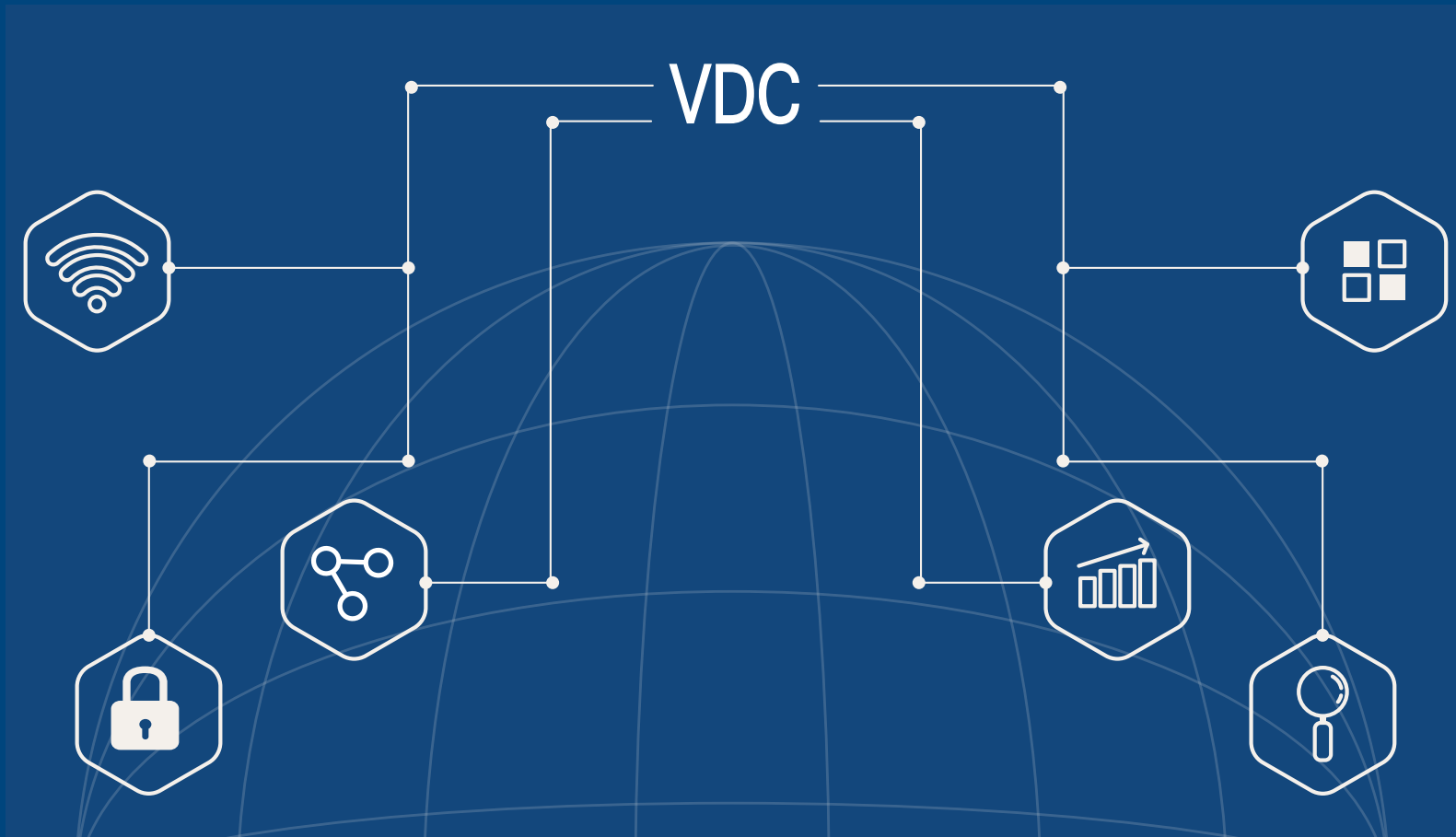


A WAY WITH WORDS

Optimizing Enterprise Mobility Workflows with Voice Technology



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EXECUTIVE SUMMARY

As companies across industries seek ways to optimize workflows in the midst of operational challenges, voice automation is a leading choice for the mobile workforce. Voice automation captures and shares data through speech rather than image and has applications in order picking, packing, and stock replenishment. Having existed in the retail, manufacturing, and warehousing verticals for the last two decades, voice is entering a new generation of productivity gains, offering improved levels of ergonomics, speed, and connectivity.

In a recent study, VDC Research consulted industry leaders to evaluate how voice technology has impacted operations for the companies that implement it. VDC fielded a survey to 150 operations and technology executives in Europe and North America across sectors, including manufacturing, retail services, e-commerce, transportation and logistics, wholesale and distribution, maintenance and repair, and food services. In addition, VDC conducted ten in-depth interviews with executives from companies using voice solutions in their operations, as well as with leaders from solutions providers, which work with end user companies to implement voice solutions.

This report details the findings of VDC's work. Major takeaways include:

- » Voice automation improves operational speed by an average of 31% within the workflows using it, most commonly picking, packing, and loading.
- » Voice automation improves operational accuracy by an average of 32% within the workflows using it, most commonly picking, packing, and loading.
- » Worker satisfaction and productivity are top motivators for organizations that migrate to voice technology. Voice automation can have a positive impact on worker satisfaction, a major advantage for companies facing tight labor markets.
- » Top operational challenges that drive companies to adopt voice technology are a need to improve worker productivity, worker satisfaction, and order fulfillment speed.
- » The leading use cases for voice are picking and packing. Loading, maintenance & inspection, forms management, and putaway workflows also have demand for voice, and provide an opportunity to expand voice workflows beyond their most common applications.
- » Leading selection criteria of companies switching to voice include easy integration, flexibility in host connection, Android compatibility, voice recognition performance, and customization.
- » When comparing voice solutions across brands, Honeywell outperformed in a majority of areas. Error reduction, safety, hardware reliability, workflow adjustments, and training/onboarding time were particular areas of advantage for Honeywell's solution.

INTRODUCTION

AS DELIVERY TIMES DECREASE, OPERATIONS MUST OPTIMIZE

Workers across the warehouse, manufacturing, transportation, and field services environments have faced growing pressure to optimize workflows in order for businesses to stay profitable and competitive. Despite growing investments in automation, manual labor remains a critical contributor to many business-critical workflows. Given the evolving environment, more is being asked of mobile workers, and organizations are looking for solutions that improve their productivity and work quality while also seeking to improve job satisfaction and retention.

As complexity grows and time frames shorten, operations leaders seek solutions that optimize the resources available, and voice automation solutions have proven to be a great asset. Voice automation captures and shares data through voice dialogue rather than image and has applications in operational workflows that include order picking, packing, and stock replenishment. Most common in manufacturing, warehousing, and retail spaces, voice automation can optimize data capture needs around stock management. By enabling hands-free workflows, voice automation improves worker speed, accuracy, safety, and overall satisfaction.

Operations across the manufacturing, retail, logistics, and wholesale industries have switched to voice automation solutions in the last ten years, transitioning from tools like barcode scanners, PTT-enabled communication devices, and paper picking slips. Companies within the manufacturing sector have experienced a growing number of SKUs in the last few years, sometimes pushing warehouses and fulfillment centers to jump directly from a paper-based picking system to voice. Retail applications have adapted to new omnichannel models and a shifting workforce by integrating voice-automated order picking workflows. Logistics and wholesale applications, under pressure to cut fulfillment times, adopt voice solutions to pick and re-stock items.

Conventional picking methods can cause trouble for users: scanners/RF guns force workers to look down at the screen of a mobile computer frequently. Workers must hold devices or paper slips throughout their workflows and lose time taking out and putting away devices. Voice allows workers to receive information as they move through a process, minimizing distractions and eliminating the need to remember written codes or product amounts. Errors or out-of-stock issues receive an immediate response and reduce ripple effects that could impact other workers. IT and operations leaders report workers feeling a heightened sense of freedom once they transition to voice, and within six months, a preference for voice over other systems.

Voice automation is not a new solution for manufacturing, retail, or logistics operations. However, new features of voice solutions continue to optimize operational workflows, and attract users interested in adopting voice or upgrading to a newer voice system. The ergonomics of voice hardware have improved, and hardware-agnostic solutions - which have the appeal of functionality on both legacy devices and newer hardware - are becoming more popular. Speaker-independent solutions are also emerging, allowing individual users to build a customized vocabulary for their workflows and eliminating recognition errors. These improvements will ensure that voice remains a popular solution within its use cases in the coming years.

IMPLEMENTING VOICE HAS A QUANTIFIABLE IMPACT ON PRODUCTIVITY

Companies reported seeing a 31% improvement in speed and 32% improvement in accuracy in workflows that adopted voice solutions, the majority of which were order picking, packing, and loading.¹ This increase in efficiency enabled the workforce to handle more orders per worker, and in turn cut the total labor cost per order. Since voice also reduces errors from misplaced items or incorrect picks, significant time was also saved around identifying, troubleshooting, and correcting errors.

¹VDC Voice Solutions Survey 2022

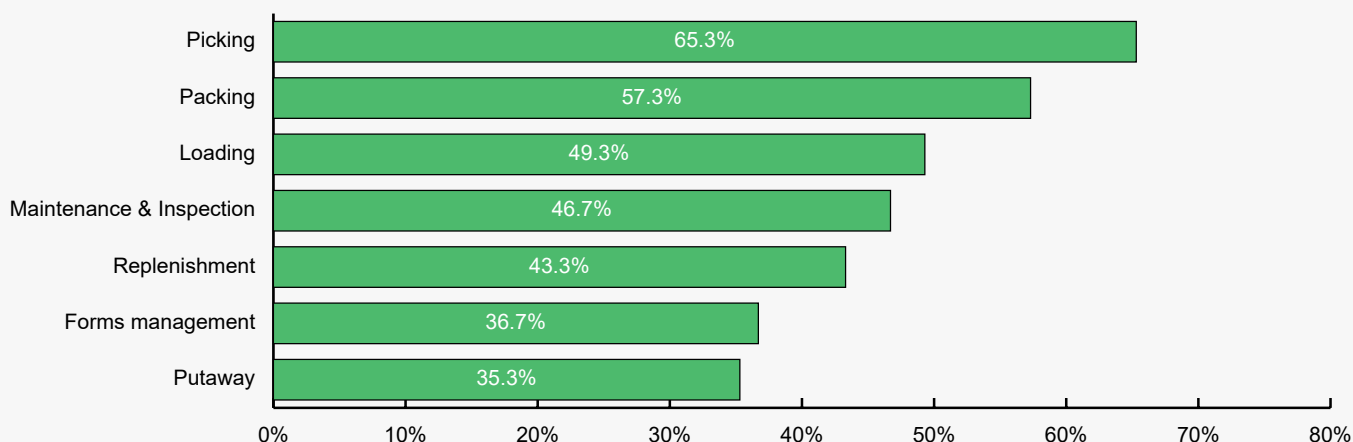
With fewer errors and more efficient workflows, businesses can pivot their focus to other pain points. Some businesses using voice report transitioning to a leaner fulfillment operation, while others dedicated the time to improving customer service capacity.² An executive at a food processing manufacturer described their voice system, which used Honeywell-branded devices, as seamless:

It's very very efficient, using Honeywell. It's seamless. You're not stopping and talking... That's where we've seen great efficiencies where you're not stopping, you're just driving the forklift where you're going. And you don't have to go look down. Over time that improves efficiencies.

— Manufacturing Site Manager,
Campbell's Soup Company³

The term “seamless” arises frequently when users discuss voice: work does not need to pause as a user looks for instructions or records an action. Eliminating the need to pick up a scanner or look down at a mobile computer or paper slip allows workers to keep moving and preserves their focus.

Figure 1: For which workflow(s) do you currently use voice solutions?
(Percentage of Respondents)



Source: VDC Voice Solutions Survey 2022. Sample size: 150

^{2,3}VDC Research, Interviews conducted in 2022

Figure 1 demonstrates that voice may be used across a range of workflows. Picking and packing were the most common among users surveyed. Maintenance, replenishment, forms management, and putaway also saw use cases of over 30%. Organizations may not transition all processes to voice, but the option to transition more areas than packing or picking enables user organizations to customize solutions to their unique needs and environments. For example, voice workflows tailored to maintenance and inspection can guide workers in the manufacturing industry through each step of an inspection process, ensuring that no areas are overlooked. Similarly to picking or packing, voice-automated inspection processes eliminate the need for users to look down at a screen, and improves their focus.

EMPLOYERS SEEK TO LOWER TRAINING TIME AND IMPROVE WORKER SATISFACTION

Supply chain disruptions, looming economic recession, and the COVID-19 pandemic have shaken operations and catalyzed conversations around worker safety, health, and satisfaction. Workers not only need efficient solutions, but also need to feel empowered and comfortable. Voice solutions offer an alternative to paper- and scanner-based picking systems, and free workers from holding data capture devices. Through voice automation, workers hear product codes while picking, and do not need to pick up or look at devices to reference product codes. Voice solutions are also ergonomic in their physical comfort and enablement of a hands-free workflow, reducing the discomfort that can come with long periods of wear. In an interview with VDC, an executive at a voice solutions provider described the advantages of Bluetooth headsets for voice, noting how Honeywell's headset offers superior comfort:

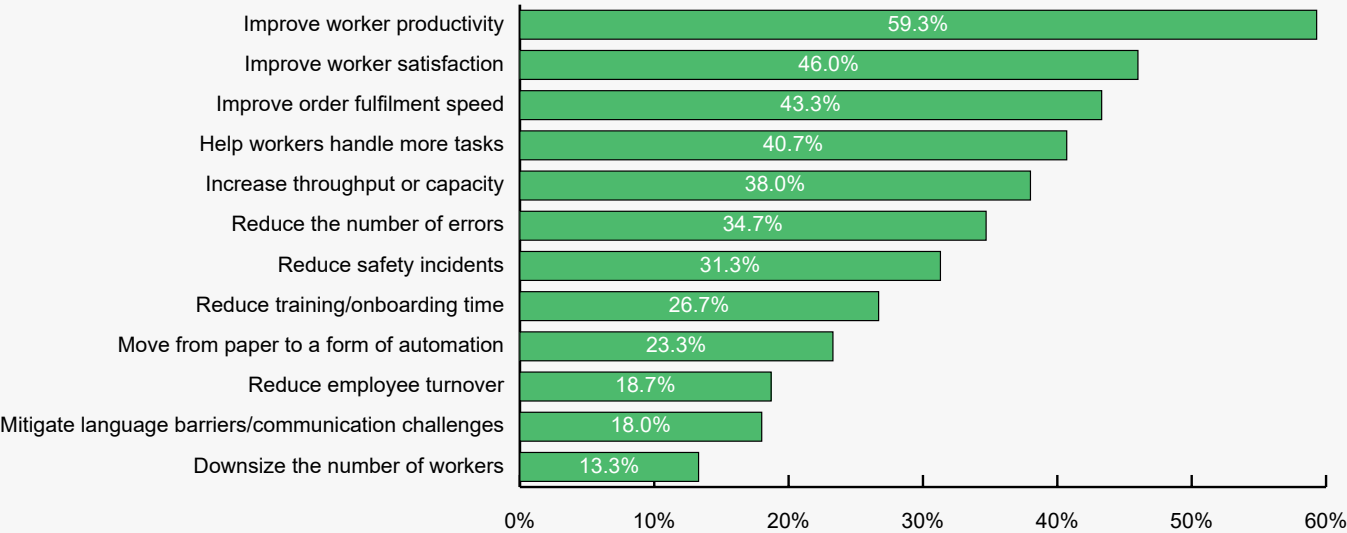
Because they have the best Bluetooth industrial headset on the market, Honeywell has an advantage with using their purpose-built Talkman devices. The comfort really is less about what's on your waist because all of these systems are designed so that you rarely have to interact with it... what people care about is what's on their head and what's touching them. And I think Honeywell has the advantage currently just because the SRX3, their Bluetooth headset, has a lot of different options.

*— Vice President of Solutions,
Voice Solutions Provider⁴*

⁴VDC Research, Interviews conducted in 2022

Organizations interested in upgrading their enterprise mobility technologies cite a need to cut down on onboarding time, bringing workers up to speed faster, and minimizing the frustration that may stem from a complicated, multi-step training process. Reducing onboarding time is both proactive and reactive: organizations seek a process that helps them to work within the constraints of high turnover, while in turn reducing future turnover rates through improved worker satisfaction. Environments using voice also rely on temporary seasonal workers to manage increased order volumes and rely on voice to get temporary staff to full productivity as quickly as possible. Organizations that switched to Honeywell's voice automation solution noted that training times were cut in half, and that programming workers' voice dialogues could take as little time as a single shift.⁵

Figure 2: Which operational challenges led you to adopt voice solutions for your organization?
(Percentage of Respondents)



Source: VDC Voice Solutions Survey 2022. Sample size: 150

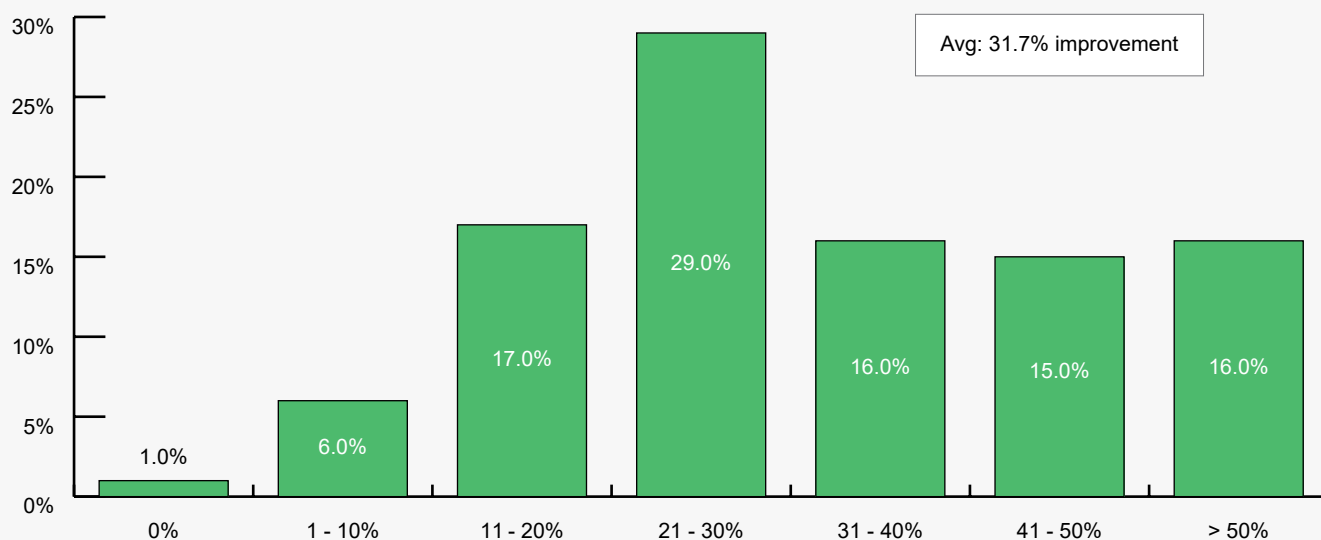
Figure 2 demonstrates that productivity is a top priority to organizations that switched to voice automation, followed by improved worker satisfaction and order fulfillment speed. These top three drivers behind switching to voice center on improving the experience and performance of mobile workers and meeting the challenges that the modern supply chain places on mobile workflows.

COMPANIES IMPLEMENTING VOICE REPORT FEWER ERRORS

Communication issues are perhaps the most costly and avoidable challenge faced by organizations dependent on mobile workflows. Issues that may have occurred with paper picking, scanning, or RFID are minimized with voice, thanks to automatic error messages if an item is moved incorrectly. All instructions in a voice-automated workflow are designed to reduce commands and responses to their most simplistic, straightforward format, eliminating written errors or mistaken item numbers.

⁵VDC Research, Interview conducted in 2022

Figure 3: After implementing solutions from your main vendor, how much did your operations improve in terms of workflow accuracy?
(Percentage of Respondents)



Source: VDC Voice Solutions Survey 2022. Sample size: 150

With robust, durable hardware, workers can rely on voice to effectively capture data without lapses in communication. An executive in the food processing space, whose company was trialing Honeywell's voice-guided solution, noted the real-time accuracy that came with ERP integration:

When you have that voice technology, it ensures that things are placed in the correct bin... So, if a warehouse personnel wants to put an item in the wrong location, it would beep to him/her, make a sound of 'that is wrong,' and immediately send a report and say, look, that operative has tried, so s/he has to correct his action.
— Director, food processing plant⁶

Immediacy in communication through voice both minimizes worker errors and improves communication between pickers and management as they work through issues.

⁶VDC Research, Interview conducted in 2022

COMPANIES CHOOSING VOICE SEEK VALUE OVER COST

Given the high ROI potential of voice automation investments, decision makers have matured in their evaluation of investments, opting to prioritize capabilities and features over price. While decision makers are aware of price differentials between vendors, given the high up-front investment required for voice automation, price is rarely the determining factor for a decision – users reported paying more for a voice provider that they knew could handle their scale and growth, and looked to optimize ROI rather than pay a low initial price. A director for an international manufacturer noted the advantages to a Honeywell (formerly Vocollect) solution chosen by their company:

The cost on Vocollect I know was a little bit higher than [other brands]. However, the capability was also a lot higher. And it was scalable, because Vocollect have reach within up to 60 countries and 35 languages.

— Supply Chain Manager, F500 FMCG company⁷

Included in users' perception of a brand's value is hardware durability. Providers that could offer customized hardware had the advantage of offering a rugged, long-lasting product. An executive at a global equipment manufacturer noted the ruggedness of a voice solution they were evaluating:

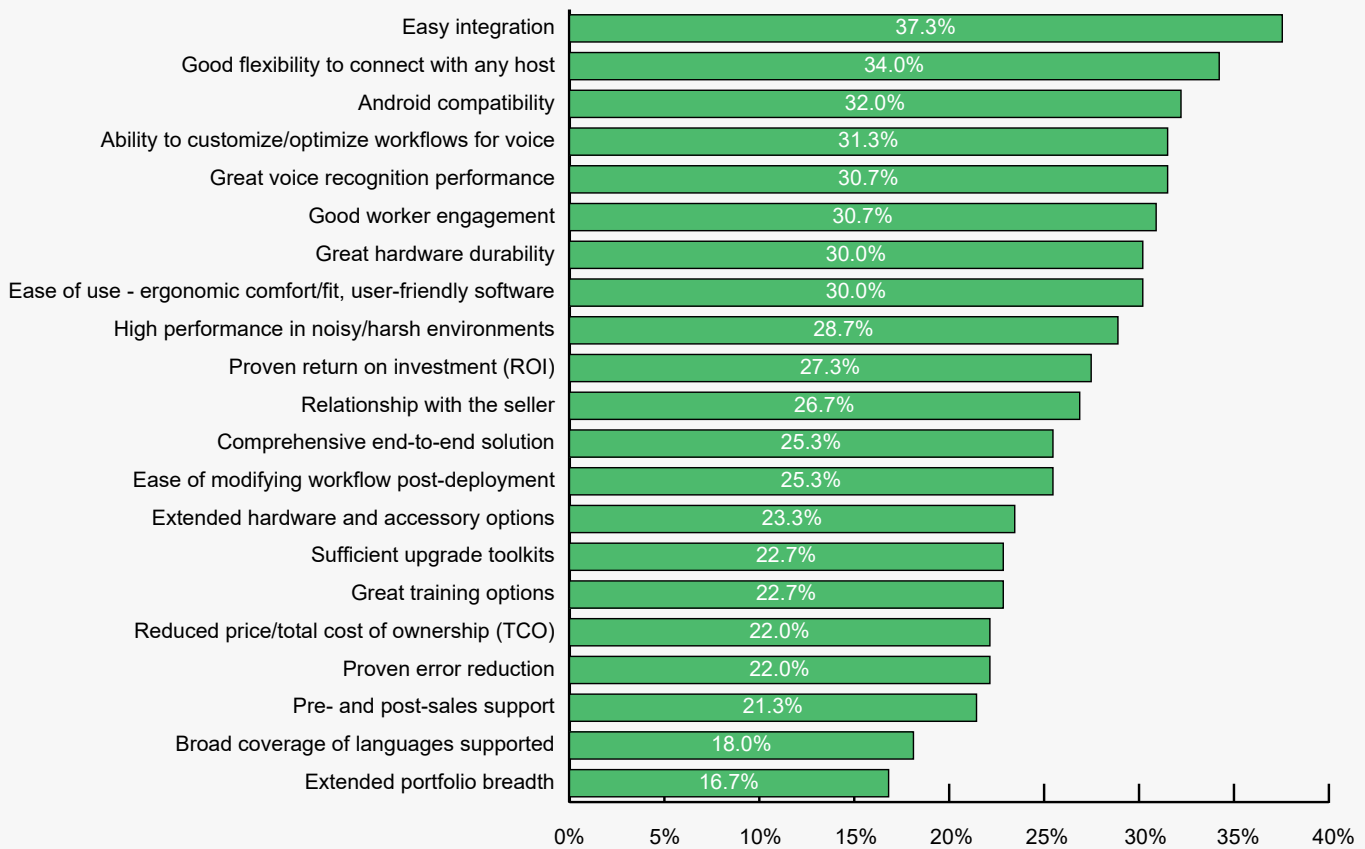
Hardware performance for Honeywell is definitely very superior. And because they have all the R&D and they have pioneered into the many different components and subsystems they make... So, it's difficult to beat them.

— Global Supply Chain Performance Manager, Caterpillar, Inc.⁸

^{7, 8}VDC Research, Interview conducted in 2022

Thus, cost falls low on priorities as a deciding factor for decision-makers, who instead seek devices that will last and systems that will scale. Voice automation can bring immense cost and time savings to the specialized workflows that it applies to, and decision makers prioritize long-term savings over initial cost.

Figure 4: What were the main criteria that influenced your decision to choose your voice provider?
(Percentage of Respondents)



Source: VDC Voice Solutions Survey 2022. Sample size: 150

Figure 4 displays the top priorities of respondents whose companies had implemented voice solutions within the last five years. Compared with the functional benefits of voice, price and total cost of ownership fall low on the list of top factors in choosing a voice provider. While in other areas of operations, organizations may seek to cut costs, voice is seen as a necessary expense, where premium product features are often prioritized over a low price.

ENTERPRISE EVOLUTION PUSHES FOR VOICE

WMS AND ERP INTEGRATION IS KEY FOR EFFICIENCY & SECURITY

Organizations that switch to voice automation maintain that WMS and ERP integration is a key motivator. Voice automation, which may be implemented by an OEM, a solutions provider, or in tandem with a WMS integrator, links directly to inventory management systems and updates those systems in real time. Among the voice providers available to organizations, Honeywell's solution is popular for the ease with which it can connect to ERP systems. Some users report that Honeywell's voice solution takes fewer steps to launch and is compatible with multiple management systems and operating systems. An executive in the fast-moving consumer goods (FMCG) space noted that integration capabilities of Honeywell with a niche ERP system made it a clear choice over a competitor, which would have required more development from their team. Other respondents noted the benefit of Honeywell as a global organization and described successes integrating its products across continents.⁹

Voice automation offers a dramatic shift from systems using scanners or pencil and paper-based order fulfillment. Unlike paper-based systems, voice updates inventory systems in real time. Low stock is quickly identified and resolved through the connected WMS system. Systems using scanners and mobile computers, while matching voice's real-time data capture, often lack the optimized routing and order receiving that voice systems offer. Integration and optimization not only improve accuracy, but also save time, preventing workers from spending precious minutes searching for out-of-stock product, incorrectly picking a different product, or waiting for shelves to be restocked.

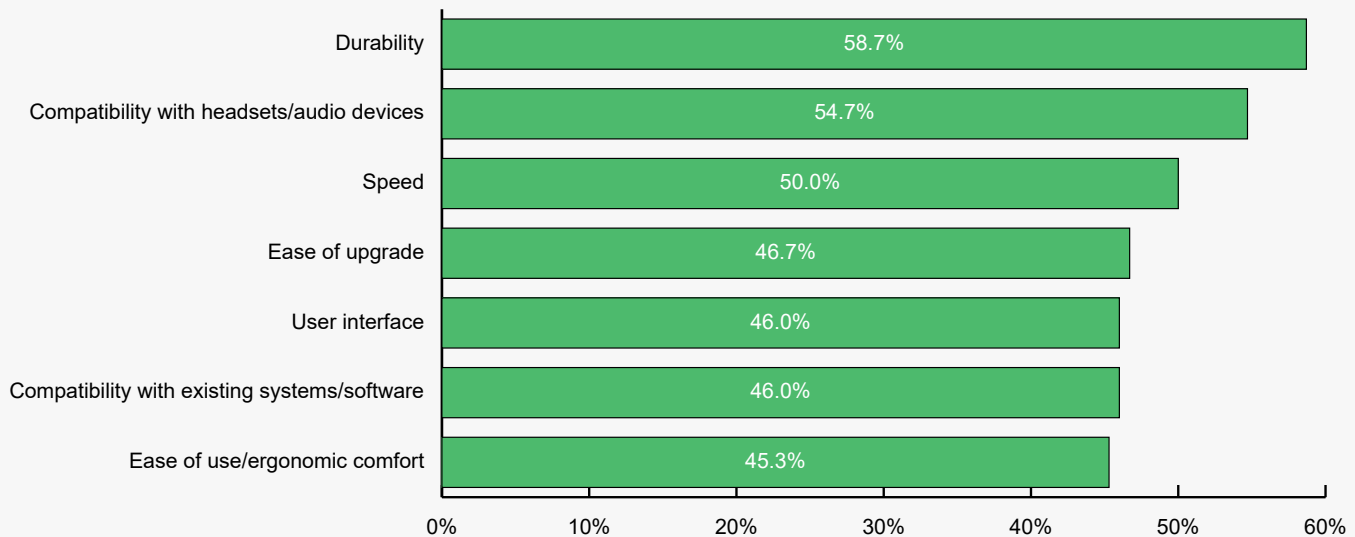
AGNOSTICISM IMPROVES INTEGRATION & MAXIMIZES ROI

Solutions that were device agnostic, OS compatible, and able to integrate with a range of inventory systems proved popular among the decision makers surveyed. Global companies managing rollout across varying regional needs and preferences cite solutions like Honeywell's as a top performer, since it can run on a range of devices and operating systems.

Switching to voice promises ROI but does require significant spend to implement, especially since participant investments can sometimes reach the hundreds of thousands of dollars. Device agnosticism may significantly lower costs, as companies can use older devices for a new voice system and integrate with existing scanners if they opt for a voice and scanning solution. Device agnostic voice solutions can help organizations progress through the modernization process without being held back by legacy devices, letting companies elide between legacy devices and new warehouse automation technology like AMRs and drones.

⁹VDC Research, Interviews conducted in 2022

Figure 5: What factors influenced your choice of voice hardware?
(Percentage of Respondents)



Source: VDC Voice Solutions Survey 2022. Sample size: 150

Figure 5 demonstrates that durability and compatibility are top priorities for users when choosing voice system hardware. Voice systems that can work with existing devices, easily upgrade, and serve as strong, comfortable tools within workflows might gain the loyalty of buyers.

A GOOD VOICE SYSTEM MUST HAVE STRONG CUSTOMER SERVICE

While voice makes a major difference to mobile workflows, voice providers that can offer superior customer service and support ensure that users are able to implement and thrive with their voice systems. Honeywell's voice technology offers support throughout the pre- and post-implementation processes, featuring on-site consultants, direct contact, after-hours and after-contract service, and briefings about new developments.

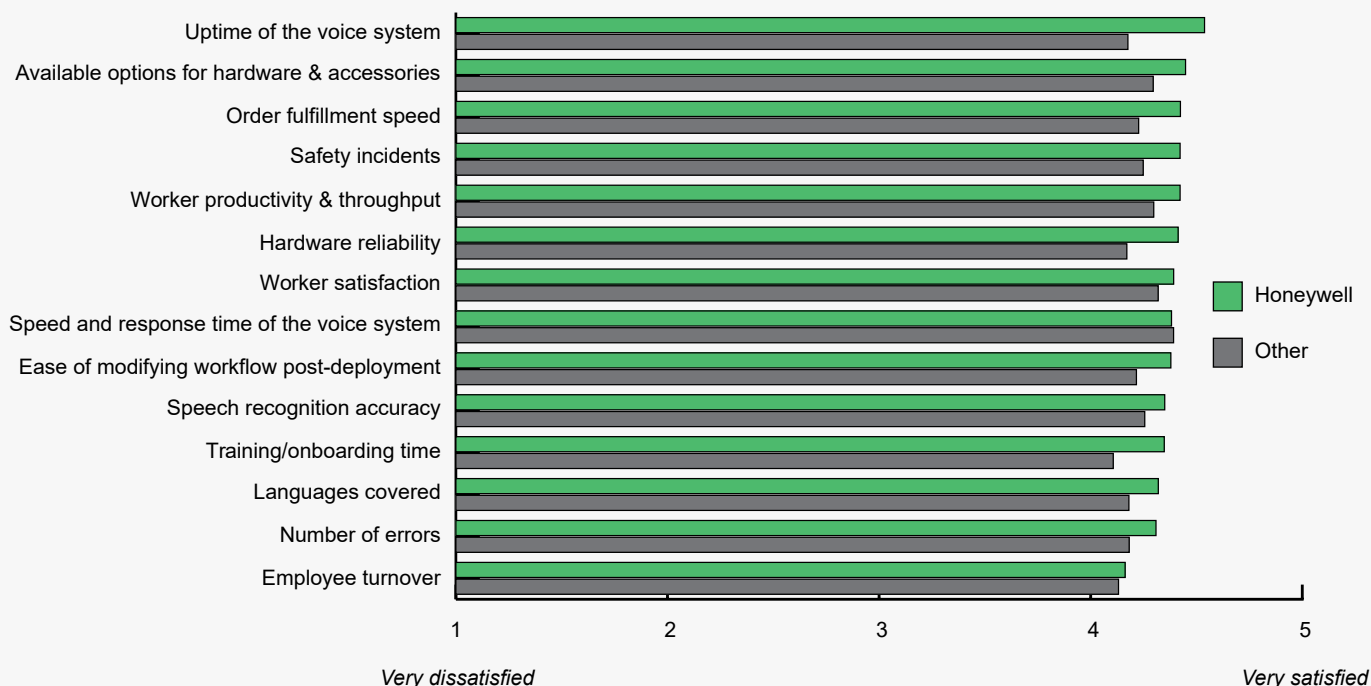
Customer service, and having the peace of mind that errors will be quickly resolved, is paramount to companies implementing voice. However, eliminating trouble instances and a need to rely on support can further set a voice provider apart from the competition. When errors or recognition issues occur with word recognition or language, those providers whose solutions have an easy issue resolution process are a top choice for users. Leaders at organizations implementing voice cited easy log-in and customization as important to voice adoption and noted that when customization and error correction processes were simple, workers and managers were able to resolve them internally and did not need to reach out to providers.

DIVERSIFYING, GLOBALIZING WORKFORCES REQUIRE ROBUST LANGUAGE CAPABILITIES

Personalization enables voice to customize to every worker's needs, further improving workflows. Warehouse and manufacturing environments in Europe and the Americas are increasingly multi-lingual environments, and voice technology can offer workflows in users' native languages from the moment a login is created. With the added ability to create new pronunciations for words, workers can eliminate recognition issues as they go through voice onboarding processes, and easily add in new pronunciations should challenges arise around system communication. Slotting users into a language from the onset prevents data from being lost in translation, as it would be in a typical conversation or with more traditional picking systems.

COMPARING VOICE ACROSS BRANDS

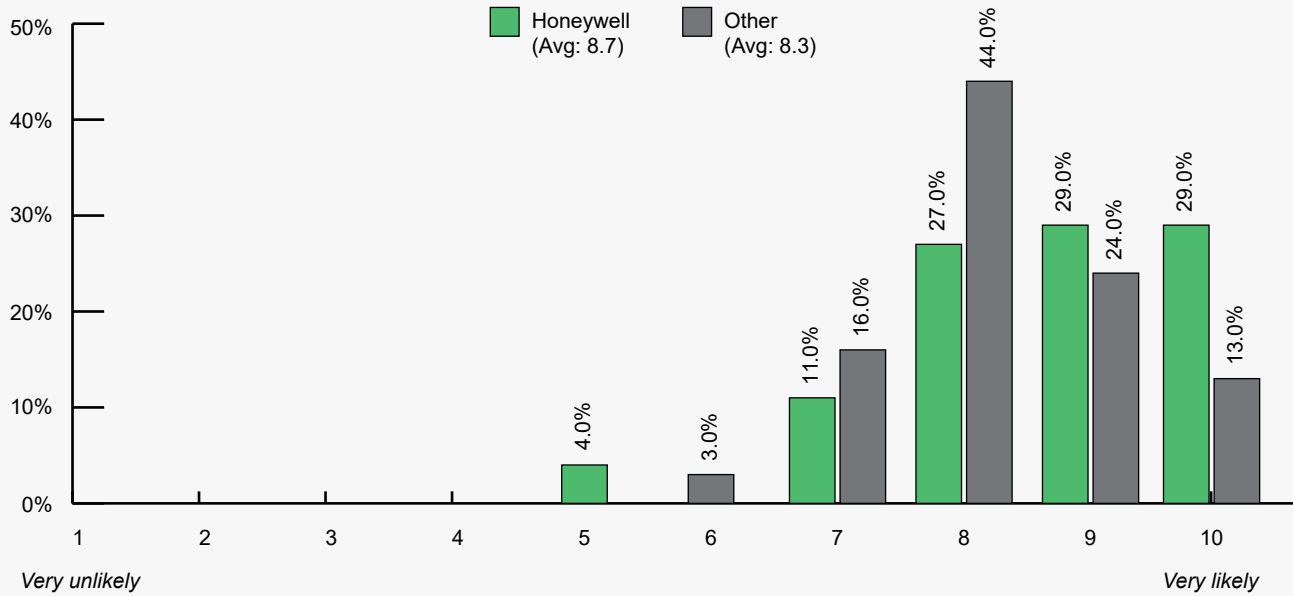
Figure 6: After implementing solutions from your main voice vendor, how satisfied are you with your voice solution's performance in the areas below?



Source: VDC Voice Solutions Survey 2022. Sample size: 150

Figure 6 shows the high level of satisfaction that survey respondents felt regarding their voice systems. In no area did the collective average of respondents fall below 4 (somewhat satisfied). Respondents were asked to evaluate their main voice vendor by the criteria above – those that had selected Honeywell as a primary vendor rated their systems more highly than the collective average of competitor brands, especially in the areas of safety, hardware reliability, modifiability, and training/onboarding.

Figure 7: How likely are you to recommend your main voice vendor?
(Percentage of Respondents)



Source: VDC Voice Solutions Survey 2022. Sample size: 150

Figure 7 shows the results of a net promoter question fielded to respondents. Scoring averages show Honeywell earning an NPS of 55%, while the competitor average is 35%. With higher numbers of promoters, the strengths of Honeywell's solution (its durability, ease of use, and flexibility) give it a critical edge when compared with other products.

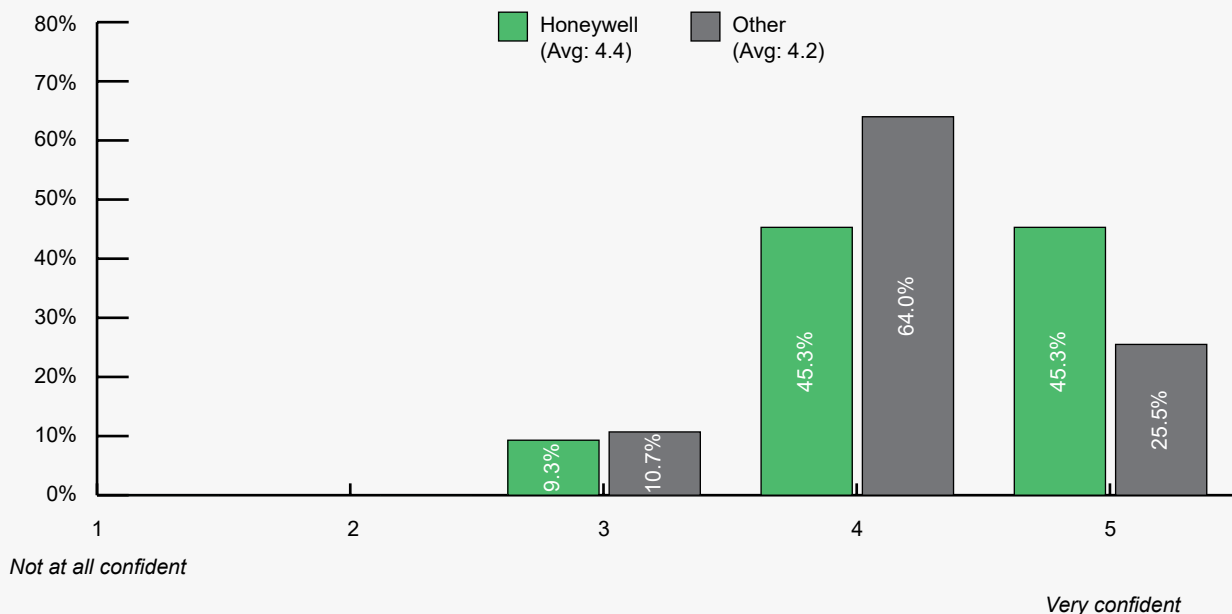
ROOM FOR GROWTH

Providers that can address persistent pain points in voice automation workflows may gain new followers as decision makers seek to upgrade their solutions. One major issue hindering mobile workers' operations is connectivity: users whose facilities had dark zones lacking reception/connection reported issues with voice automation, since dialogue in those zones might not synchronize with inventory management systems. Improving connectivity – or enhancing the connective capacity of voice systems – would ensure that all locations can be used to their fullest.

Organizations are also looking to invest in worker satisfaction through a focus on device usability. Improving the ergonomics and comfort of voice devices will be an important step forward for the industry: OEMs should investigate new headset designs that better accommodate PPE and improve battery life so that hot swap does not disrupt workflow. With headset challenges arising from workers unable to hear their surroundings, or whose environment is loud enough that they accidentally confirm orders, optimizing noise filtration capacities will become paramount.

The mobile enterprise remains diverse in both workflow requirements and worker pools. With diversity comes a need for systems to adapt to a wide range of speakers, and language recognition remains a key area for voice systems to navigate. Systems that enable each worker to personalize their vocabulary and optimize commands to their shortest form will gain and maintain a following.

Figure 8: How confident are you that your main vendor will be able to meet your future voice needs?
(Percentage of Respondents)



Source: VDC Voice Solutions Survey 2022. Sample size: 150

As companies confront the evolving needs of their businesses, the ability of a voice brand to be flexible enough to meet new needs will be a major determiner of user loyalty. In Figure 8, Honeywell attains a higher confidence level among current users than does the collective average of competitor brands. Honeywell's scale and investment in research contribute to its reputation as a strong choice for changing operational needs. Respondents using Honeywell had a confidence score of 4.4 out of 5 for the company's ability to meet changing needs, compared to a 4.2 score for competitors.

THE FUTURE OF VOICE

Voice has helped to push industries forward and made significant progress in optimizing workflows. Continued innovation could lead to improved operations visibility: real-time line of sight might be translated into predictive analytics, helping management make informed decisions about supply and relevant workflows. Emerging technologies such as industry 4.0 and twin modeling offer further areas of optimization for voice, which has the potential to offer key insights about organizational infrastructure.

Conversely, there may be areas within workflows where voice hinders the mobile worker – for packers needing to strategically palletize goods as they pick, optimized picking based on route does not always match an optimized pallet of goods. For workers that must confirm a larger group of items close to each other, voice may also limit a worker's efficiency, causing them to slow down to confirm pick numbers orally where a barcode scanner might be faster. An examination of processes that see less optimization from voice will lead to further end user benefits in years to come.

Voice automation is continuing to advance and will expand its enterprise offerings with the integration of new capabilities. Innovations like speaker independence promise to reduce the amount of time spent on training thanks to a broad database of recognized terms. For example, Honeywell's Pick Up & Go (P&G) solution enables workers to instantly start engaging with workflows, rather than spending time acclimating the technology to their pronunciation. Growing capabilities of voice will also minimize the already-decreased reliance voice users have on mobile devices like tablets and handheld computers. With improvements to voice, mobile devices will become invisible during workflows, meaning that workers will not need to think about those devices and will fully focus on the task at hand. These developments will offer improvements to device ease of use and ergonomics at organizations adopting voice automation, in turn making workflows easier for generations of future workers.

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ABOUT VDC RESEARCH



Founded in 1971, VDC Research provides in-depth insights to technology vendors, end users, and investors across the globe. As a market research and consulting firm, VDC's coverage of AutoID, enterprise mobility, industrial automation, and IoT and embedded technologies is among the most advanced in the industry,

helping our clients make critical decisions with confidence. Offering syndicated reports and custom consultation, our methodologies consistently provide accurate forecasts and unmatched thought leadership for deeply technical markets. Located in Southborough, Massachusetts, VDC prides itself on its close personal relationships with clients, delivering an attention to detail and a unique perspective that is second to none.

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