EXTENDING REALITY

The Impact of Manufacturing Leader Age on Views of XR for the Manufacturing Workforce

Lilly Gillespie and Mark Drapeau

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SUMMARY

Using data from a survey of 600 senior-level manufacturing leaders (“MLs”), we researched leaders’ awareness of and views towards immersive technologies, including augmented reality, mixed reality, and virtual reality (under the umbrella of extended reality, “XR”). We also investigated their thoughts on how XR technology might affect various areas of their business and industry. We found that younger manufacturing leaders (under age 35) are far more enthusiastic about XR's role in recruitment, workforce skills training, and employee retention. While younger leaders say they are “very tech savvy,” older manufacturing leaders (age 35+) are much more familiar with XR in the workplace than their younger counterparts. Additionally, XR’s role in and potential for workforce development should be noted by lawmakers, educators, and business leaders across industries who want to attract and train new talent as they lose skilled employees to retirement.

FINDINGS

Younger manufacturing leaders feel far more positively than older leaders about XR's role in recruitment, workforce skills training, and employee retention.

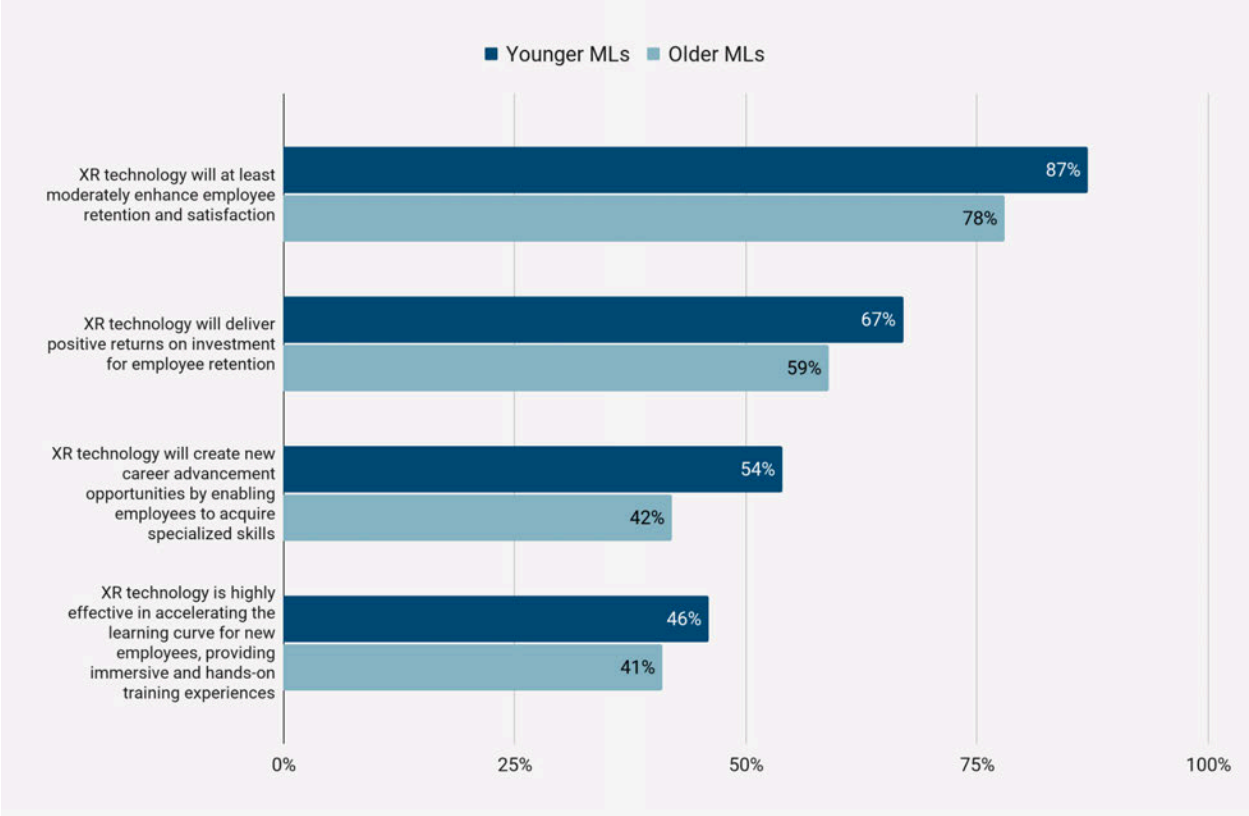
Younger leaders' familiarity with and enthusiasm for XR technology applies specifically to its potential for career training and advancement opportunities, as well as company recruitment and retention. While the difference is modest, younger leaders (under age 35) believe XR can improve recruitment by showcasing innovative technologies. In fact, a majority of those surveyed already work at companies that use XR as a recruitment tool. Older manufacturing leaders (age 35+) were less likely to work at a business that already uses XR in recruiting. However, older leaders tend to be further along in their manufacturing careers and perhaps further removed from current recruitment processes. Unsurprisingly, younger leaders are more than two times as likely as older leaders to be new to the manufacturing industry (3 years or less).

A majority of younger MLs say their businesses use XR tech to recruit and are more likely to think showing off XR will improve recruitment

	Overall	Younger MLs	Older MLs	Net Difference
My business is using XR as a recruitment tool	46%	**52%**	41%	+11%
XR technology will significantly enhance recruitment by showcasing innovative technology adoption	38%	**41%**	36%	+5%

Younger manufacturing leaders see XR as a valuable tool for employee retention and satisfaction, recognizing its potential return on investment. Younger leaders are more likely to view XR as a pathway to career advancement because it enables workers to acquire specialized skills that equip them for opportunities. Additionally, they are slightly more likely than their older counterparts to view XR technology as highly effective in catching new employees up to speed through immersive, hands-on training experiences.

Younger leaders primarily see XR technology benefiting their employees, career trajectories, and training



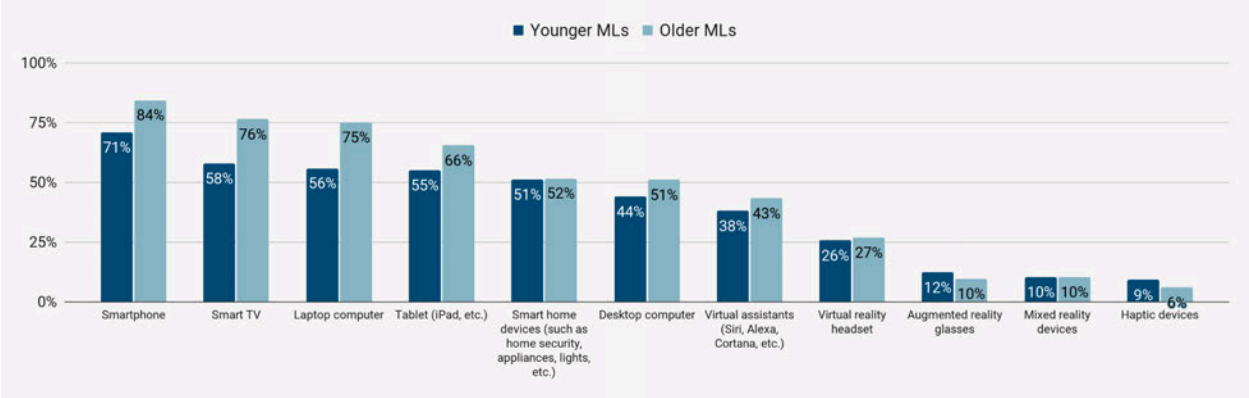
While younger manufacturing leaders say they are tech-forward, older leaders are much more familiar with XR in the workplace.

Younger leaders in the manufacturing industry often believe they are more tech-savvy than their older counterparts, likely due to their personal use of apps, messaging platforms, and gaming. However, regarding device use and technological understanding, older leaders use relevant technology just as much, if not more.

Younger leaders consider themselves "very tech savvy," but older leaders use a given tech more or the same as younger counterparts

	Overall	Younger MLs	Older MLs	Net Difference
"Very tech savvy" - very skilled and comfortable finding new tools all the time	50%	**59%**	43%	+16%
How many devices do you use on average?	4.7 devices	4.3 devices	**5.0 devices**	-0.7 devices

Older manufacturing leaders are more likely to use smartphones, smart TVs, computers, and tablets



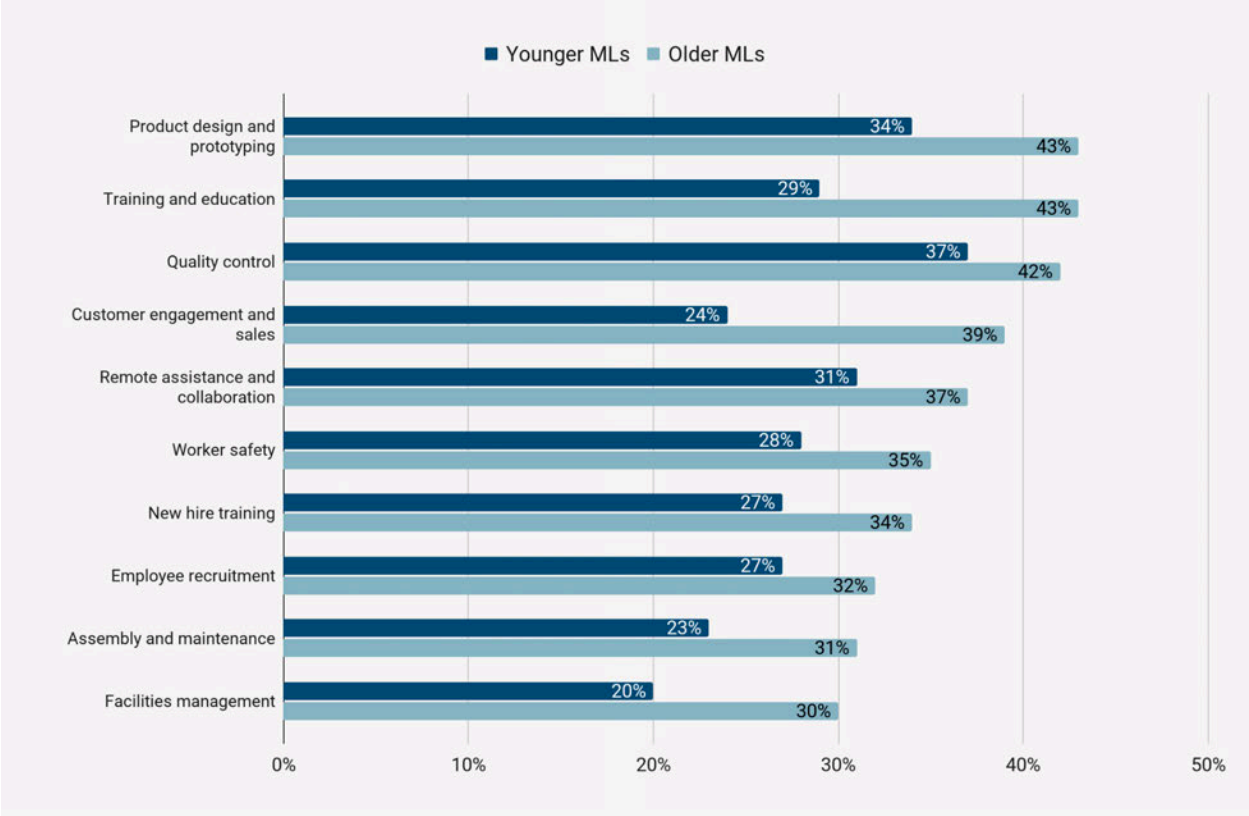
This generational divide is also apparent when it comes to tools integrated with XR. Older leaders more often correctly identify whether technologies and devices include augmented, virtual, or mixed reality than younger MLs do.

Older leaders have a more accurate understanding of which devices and technologies are integrated with XR

Which devices are XR?	Overall	Younger MLs	Older MLs	Net Difference
Virtual assistants	45%	35%	52%	**+17%**
Augmented reality glasses	51%	42%	58%	**+16%**
Virtual reality headset	60%	52%	67%	**+15%**
Mixed reality devices	49%	43%	53%	**+10%**
Haptic devices	23%	23%	23%	-0-

In areas such as training, remote assistance, collaboration, assembly, and maintenance, older leaders are more likely to see the potential for XR to drive improvements, with some significant differences in perception. Interestingly, older leaders are also more inclined to view XR as a valuable tool for enhancing remote collaboration. Older MLs are more likely to credit XR with the potential to bring positive returns on investment in the technical development stages of the job–specifically, the prototyping and product design process.

In every area, older MLs are more likely to think XR might improve things



Older MLs are more likely to see the potential of XR in remote collaboration, prototyping, and product design

	Overall	Younger MLs	Older MLs	Net Difference
XR technology is the future of collaboration	41%	34%	46%	**+12%**
XR technology will deliver positive returns on investment for prototyping	71%	65%	76%	**+11%**
XR technology will deliver positive returns on investment for product design	75%	70%	78%	**+8%**

DISCUSSION

Not Just For Gamers: XR Tools Bring Modernization and Customization Across Industries

As younger Americans enter the workforce, many prioritize personalization and personal growth over company loyalty and feel disillusioned by the rising cost and diminishing returns of a college degree. XR technology offers exciting potential for the manufacturing sector, providing new opportunities for skill development and career growth. Manufacturing leaders under 35 years old represent younger Millennial and older GenZ workers, reflecting broader generational shifts in attitudes toward work and technology. Younger leaders know XR's potential to attract workers with the technology's immersive, game-like appeal and its tangible impact on training and long-term career advancement. In the early stages of their careers, younger leaders may find XR's potential more personally and professionally relevant for shaping their employees' growth and career paths.

In the workplace, generally, Millennials and GenZ have lived through rapid technological developments and have a high tolerance for change. Experimentation with and adoption of new technology defines their learning experiences. Deloitte advises employers across sectors to be "ready to adopt a speed of evolution that matches the external environment." Unlike previous generations, GenZ expects personalization and approaches company loyalty differently, favoring flexibility over long-term commitments. The rise of gig work, side hustles, and remote contract opportunities means both GenZ

and Millennials can increasingly choose roles that align with their personal interests rather than committing to a single path for their entire career.

Older manufacturing leaders' knowledge of and enthusiasm for XR technology suggests the manufacturing sector may have already gotten the message about the newest generation of workers. Using XR tools for collaboration, remote work, and driving improvements for their companies at large indicates leaders have adopted an innovative and responsive approach to workforce modernization. As XR is often associated with cutting-edge technology, its adoption signals a forward-thinking workplace, which can attract tech-savvy younger talent eager to work with modern tools. Moreover, using XR for prototyping, product design, and remote collaboration aligns with younger generations' expectations for digital innovation and flexibility in the workplace. By introducing XR into manufacturing processes, companies not only stay competitive but also create an appealing environment for younger employees who value technological advancement and streamlined workflows. This approach ultimately bridges the gap between traditional manufacturing practices and the evolving needs of a modern workforce.

The integration of XR in manufacturing can serve as a model for other industries by demonstrating how emerging technologies could be leveraged to modernize workflows and attract a new generation of talent. The healthcare, education, construction, fashion, and retail sectors have similar opportunities to apply XR to enhance training, streamline operations, augment design processes, and improve remote collaboration.

The key lesson across industries is that embracing innovative tools like XR not only improves efficiency and technical processes but also aligns with the expectations of younger professionals. At a time when talent shortages and the retirement of skilled workers plague sectors and younger workers increasingly expect personalization and customized training, XR extends new possibilities. Through virtual simulations and augmented reality, new employees can engage in interactive training sessions that replicate real-world scenarios, helping them quickly acquire technical skills without the risks of traditional methods. Adopting modern technology offers companies a dual benefit–enhancing operational capacity and positioning industries as forward-thinking–thus attracting a skilled and tech-oriented younger workforce. The model of the manufacturing sector demonstrates how aligning technology with recruitment and modernization goals can be a strategic advantage in any sector.

METHODS

The RXN Group conducted an online survey of 600 manufacturing leaders across the country from March 20-26, 2024. The survey has a margin of error of +/-4.0%; the margins of error are larger for subgroups. The XR Association originally published a subset of the survey as “Beyond the Factory Floor: XR’s Critical Role in Manufacturing and Workforce Development” here.