

UNDERSTANDING EMERGING TECHNOLOGY AUTOMATION

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MARKET OVERVIEW

Most discussions about emerging technology tend to focus on the individual technologies that are working their way towards adoption. CompTIA's research series on emerging tech has featured [artificial intelligence](#), [blockchain](#), and [virtual reality/augmented reality](#); many other topics such as autonomous vehicles, quantum computing, robotics, and 5G networks also merit discussion in this space.

Unfortunately, that space is crowded. As businesses reconsider how technology impacts their operations and strategies, it is natural for them to concentrate more than ever on the future trends that have the potential to be disruptive. The problem comes in finding the resources to dedicate to such an effort. Treating "emerging technology" as a collection of discrete fields to be dissected individually creates bottlenecks and exacerbates skill gaps.

However, there are other ways to approach emerging technology. One of those approaches is to identify a higher-order business objective, then bring in the technology necessary to achieve that goal. This brings emerging technology discussions in line with digital transformation, and it also clarifies which technologies should be prioritized.

One of the most pertinent examples of this second approach is automation. Obviously technology has a long history of reducing manual labor, whether that comes through advances in silicon or innovations in mechanical systems. Today, though, the capabilities of technology are reaching dramatic heights, thanks to falling costs of components, greater availability of data, and new models of computation.

As companies pursue automation of business systems, they will likely explore several technologies that can be classified as emerging. Internet of Things, AI, biometrics, and more could all play roles in automation, and having a long-term goal will help define exactly what those roles are.

Defining Automation

As with many tech trends, there tends to be a form of recency bias when it comes to automation. Given the incredible new capabilities that exist for automating tasks, the perception exists that automation is a highly complex activity, involving new streams of data, new machine learning algorithms, and new robotic devices.

While there are certainly emerging use cases that include some or all of these new components, it is helpful to take a broader view of automation that recognizes examples that already exist in everyday life. For instance, most consumers would not say that they have robots in their homes today. But this answer implies a definition of robot closer to Rosie from the Jetsons or Data from Star Trek. However, if a robot is defined as a machine that performs a task without human assistance, most consumers would realize they own several robots, such as a washing machine or dishwasher.

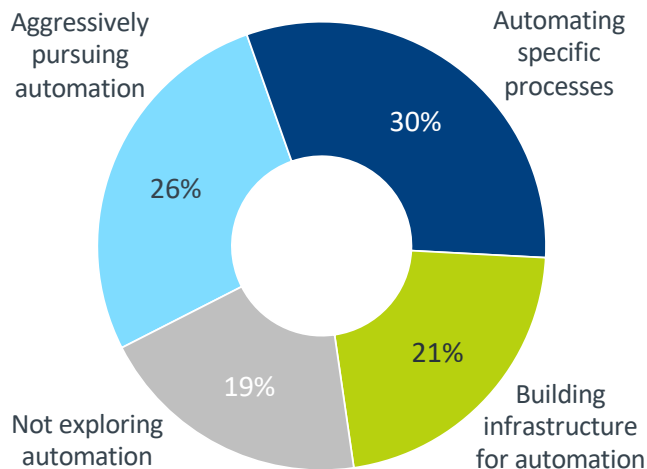
The scope of the tasks being performed is perhaps the biggest source of confusion when it comes to automation. Again, the perception is that modern automation is highly complex, with widespread IoT networks collecting data and advanced AI making decisions. Thinking about things at a smaller scale makes automation much more attainable for businesses of all sizes. Reducing the overhead on a single task (such as the use of marketing automation within a CRM application) can provide a tremendous boost to productivity.

Automation, then, is a goal that most companies can achieve through the application of different technologies. In some cases these technologies may be standard fare; in a growing number of cases these technologies will be cutting-edge. Either way, companies will need to invest in new skills to integrate all the pieces and analyze all the data.

ADOPTION PATTERNS

The number of companies that are pursuing automation in some way is proof that automation (and other business goals) are more broadly applicable than most individual technologies. Overall, 81% of companies in CompTIA's survey have automation on their radar screen. There are some interesting differences, though, when looking at different segments of the population.

Current Mindset Towards Automation



The first difference is probably not so interesting or surprising: small businesses (less than 100 employees) are the most likely to not be exploring automation at all. As other CompTIA research has found, these companies are resource-constrained and often lag behind in their use of technology (unless they are a startup). Putting several different pieces together will require some maturation.

Beyond that, one might expect large companies to lead the pack in aggressively pursuing automation, but the most popular approach for these firms (with 500 or more employees) is to selectively automate certain processes. Part of this may come from the fact that larger companies may have already explored automation of simpler tasks, and now the processes they are targeting are more complex. Part of it may also come from a greater recognition that technology is now intertwined with business and must have a more defined ROI, so each process must be evaluated for the proper solution.

Job role plays a part in how employees view automation efforts. IT employees are most likely to claim that their company is pursuing automation: 35% of IT workers believe that they are aggressively pursuing automation and 36% believe they are automating specific processes. These workers in a technical capacity are not only the ones in the trenches putting the pieces together for automation, they are also more likely to be automating functions that reside within

their department. Executives lean toward the aggressive end of the spectrum (29%), likely looking for those strategies that will improve the bottom line. Employees in a business function lean more towards automation of specific processes (31%), focusing in on those areas where they have direct visibility.

BENEFITS OF AUTOMATION

Typically, cost cutting is the top benefit that companies hope to obtain with a new technology, especially in the early days. So it is noteworthy that companies highlight a reduction in mistakes as the top benefit they are looking for with automation. Companies are becoming more aware that user error can throw a wrench in the operation of a digital business, and they want to eliminate missteps in processes that should have predictable results.

Of course, lower costs and greater productivity clock in at #2 and #3 on the perceived benefit list, so there is not complete deviation from the norm. While automation may help in these areas, companies should remember that these metrics apply to activities that have been performed in the past. If they want to do things that have never been done before, there will be investment rather than optimization.

Customer experience is a good example of new activity. Increasingly, businesses have improvements in customer experience as a goal for new technology, and in many cases these could be brand new experiences on mobile devices or even virtual spaces. By collecting customer data (in a responsible way) and feeding that into a customer profile, companies can interact in personalized ways.

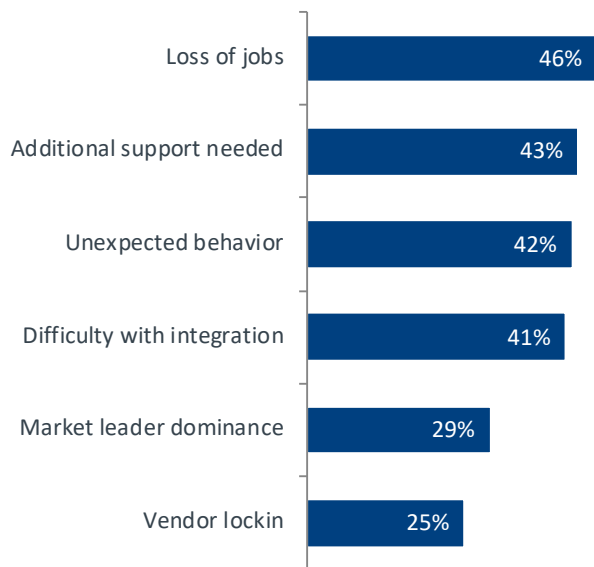
Perceived Benefits of Automation



CHALLENGES

Automation suffers from the same problem faced by most emerging technologies. As capabilities get closer to something once only imagined by science fiction, concerns also get closer to the worst that people have imagined.

Perceived Drawbacks to Automation



With automation, as with artificial intelligence, the primary fear is that the machines will take over, leaving humans with no jobs. This worry does not come only from science fiction; technology's history of reducing manual labor has left a trail of obsolete professions.

However, the net result of technology on jobs is uncertain. Just as technology has eliminated some roles in the past, it has created others. Even now, as loss of jobs is the top potential drawback to automation, the second biggest challenge is expected to be additional support needed for infrastructure, optimizing the behavior of automated processes, and integrating the different pieces of the system.

Finally, vendor lockin is an issue that has grown more important as companies invest more in technology. As automation is achieved by stitching together multiple pieces, the potential for vendor lockin is high. Businesses should investigate options that allow for future flexibility, such as vendors that utilize open standards and APIs.

Interest in emerging technology has risen dramatically as companies seek competitive advantage. At the same time, the benefits of technology must go beyond improvements to standard IT operations and drive corporate goals. Automation is a prime example of a broad business initiative that will focus the exploration of new trends and further connect the IT department to the rest of the organization.

About This Research

This research brief is part of a larger study conducted by CompTIA on the awareness and application of emerging technology. Other topics in this series include: artificial intelligence, AR/VR, automation, drones, and the business implications of early stage technology.

The quantitative study consisted of an online survey fielded to U.S. workforce professionals during October 2017. A total of 701 businesses based in the United States participated in the survey, yielding an overall margin of sampling error proxy at 95% confidence of +/- 3.8 percentage points. Sampling error is larger for subgroups of the data.

As with any survey, sampling error is only one source of possible error. While non-sampling error cannot be accurately calculated, precautionary steps were taken in all phases of the survey design, collection and processing of the data to minimize its influence.

CompTIA is responsible for all content and analysis. Any questions regarding the study should be directed to CompTIA Research and Market Intelligence staff at research@comptia.org.

CompTIA is a member of the market research industry's Insights Association and adheres to its internationally respected Code of Standards.

About CompTIA

The Computing Technology Industry Association (CompTIA) is a non-profit trade association serving as the voice of the information technology industry.

With approximately 2,000 member companies, 3,000 academic and training partners, 100,000-plus registered users and more than two million IT certifications issued, CompTIA is dedicated to advancing industry growth through educational programs, market research, networking events, professional certifications and public policy advocacy.

CompTIA's efforts to address issues related to emerging technology include member-led [communities](#) focused on businesses and IT professionals along with a [policy group](#) focused on legislation and regulations.