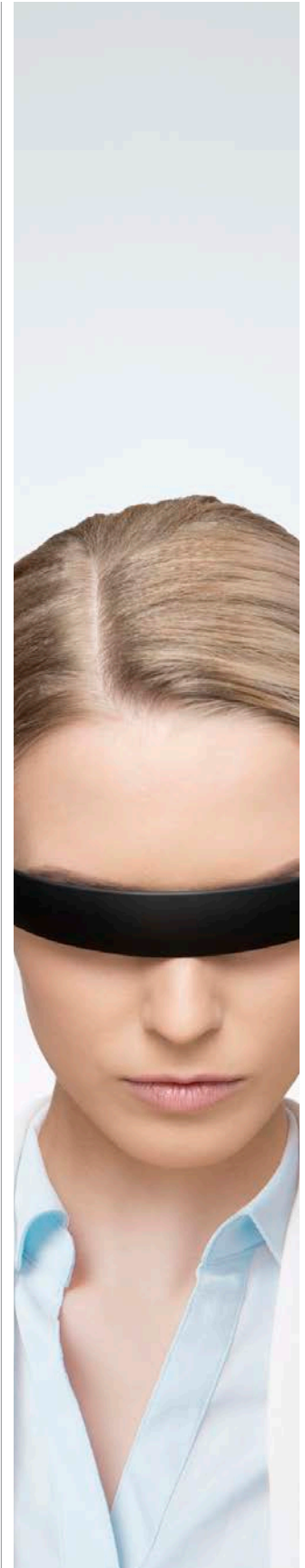


# FIRM OF THE FUTURE

## Success in the Future

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The industry landscape will continue to change and material handling, logistics and supply chain firms will be different in many ways in 2030 and 2040 than they are today. Making those differences the elements of a successful, prosperous business requires vision, planning and action today.



**Report Credits**

The “Transformation Age, Shaping Your Future” report site offers information and dialogue on long-term industry trends for the material handling and logistics industry. As such, the information contained within serves as an invitation to engage in thought and discussion about key factors that are expected to drive, fuel and impact various aspects of life, commerce and industry in the coming decade.

Much of this information was gleaned from in-depth interviews with industry leaders and trend experts. Other data was obtained from secondary research of published material on specific topics. The combination provides insights into those forces that will impact the industry and, more importantly, the implications for action needed now and in the future by company leaders and their teams.

We wish to express thanks to all who gave their time and shared their experience, expertise and opinions for this report.

The report and website were developed by Burchette & Associates, Inc. for MHI.

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