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Humanoids | Asia Pacific

China Humanoids Survey 2026: High Intent, Gradual Rollouts

The results of our AlphaWise survey of corporate executives across industries in China indicate interest in humanoids remains high, although deployment timelines have extended. Payback requirements, lower expected prices, and limited product readiness suggest a gradual path from pilots to scale.

AlphaWise α

Key Takeaways

- The long-term trend of humanoid adoption remains positive, favoring leading component suppliers.
- Timeline expectations have moved further out amid a tempering in satisfaction with available models.
- Economic concerns are more to the fore and corporates want relatively quick payback on humanoid costs.
- Primary use cases remain in manufacturing and logistics; companies are increasingly widening perceived potential applications for humanoids.
- Humanoids remain a key part of the AI drive behind China's innovation leadership, although volumes may remain modest near term.

Our second annual AlphaWise survey of 94 executives across China's manufacturing, industrial and service sectors suggests **a more gradual transition from demos to n than previously anticipated,** consistent with our view that humanoids remain at an early stage, constrained by data bottlenecks, limited generalization, and hardware reliability.

Adoption willingness appears to remain high, reinforcing views in our China Industry 5.0 BluePaper that embodied AI will be a key pillar of industrial intelligence. Growing interest for multi-functional robots over single-task solutions signals an early shift toward more flexible workflow. At the China International Industrial Fair in Oct-26, a key theme was the greater use of AI in manufacturing, with greater emphasis on ROI. We expect structured applications to lead adoption, with broader use cases emerging as intelligence, reliability, and affordability improve. **Ultimately, scaled deployments/repeat orders will be key indicators of n progress.** We expect near-term volumes to remain modest, with 2026/2027 humanoid shipments of 50k/100k units in China.

We remain positive on the long-term robotics trend, favoring leading component suppliers as early beneficiaries; we prefer Hengli Hydraulic, Leaderdrive, Shuanghuan. Despite Unitree's narrowed lead, we are constructive on its full-stack platform evolution; progress in intelligence / use cases is needed to unlock upside.

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Morgan Stanley appreciates your support in the 2027 Extel Asia Research Survey. Voting opens 10 November 2026.

Read 2025 survey results:

- China Humanoids Survey: High Willingness to Adopt Meets Premature Products
- China Survey (2): What work are humanoids expected to do?

Read more:

- BluePaper: China's Emerging Frontiers: China's Next Industrial Revolution
- Yushu Technology: Building a Full-Stack Intelligent Robotics Platform
- China Industrials: CIIF Trip Takeaways: AI Demand Intact
- China Industrials: CIIF Trip Takeaways: Intelligent/ Humanoid Robots

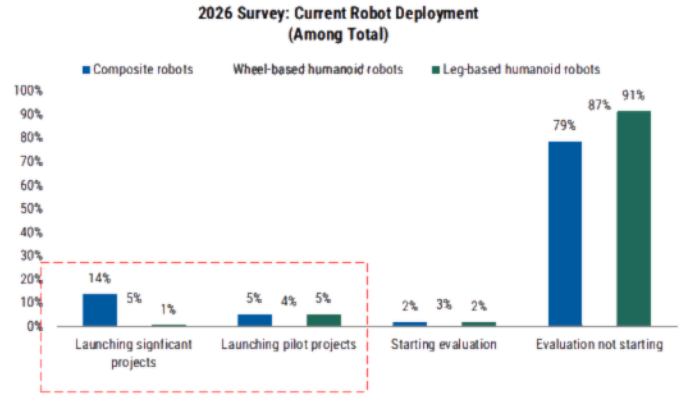
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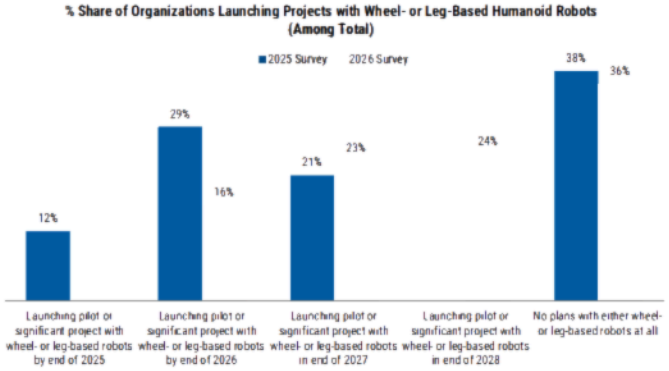
Six Key Charts

Exhibit 1: Current deployment is low, despite modest increase from 2025, led by composite robots.



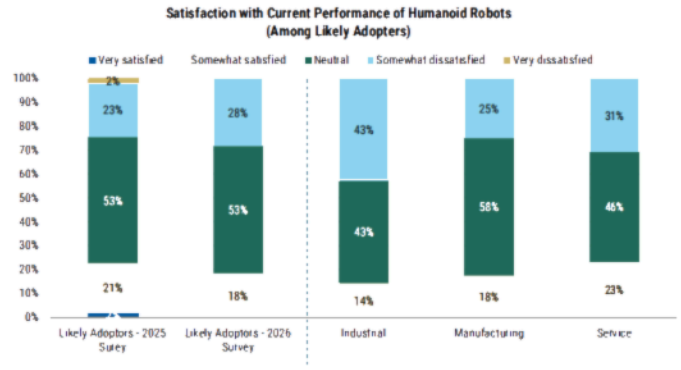
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 2: The likely adopters over three years remain high at 64% vs. 62% in 2025 survey, but the deployment timeline has moved right, and 2nd year adoption intention has lowered.



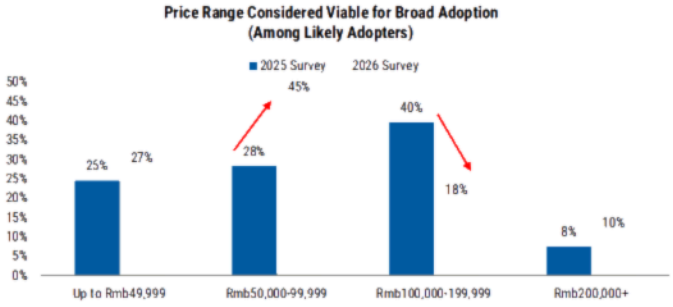
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 3: Satisfaction rate on humanoid robot dropped to 18%, versus 23% in 2025; 28% dissatisfied, indicating mass n still in early stages.



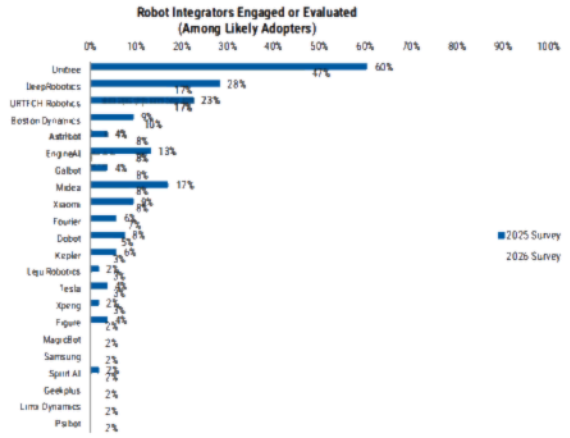
Source: AlphaWise, Morgan Stanley Research. Likely adopters n=80

Exhibit 4: Upfront cost is now the top adoption challenge, corporates now expect a lower price range viable for broad adoption. 72% see sub-Rmb100k as viable, vs. 53% last year.



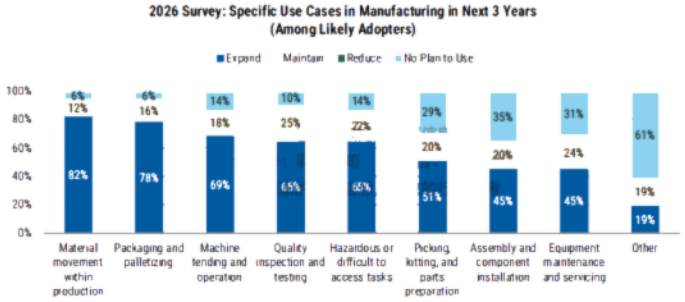
Source: AlphaWise, Morgan Stanley Research. Likely adopters n=80

Exhibit 5: Robot selection preference is for reference only, given small number of respondents vs. very broad brands. In the survey, Unitree remains the leader in engagement, with a narrower gap.



Source AlphaWise, Morgan Stanley Research. Likely adopters n=60

Exhibit 6: The use cases in manufacturing are mainly in material handling, packaging, and machine tending, largely in line with our observation.



Source AlphaWise, Morgan Stanley Research. Likely adopters n=60

Key Insights

Our proprietary AlphaWise survey of 94 executives across manufacturing, industrial and services sectors in China provides insights into corporate adoption of humanoid robots, integrators selections, and preferences. Below are the key takeaways.

- **Interest in humanoid robots remains high, but n is likely to take longer than expected a year ago.** 60 of 94 respondents (64%) are likely adopters of wheel- or leg-based humanoid robots over the next three years, slightly up from 62% in 2025. However, expectations for deployment by end-2027 have fallen materially across all three robot categories: composite robots (50% vs. 64% previously), wheel-based humanoids (36% vs. 58%) and leg-based humanoids (22% vs. 41%), pointing to roughly a one-year delay in the adoption curve.
- **Initial deployments will likely remain small, with meaningful fleet expansion taking longer.** By end-2028, 75% of respondents expect composite-robot deployment, but 46% expect only 1-10 units, vs. 16% at 11-50 units and 13% above 50 units. Wheel- and leg-based humanoids show an even stronger skew toward 1-10-unit fleets, suggesting broad experimentation before scaled rollouts. Early installations will be used to test robot reliability, scenario adaptability, and the interaction with existing production systems.

- **ROI and cost are becoming more important adoption hurdles, with the mainstream viable price range shifting towards Rmb50k–100k.** While respondents continue to expect higher robotic investments, the share anticipating significant increases has fallen to 22% from 30%, suggesting a more selective capital allocation. High upfront costs are now the most frequently cited adoption challenge (62%), while total cost (82%) and ROI (80%, up 16ppt from 2025) have become almost as important as reliability/safety (85%) and functionality (83%) in purchasing decisions. The viable price point has shifted lower; 72% consider prices below Rmb100k financially viable (vs. 53% in 2025) and 82% set the longest acceptable payback at under three years; 65% require the same or a shorter payback than for other automation investments.
- **Manufacturing and logistics remain the most promising initial applications, with demand centered on material handling, repetitive operations and hazardous environments.** Manufacturing (90%), logistics/warehousing (85%) and R&D (79%) are the top equal-weighted deployment areas. Open-ended responses provide more concrete examples, including production-line material replenishment, warehouse transportation, loading/unloading, packaging, palletizing, machine tending, assembly and quality inspection. Respondents also highlighted the replacement of workers in hazardous or physically demanding environments, including oil and gas operations, high-temperature processes, and inspections in dangerous areas.
- **Customer requirements are shifting towards multi-functional capabilities.** 70% expect humanoids to perform limited multi-functional tasks, vs. 50% citing specific tasks, indicating demand for flexible robots across production, material handling, inspection, and service workflows. Only 18% are satisfied with current humanoid performance, compared with 23% last year. Enterprises want robots capable of

learning new production processes, adapting to customized products and integrating with existing automation systems.

- **Integrators competition is tightening.** Unitree remains the most-mentioned company (32%) from which corporates plan to buy and deploy humanoid robots over next three years. Reliability/safety, functionality, total cost and ROI are the four leading purchase criteria; DeepRobotics receives the strongest ratings across the eight assessed criteria among the top three companies, albeit on a small rating base (n=9). In our view, brand preferences remain preliminary, given limited actual adoption, relatively small integrator-specific rating bases, and the potential influence of brand awareness or other product offerings (such as quadruped). Qualitative responses indicate customers are primarily concerned with application suitability, reliability, pricing, integration, and customization, rather than any particular brand or robotic form factor.

Our view:

- **We remain positive on long-term intelligent-robot demand.** The survey indicates continued high adoption willingness. While there is a delay in deployment timeline, corporates are increasingly focused on validation before deployment, adopting a more pragmatic approach to n. The next stage of industry development will be characterized by a growing number of pilot projects, rather than an immediate acceleration in robot unit shipments. Repeat orders, deployments across multiple production sites, and fleet sizes beyond 10 units should be more meaningful indicators of n progress than initial customer announcements. China's strong adoption willingness, coupled with a large manufacturing base (manufacturing is the most anticipated deployment area, 90% of respondents, equal-weighted by sector), could strengthen China's leadership in this frontier industry, supported by early deployment and accelerated data feedback loop.

- **Near-term shipment volumes to remain modest, despite strong growth from a low base.** We estimate China humanoid shipments of 50k units in 2026, 100k in 2027, and 446k by 2030, driven by integrators' efforts to scale deployments and close the real-world data feedback loop. Potential use cases are broadening across material handling, logistics sorting, unmanned retail, and commercial services. However, n will take time to materialize, with product reliability and deployment economics yet to be proven. We expect some pilot projects for specific tasks to gradually convert into broader deployments starting in 2027, although the pace of scaling remains uncertain.
- **In our view, structured and measurable industrial applications are likely to lead, with broader opportunities emerging gradually as robot intelligence, reliability, and affordability improve.** The early value proposition lies in solving specific operational pain points, such as applications requiring mobility, flexible interaction with existing equipment, or deployment in difficult environments. These may offer greater incremental value than tasks already efficiently performed by fixed industrial robots. However, respondents mentioned additional opportunities in customer service, retail, automotive sales, commercial cleaning,

and knowledge-based services, indicating potential long-term application breadth.

- **We continue to expect composite and wheel-based robots to achieve meaningful industrial adoption earlier than bipedal humanoids**, particularly in structured factory and warehouse settings where mobility requirements can be met without complex walking mechanisms. We continue to see potential for leg-based robots in unstructured environments and high-value applications, but their higher technical requirements and current reliability constraints may delay broad deployment.
- **While this year's survey indicates a lower price expectation, we think the price acceptance will depend on productivity.** Some manufacturing customers are willing to pay substantially more for robots capable of delivering higher-value production tasks, implying that pricing will likely remain differentiated by application. Instead of standalone low upfront cost, we believe the humanoid must also demonstrate measurable productivity improvements, high equipment utilization, and manageable integration and maintenance costs.
- **Supply chain components could benefit ahead of scaled humanoid deployment.** While our survey indicates a delay in commercial deployment, our recent trip takeaways indicate component demand emerging faster, supported by more pilot projects as integrators rush to accumulate real-world data,.Suppliers could therefore benefit ahead of downstream integrators. Reducer suppliers (Leaderdrive and Laifual) are seeing strong demand and expanding capacity rapidly.

Stock Implications:

- **Unitree / Yushu (688836.SS, EW): Full-stack platform potential, but requires further execution proof.** While Unitree's lead in customer engagement has narrowed in our latest AlphaWise survey, we remain positive on its transition toward a full-stack intelligent robotics platform, supported by its leadership in locomotion, hardware integration, and cost control. Its expanding portfolio, alongside a growing ecosystem, positions it to address diverse applications. We appreciate its pragmatic, n-focused approach and strong cash flow, which support continued investment in intelligence. However, further progress in "brain" and repeatable commercial deployments is needed for more upside on stock performance.
- **Leaderdrive (688017.SS, OW): Strong humanoid orders with rapid capacity expansion.** We favor Leaderdrive for its leadership in harmonic reducers and growing humanoid exposure. Humanoid-related orders surged 4-5x to ~400k units in 9M26, vs. ~100k in 2025, approaching half of total reducer demand. Monthly capacity is targeted to rise from ~90k units currently to 120k by end-2026, with further expansion in 2027. Diversification into planetary reducers, screws and actuators offers additional opportunities, although rapid capacity expansion and pricing competition could pressure margins.
- **Hengli Hydraulic (601100.SS, OW): Solid core growth with humanoid upside.** We favor Hengli for its leadership in hydraulic components, given global construction strength, share gains, new vertical expansion, and overseas opportunities. While the US AD/CVD investigation remains an overhang, we estimate a manageable ~4% impact on 2027 net profit. Actuator and humanoid

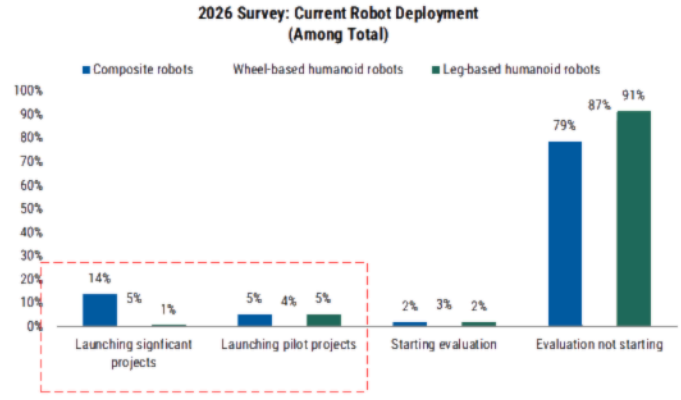
business breakthroughs should continue to drive revenue growth in 2027, which management expects to exceed 200% YoY. In humanoids, Hengli is a leading planetary roller screw supplier to a key US integrator, with potential expansion into motors.

- **Shuanghuan (002472.SZ, OW): Leading gear and reducer supplier with expanding humanoid opportunities.** We favor Shuanghuan for its proven gear manufacturing capabilities, leadership in RV reducers and an expanding portfolio covering planetary, cycloidal and harmonic reducers. Its broad technology coverage and established customer relationships position it well to capture evolving humanoid demand. It has been developing a new type of reducer with a key North American customer. Following FineMotion's IPO withdrawal, closer integration of group-wide R&D and manufacturing resources could further strengthen product development and cost competitiveness.

Adoption Plans - Still High Willingness, But Timing Shifted Right

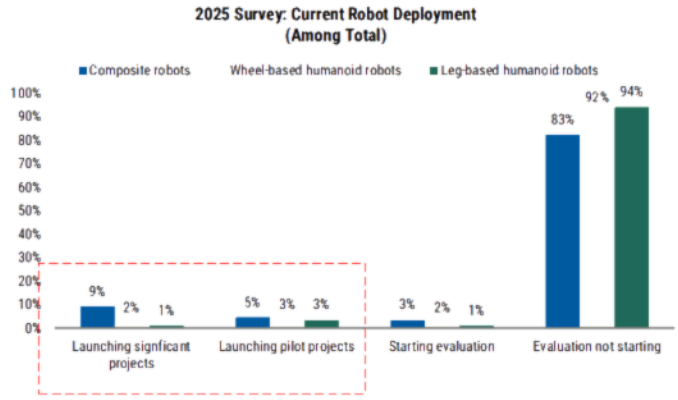
Current deployment has increased modestly from 2025. Based on our observation, China had a strong push in robotics industry development over the past year, including comprehensive government policies, extensive financing, and industry partnership. With such endeavors, current pilot and significant-project incidence is modestly higher, at 19% of organizations for composite robots, 10% for wheel-based humanoids and 6% for leg-based humanoids, compared with 14%, 6%, and 5%, respectively, in the 2025 survey. The verification and adoption process is taking time to fit into existing workflows, but the direction is positive and indicating an initial adoption.

Exhibit 7: Current deployment rises modestly, lead by composite robots...



Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 8: ...compared with 2025 results.



Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 9:

China's national and local policies

National Policies	Release Date	Target
MIIT Guiding Opinions On The Innovative Development Of Humanoid Robots	Jan-23	• By 2025, products reach internationally advanced levels and achieve mass production; cultivate **2–3 ecosystem companies** with global influence
Standards System For Humanoid Robots And Embodied Intelligence	Feb-26	• Covers six pillars: basic commonality, brain/intelligent computing, limbs and components, robots and systems, applications, and safety and ethics
"15th Five-year Plan"	Mar-26	• Lists **robotics as a strategic emerging industry** for the first time
2026 Humanoid Robots And Embodied Intelligence Real-world Training Special Initiative	Jun-26	• By end-2026, humanoid robots complete application validation and routine deployment across a set of representative scenarios • Forming **100+ high-value applications**, targeting **10k-level deployment capacity** • Identifying real operational sites (**≥20 per province, ≥10 per central SOE**)
Local Government Policies	**Release Date**	**2027 Target**
Zhejiang Province Implementation Plan For Innovative Development Of The Humanoid Robot Industry (2024–2027)	Sep-24	• Provincial annual robot output reaches **20k units** • Reaching core-industry scale of **Rmb20bn**; related-industry scale of **Rmb50bn**
Shenzhen Embodied Intelligence Robot Technology Innovation And Industrial Development Action Plan (2025–2027)	Mar-25	• Cultivating **10+ new companies valued over Rmb10bn**, 20+ companies with revenue over Rmb1bn • Achieving **50+ billion-yuan-level application deployments**; related-industry scale of **>Rmb100bn**
Shanghai Embodied Intelligence Industry Development Implementation Plan	Jul-25	• Reaching industry scale of **Rmb50bn** • Providing 30% subsidy for model R&D, 20% for application projects, 50% for ecosystem projects
Beijing Economic-technological Development Zone: Measures To Promote Innovative Development Of Embodied Intelligence Robots	Aug-25	• Forming **10k-unit-scale mass-production capability** for embodied intelligence robots • Building **tens-of-millions-scale** real-world embodied dataset
Hangzhou Embodied Intelligence Robot "Chain Strengthening" Action Plan (2026–2027)	Jan-26	• Integrator enterprises' total output **exceeds Rmb20bn** • Value-chain total output **exceeds Rmb50bn**

Source: Government announcements, Morgan Stanley Research

Overall adoption willingness remains high.... Among the 94 organizations surveyed, 60 (64%) are identified as 'likely adopters' (those planning pilot or significant projects with wheel- or leg-based humanoid robots over the next three years), slightly up from 62% (53 of 86 organizations) in the 2025 survey.

- *Note: we acknowledge the shift in this year's respondent composition which could have contributed to the slight increase in adoption willingness. Manufacturing companies represented 65% of this year's respondents, versus 51% in 2025, while the industrial share declined to 15% from 26%. Manufacturing companies are likely to see early adoption (see Exhibit 22).*

...but timing has shifted right. In the 2026 survey, 16% of respondents plan reach this stage by end-2026, 23% by end-2027, and 24% by end-2028. In the 2025 survey, 29% of respondent planned to launch projects by end-2026 and 21% by end-2027.

Roughly a one-year delay in deployment expectations across all three robot categories. For composite robots, 27% expect pilot or significant deployments by end-2026, vs. 47% in the 2025 survey; the share rises to 50% by end-2027, still below the 64% previously expected, and to 75% by end-2028. A similar pattern holds for wheel-based humanoids: 12% by end-2026 vs. 37% in the 2025 survey, 36% by end-2027 vs. 58%, and 59% by end-2028. For leg-based humanoids, the corresponding shares are 9% by end-2026 vs. 17% previously, 22% by end-2027 vs. 41%, and 44% by end-2028.

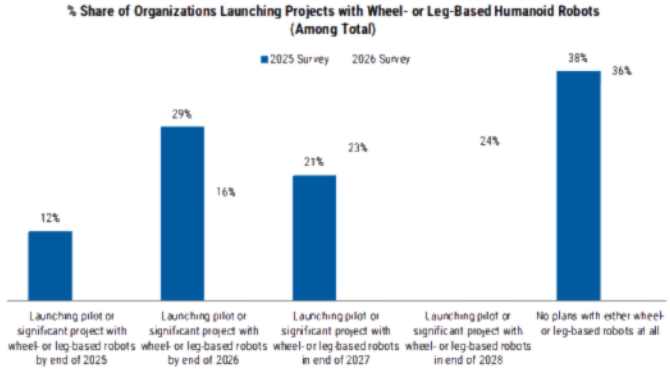
Unit installations expectations for end-2026 and end-2027 have generally been revised down vs. the 2025 survey. Even by end-2028, the largest cohort expects only 1-

10 units (46% for composite, 40% for wheel-based and 33% for leg-based robots), indicating breadth before scale.

- By end-2026, 18% expect to install 1-10 composite robots, 3% expect 11-50 units and 6% expect more than 50 units, vs. 20%, 10% and 5%, respectively, in the 2025 survey. By end-2027, 38% expect 1-10 units, 4% expect 11-50 and 7% expect more than 50, vs. 28%, 8% and 13% previously. By end-2028, the shares rise to 46%, 16% and 13%, respectively.
- For wheel-based humanoid robots, by end-2026 10% expect 1-10 units, 3% expect 11-50 and 1% expect more than 50, vs. 26%, 9% and 2%, respectively, in the 2025 survey. By end-2027, the shares are 29%, 5% and 2%, vs. 35%, 12% and 12% previously. By end-2028, 40% expect 1-10 units, 14% expect 11-50 and 4% expect more than 50.
- For leg-based humanoid robots, by end-2026 7% expect 1-10 units, 2% expect 11-50 and none expect more than 50, vs.15%, 1% and 1%, respectively, in the 2025 survey. By end-2027, 17% expect 1-10 units, 2% expect 11-50 and 3% expect more than 50, vs. 26%, 8% and 7% previously. By end-2028, the shares rise to 33%, 6% and 4%, respectively.

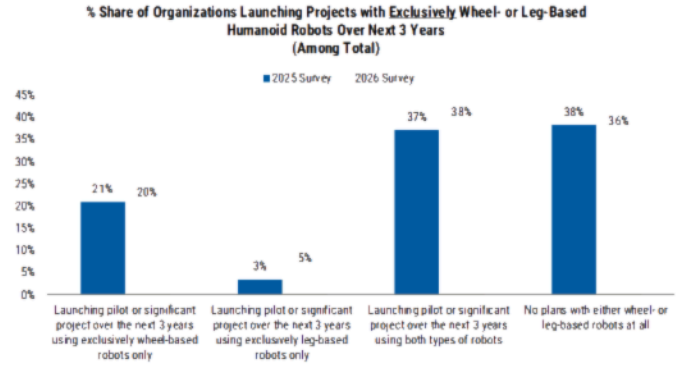
Intent to deploy wheel-based humanoid robots remains stronger than for leg-based robots, but the gap in exclusive preference has narrowed slightly. Over the next three years, 20% plan wheel-only projects, 5% leg-only projects and 38% projects using both types vs. 21%, 3% and 37%, respectively, in 2025.

Exhibit 10: 64% are likely adopters over three years



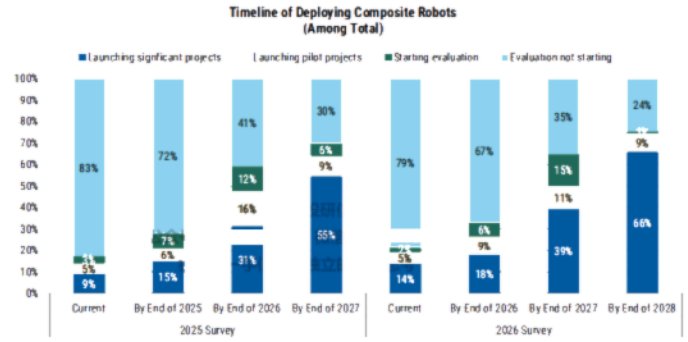
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 11: Dual-form-factor plans exceed single-type plans



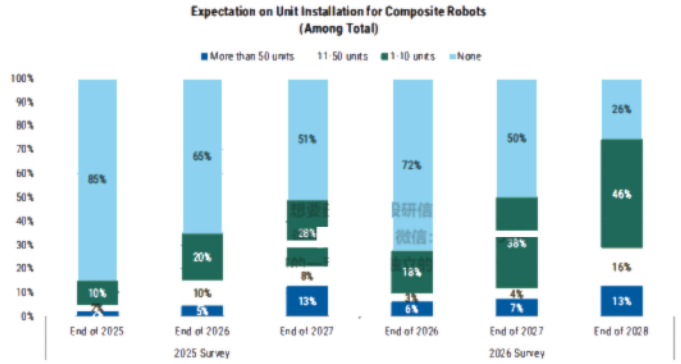
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 12: Composite deployment reaches 75% by 2028



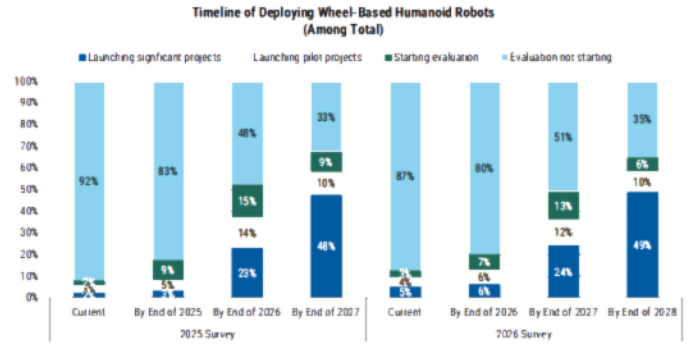
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 13: Composite fleets remain mostly 1-10 units



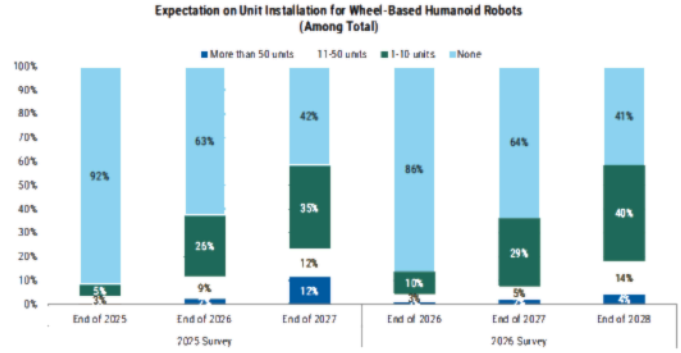
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 14: Wheel-based adoption reaches 59% by 2028



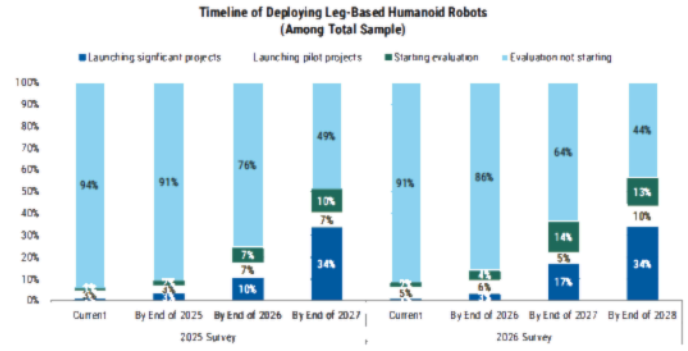
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 15: Wheel-based fleets remain small through 2028



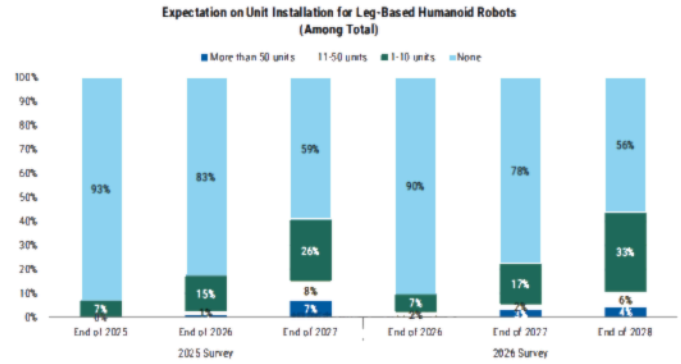
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 16: Leg-based adoption reaches 44% by 2028



Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 17: Leg-based fleets remain mostly 1-10 units



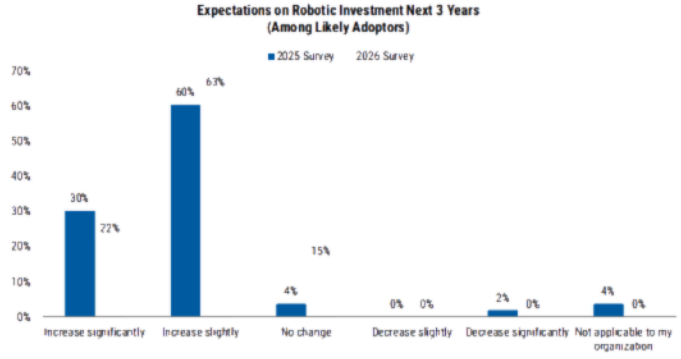
Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Product Readiness: ROI Moves to the Front of the Purchase Decision

While robotic investment sentiment remains strong... 85% of likely adopters expect spending to increase over the next three years, down from 91% in the 2025 survey. 63% expect a slight increase, vs. 60% in 2025, while 22% expect a significant increase, down from 30%.

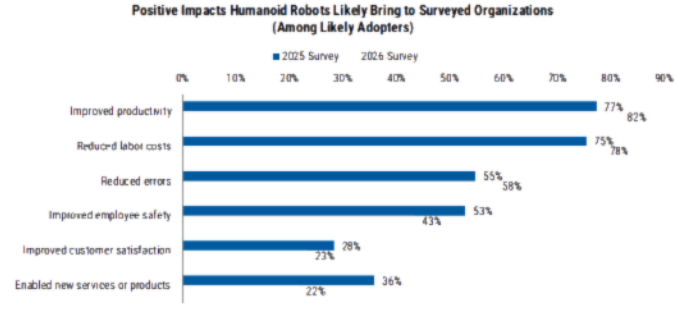
...Corporates are becoming more cost-conscious. The top expected benefits remain improved productivity (82%), lower labor costs (78%), and fewer errors (58%), all up vs. 2025. High upfront costs are now the most cited adoption challenge (62%), followed by limited robot capabilities (60%), integration with existing systems (55%), maintenance and operating expenses (52%), and technical limitations (47%). Cost and technical concerns have risen, although concern about limited capabilities has eased from 74% in 2025. At the same time, 'enabled new services or products' fell to 22% from 36%, pointing to a more economically focused adoption case.

Exhibit 18: Robotic investment sentiment remains strong



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

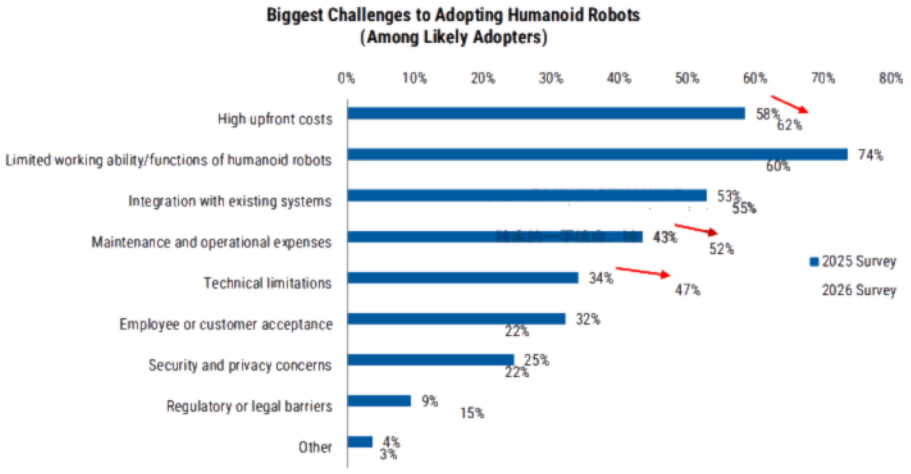
Exhibit 19: Productivity and labor savings lead benefits



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

Exhibit 20:

Upfront cost is now the top adoption challenge

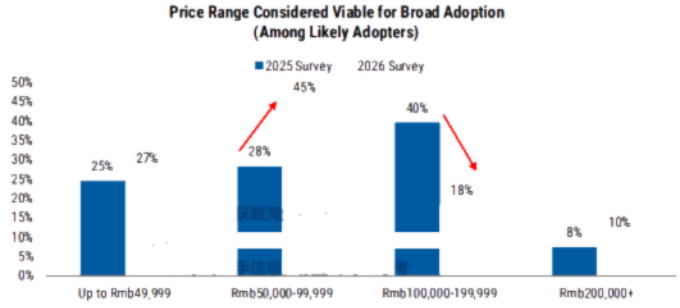


Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

The financially viable price range for broader adoption has shifted lower. 45% of respondents cite Rmb50,000-99,999 per unit, up from 28% in the 2025 survey, while the share citing Rmb100,000-199,999 falls to 18% from 40%. Willingness to pay is higher in manufacturing, where 25% cite Rmb100,000-199,999 and 15% cite above Rmb200,000.

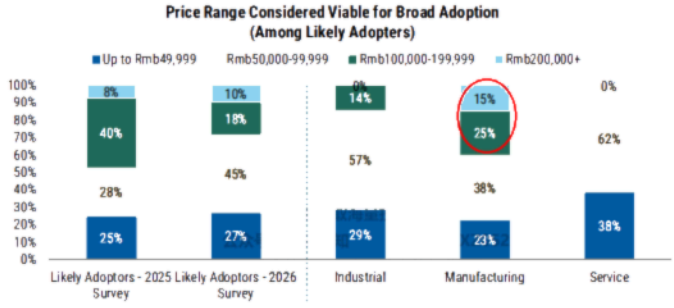
On payback, 82% set the longest acceptable payback at under three years, with 38% viewing 2-3 years as the longest acceptable period, which yields an average of about 26 months. Relative to other automation initiatives, 37% require about the same payback, 28% require a shorter period, 12% accept a longer period and 22% say it depends on the use case. Thus, 65% require the same or a shorter payback than for other automation investments.

Exhibit 21: Viable pricing shifts to Rmb50k-100k



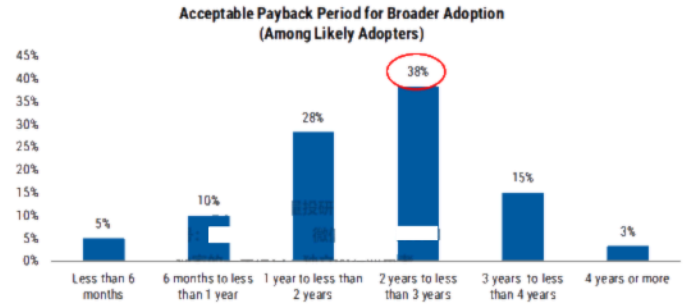
Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

Exhibit 22: Manufacturing shows highest willingness to pay



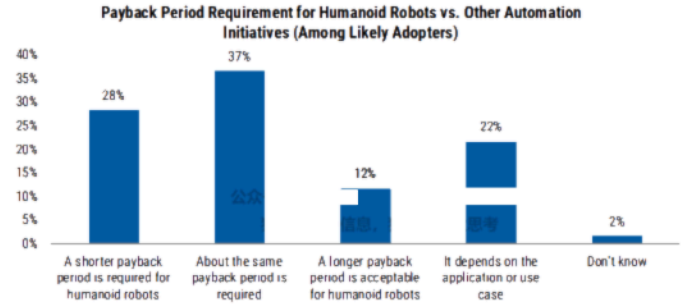
Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

Exhibit 23: 82% require payback under three years



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=80

Exhibit 24: 65% require same or shorter payback vs. other automation

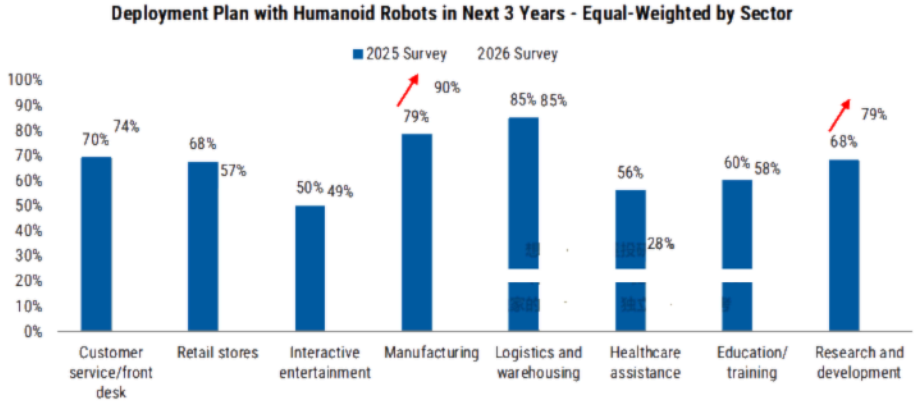


Source: AlphaWise, Morgan Stanley Research. Likely adopters n=80

Manufacturing and logistics remain the most credible initial demand pools. Manufacturing is now the most cited use case at 90%, up from 79% in the 2025 survey and ahead of logistics/warehousing at 85%, which is broadly unchanged. Research and development rises to 79% from 68%, entering the top three deployment areas. Respondents highlight material transfer, loading and unloading, packaging, palletizing, machine tending, and inspection. This aligns with the specific use cases emphasized in our 2025 follow-up; that is repetitive workflows with measurable throughput, safety or labor benefits, often in structured settings.

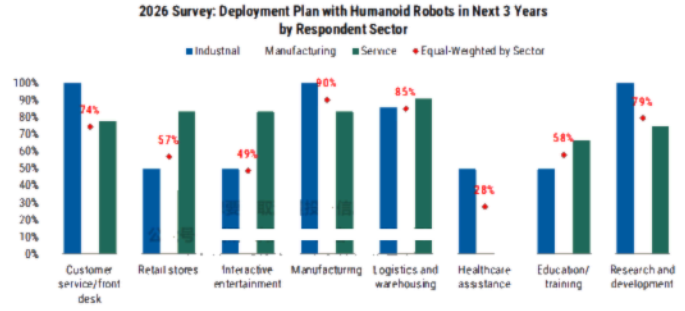
Corporates are demanding broader functionality. 70% expect humanoid robots to perform limited multi-functional tasks, up from 49% in the 2025 survey, overtaking specific-task use cases at 50%, down from 72%. General-purpose tasks also rise to 38% from 32%. The shift indicates greater demand for task flexibility even as buyers remain selective on economics and performance.

Exhibit 25: Manufacturing leads; R&D gains



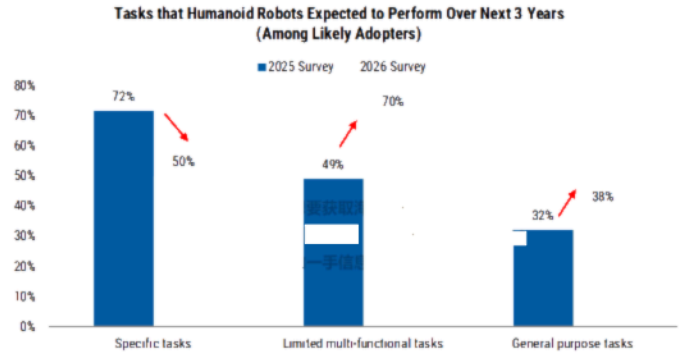
Source: AlphaWise, Morgan Stanley Research. Likely adopters n=80

Exhibit 26: Manufacturing and logistics lead across sectors



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=50 across industrial (n=7), manufacturing (n=30) & service (n=13)

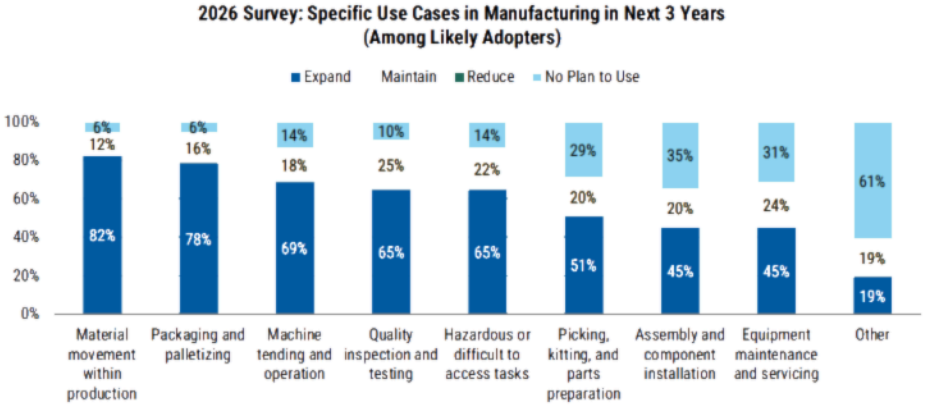
Exhibit 27: Multi-functional tasks overtake specific tasks



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=50

Exhibit 28:

Near-term use cases remain in structured environment



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=50

Our analysis of open-ended responses sheds light on tasks that humanoid robots are expected to perform:

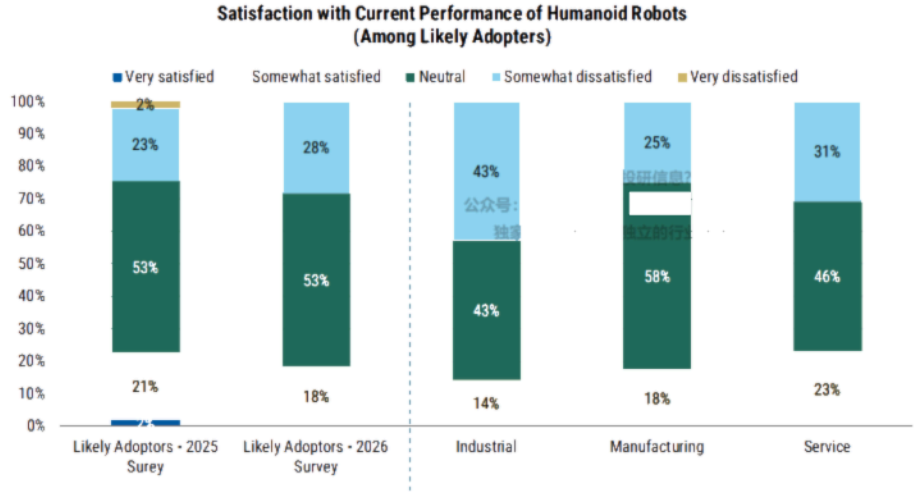
1. **Material handling, logistics and warehouse automation remain the primary near-term use case.** Respondents cited movement-intensive workflows including warehouse transportation, production-line replenishment, loading/unloading, sorting, picking, packaging, palletizing, and inter-process logistics. Respondents also mentioned cold-chain logistic inspection and non-fixed material handling in complex environments. Companies viewed humanoid robots as particularly valuable where traditional automation is difficult to deploy or would require extensive redesign.
2. **Replacement of high-risk, hazardous, and labor-intensive work.** A major theme was using humanoid robots to substitute for workers in dangerous, physically demanding or undesirable environments such as fields operations in oil & gas or high-temperature heat-treatment operations. Respondents also mentioned use of humanoid robots for heavy lifting and handling and even equipment inspections in dangerous areas. They

emphasized safety improvement over technological novelty.

3. **Manufacturing, assembly, and quality inspection are emerging as core production applications.** Respondents envisioned humanoid robots participating directly in manufacturing execution rather than serving only as logistics assistants. Examples cited include assembly and sub-assembly operations, machine tending and loading/unloading, quality inspection and testing, production process execution, equipment manufacturing assembly, secondary wiring/electrical assembly and vision-based part identification and inspection.
4. **Equipment inspection, monitoring and autonomous operations remain key adoption areas.** Inspection-related use cases were mentioned across industries including utilities, manufacturing, energy, and process industries, such as equipment inspection, plant patrol inspections, vibration analysis, safety and compliance checks, energy facility inspections, low-temperature storage inspection, and unmanned external operations.
5. **Expansion beyond industrial settings into retail, services, and customer interaction.** Compared with the 2025 survey, respondents identified more customer-facing and service-oriented use cases, including retail customer service, store reception and guidance, product introduction and Q&A, consumer interaction through enterprise AI agents, shopping assistance, commercial cleaning in malls and retail stores and knowledge-service functions.

No improvement in current performance satisfaction. Only 18% are satisfied with the current performance of humanoid robots, down from 23% in the 2025 survey, while 28% are dissatisfied, up from 25%. A further 53% are neutral, suggesting adoption plans are advancing despite no improvement in current performance satisfaction.

Exhibit 29: Performance satisfaction falls to 18%

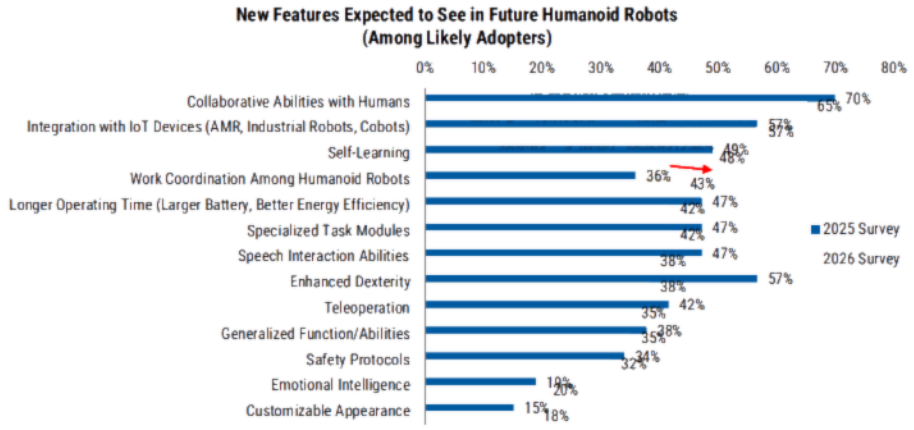


Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

Desired future features continue to be led by human-robot collaboration (65%), IoT

integration (57%), and self-learning (48%). Compared with the 2025 survey, interest in coordination among humanoid robots increases to 43% from 36%, while enhanced dexterity declines to 38% from 57%.

Exhibit 30: Collaboration, IoT and self-learning lead

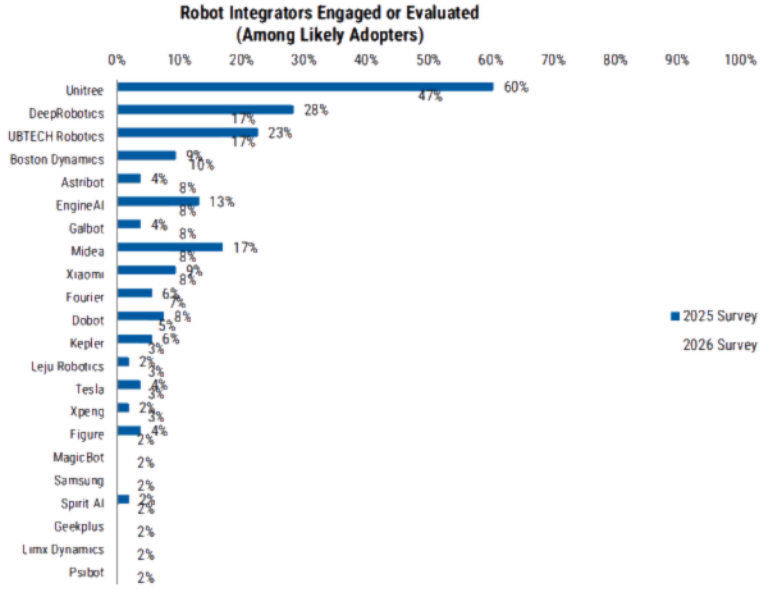


Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

Robot Selection

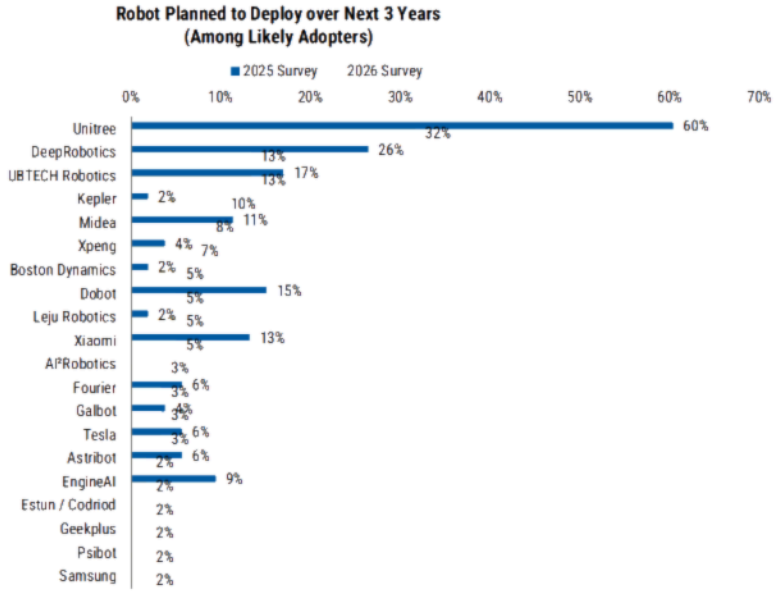
As new entrants broaden the market, integrator engagement has become more diversified. 47% of likely adopters have engaged with or evaluated Unitree (down 14ppts). DeepRobotics and UBTECH Robotics are tied at 17%, down 12ppts and 6ppts, respectively. Looking ahead over the next three years, Unitree remains the most frequently planned brand at 32%, though down from 60% in the 2025 survey. DeepRobotics and UBTECH Robotics are each at 13%, vs. 26% and 17% respectively in 2025.

Exhibit 31: Unitree leads engagement despite its lead narrowing.



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

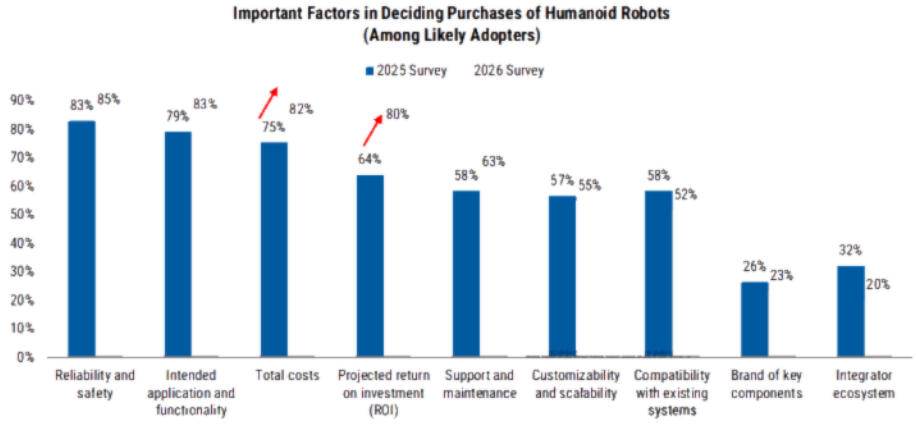
Exhibit 32: Unitree remains in the lead but the gap has narrowed.



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

Reliability and safety (85%), intended application and functionality (83%), total costs (82%), and ROI (80%) are the leading factors influencing purchase decisions. ROI shows the largest increase vs. the 2025 survey, up 16ppts, followed by total costs, up about 6ppts. Economics have therefore moved closer to reliability and functionality as core vendor-selection criteria.

Exhibit 33: Reliability, functionality, cost and ROI lead



Source: AlphaWise, Morgan Stanley Research. Likely adopters n=60

Among the four integrators highlighted in the 2026 performance comparison, DeepRobotics receives the highest 'exceptional/good' ratings across all eight assessed criteria, including 89% for intended application/functionality and 78% for reliability/safety. UBTECH Robotics and Unitree score lower across the same dimensions. The result should be interpreted with caution given the small vendor-specific rating bases (DeepRobotics n=9, UBTECH Robotics n=9 and Unitree n=25).

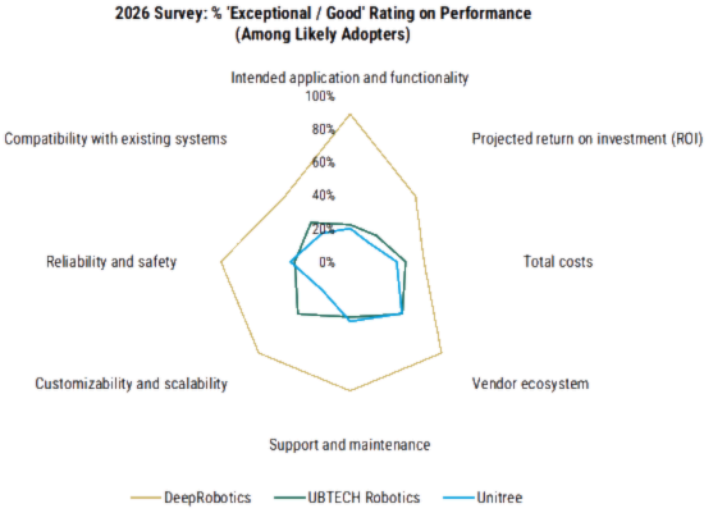
- *Note: We understand that integrators are gradually rolling out humanoid offerings*

in different applications, respondents may have interpreted certain players through experience with other robot categories, particularly quadrupeds, and that one respondent can evaluate several manufacturers.

- *We therefore see DeepRobotics' high score primarily as a prompt for further verification, not proof of a superior commercially available humanoid platform.*

We expect integrator selection to become increasingly use-case specific. In the near term, integrators able to deliver reliable specific tasks, with factory systems, maintainability and quantifiable productivity gains may have an advantage over those optimized primarily for demos or targeted for general purposes.

Exhibit 34: DeepRobotics leads all eight rated criteria



Source: AlphaWise Morgan Stanley Research. Caution on small bases. The chart includes integrators with more than 5 evaluations. DeepRobotics (n=9), UBTech (n=9), Unitree (n=25).

Respondent Feedback

We asked respondents in our survey to share their thoughts regarding the adoption of humanoid robots in their sector. Several key themes emerged based on the analysis of the open ended responses:

- **Manufacturing as the primary adoption sector.** Respondents said humanoid robots will first achieve meaningful adoption in manufacturing and industrial environments. Several comments explicitly position humanoid robots as a future "main workforce" for factory operations, especially where labor shortages, repetitive work, and operational efficiency are major challenges. Wheel-based robots are generally viewed as suitable for factory environments because most plants have flat, structured layouts.
- **Safety, stability, and reliability requirements.** Respondents repeatedly emphasized that industrial users prioritize reliability, safety, and consistent performance over advanced features. There is also a need for better precision. Respondents indicated safety standards and maintenance systems should be established before large-scale deployment.
- **Labor substitution in high-risk and repetitive tasks.** A major motivation for adoption is replacing labor in dangerous, physically demanding, or repetitive work scenarios. Unmanned operations are viewed as an important future direction.
- **Scenario-specific or industry-specific design matters more than general-purpose humanoids.** Respondents stressed that humanoid robots must be adapted to specific industry environments and workflows rather than marketed as generic solutions. The views are that different industries require customized robots and application development and general-purpose solutions are unlikely to satisfy real production needs.
- **Demand is shifting toward more intelligent, customizable, AI-driven robots.** Several respondents highlighted expectations for humanoid robots to move beyond traditional automation and become more intelligent/adaptive with self-learning capabilities, and integrated with enterprise systems/AI agents.
- **ROI, cost-effectiveness, and n readiness.** Several respondents emphasized the need for humanoid robots to demonstrate a compelling business case before large-scale adoption. Concerns around cost, investment returns, and n appeared repeatedly throughout the responses.

Specific feedback presented below:

- In oil and gas production areas, better to deploy and apply robots in hazardous production operations, while meeting the requirements of the petroleum industry and effectively interfacing with other production systems.
- Humanoid robots are very widely used in the grain, oil and food, and

cellulose fiber manufacturing industries, especially in vehicle loading and unloading, material lifting, packaging workshops, and inspections in hazardous areas, as well as consultation services at service desks, retail stores, or supermarkets. It is recommended to establish standardized and regulated industry standards to facilitate their promotion and use throughout the industry.

- As a representative enterprise in the industry, we need to deeply collaborate with robot manufacturers to form a coordinated closed loop of 'technology R&D - scenario validation - data feedback - iterative upgrades'.
- Modular construction means building houses in a factory. This industry is relatively cutting-edge. The company is currently forming a dedicated team, based on the existing intelligent manufacturing department team, to study the application of humanoid robots and embodied intelligence technologies in scenarios within our industry.
- Wheeled humanoid robots are suitable for inspections and reception in flat environments, with controllable costs; legged robots can handle steps and obstacles and are suitable for complex operating conditions. Current issues include high costs, insufficient reliability in complex environments, and expensive customization. It is recommended to conduct phased pilots, prioritize the implementation of wheeled models, improve safety standards and operations and maintenance systems, and focus on essential-demand scenarios for rational promotion.
- Scenario-specific designs must be based on the work site, operating environment, and operating movements; general-purpose solutions have difficulty meeting production needs.
- The main issues are still scenario adaptation and reasonable pricing. For example, warehouse handling was originally designed to be extremely complex.
- 1. Support batch document import and structured parsing; 2. Intent recognition accuracy ≥95%; 3. Support multi-terminal access; 4. Support permission management and log auditing; 5. Support automatic knowledge updates and annotation.
- Hope that more R&D scenarios can be jointly developed through collaboration.
- Able to rapidly learn and train independently, complete the learning of production processes for new customized products, and achieve flexible assembly without fixed positions.
- We are in the automobile sales and service industry and hope to introduce this application at the front-desk reception. The main scenarios are: guiding customers to the display area for their desired vehicle model, introducing the features and specifications of the vehicle model to customers, and interacting with customers to answer questions.
- Greater customizability, with the ability to connect to an enterprise's own customized agent.
- Humanoid robots should focus on functions that fixed-position intelligent

robotic arms do not have, especially the ability to move freely according to the scenario and perform certain work in unsafe areas.

- The equipment should remain controllable during the leasing process and be highly repairable after damage.
- The main purpose is to address scenarios that people cannot handle or that are risky for people. In addition, the robots must be safe, able to interact with equipment, and highly accurate.
- It is not about whether the form is wheeled or legged; it should be able to solve practical problems through appropriate training and learning, unlike traditional industrial robots, which mainly solve a single problem and do not have learning capabilities.
- Apparel manufacturing is a highly specialized vertical category. Conventional robots need to be deeply adapted, and scenario applications need to be redeveloped.

AlphaWise Survey Overview

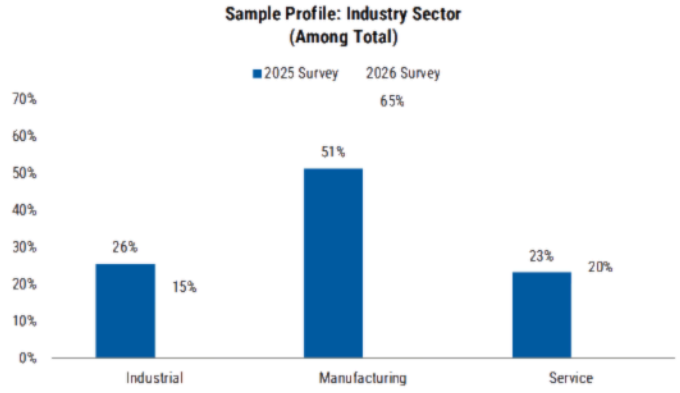
AlphaWise Survey Methodology

Online survey conducted in September 2026 among 94 executives in China who are directly involved in the investment in robotics for their organizations, of whom 60 have future plans to deploy wheel-based or leg-based humanoid robots. All respondents come from organizations with annual revenue of Rmb 1 billion or above. Extrapolation of total findings to the broader market should be made with caution.

Wherever applicable, results are trended with the first survey conducted in October 2025 among 86 executives including 53 with plans deploying humanoid robots.

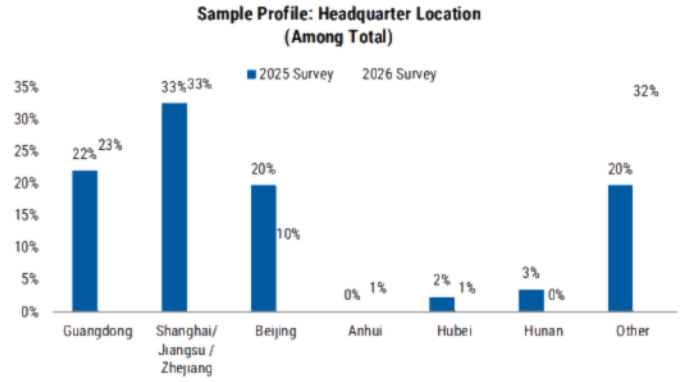
Survey Sample Profile

Exhibit 35: Industry



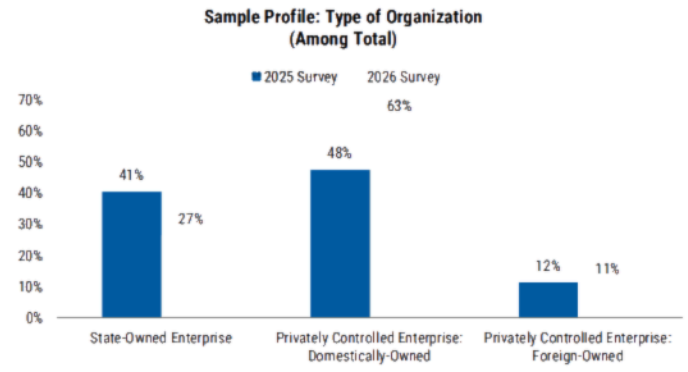
Source AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 36: Headquarter Location



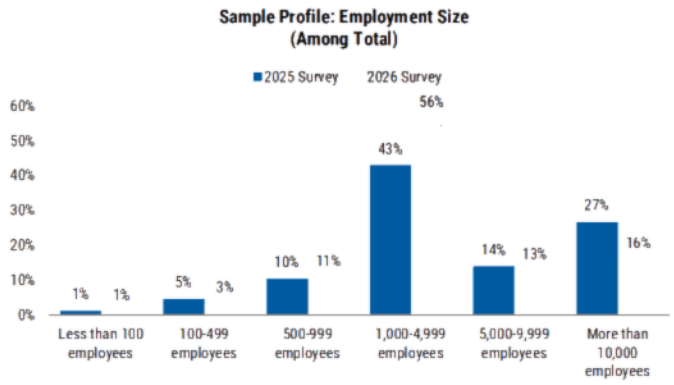
Source AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 37: Type of Organizations



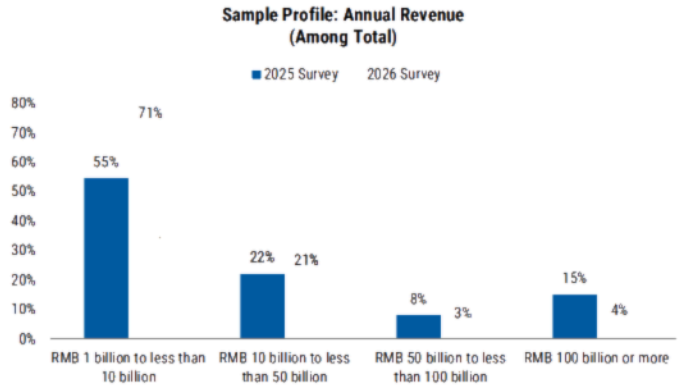
Source AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 38: Employment Size



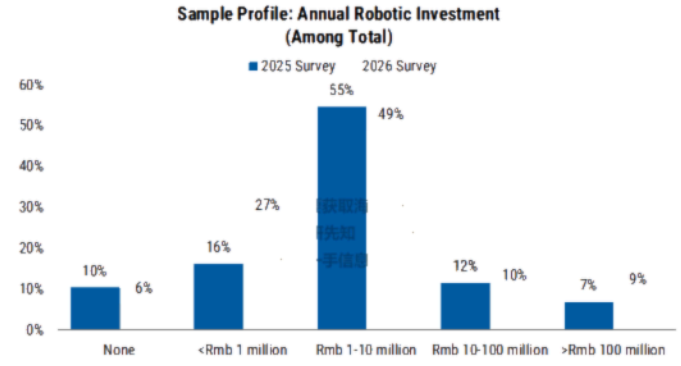
Source AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 39: Annual Revenue



Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Exhibit 40: Annual Robotic Investments



Source: AlphaWise, Morgan Stanley Research. Total respondents n=94

Valuation Methodology and Risks

Zhejiang Shuanghuan Driveline Co. Ltd. (002472.SZ)

Base case, sum of the parts.

- Core business: 25x 2026e P/E. We find this, the five-year average one-year forward P/E, appropriate considering the sustained growth across business lines.
- **Humanoid business:** 6x P/S on Rmb1.1bn sales when global humanoid sales reached 1mn units, when we expect global humanoid sales to exceed 1mn units. We view this as justified by a longer application timeline for new reducers but higher growth potential.

Risks to Upside

- Increasing penetration of dual/tri-motor and coaxial gearboxes
- Faster capacity expansion overseas, capturing more overseas OEMs' demand
- Faster-than-expected intelligent actuator growth driven by diversifying downstream
- Faster-than-expected progress of humanoid reducers

Risks to Downside

- Slower-than-expected share gains
- Weaker-than-expected overseas market demand
- Intensifying gear and actuator competition in China

Jiangsu Hengli Hydraulic Co.Ltd (601100.SS)

SOTP

Non-humanoid business: Derived from a target 2027 P/E of 25x. This is below the last upcycle's peak multiple of ~40-50x, reflecting: 1) less-robust domestic peak sales; 2) normalized adjusted net profit growth; and 3) its Pump & Valve business has passed the ultra-high growth stage.

Humanoid business: Derived from a DCF model with a WACC of 11.6% and a terminal growth rate of 4%.

Risks to Upside

- Stronger-than-expected excavator and pumps & valves demand.
- Notable penetration into foreign brands' supply chain.
- Faster-than-expected humanoid robots penetration and market share gain in the supply chain.

Risks to Downside

- Sharp decline in excavator and pumps & valves demand in China.
- Failure to expand its share in non-excavator parts.
- Slower-than-expected humanoid robot penetration.

Leader Harmonious Drive Systems (688017.SS)

Base case. We use DCF to value Leaderdrive, by discounting 2025-50e cash flow at a WACC

of 11% and terminal growth rate of 4%, to derive per share value of Rmb631.

Risks to Upside

- Faster growth in industrial robot demand
- Faster humanoid adoption
- Penetrating into more integrators' supply chain
- Margin expansion with high utilization and favorable product mix

Risks to Downside

- Slower humanoid volume growth
- Lower penetration of harmonic reducers in humanoids
- Market-share erosion and failure to enter leading US integrators' supply chain
- Intensified competition, greater pricing pressure

Yushu Technology Co., Ltd. (688836.SS)

We use a discounted cashflow (DCF) methodology to value the company, assuming 9.3% WACC and 5% terminal growth. Our PT implies 42x P/S in 2027.

Risks to Upside

- Launch a competitive general-purpose robot foundation model
- Repeatable application deployment
- Larger share of customer economics

Risks to Downside

- Hardware competition
- Lagging intelligence performance
- Geopolitical risk

