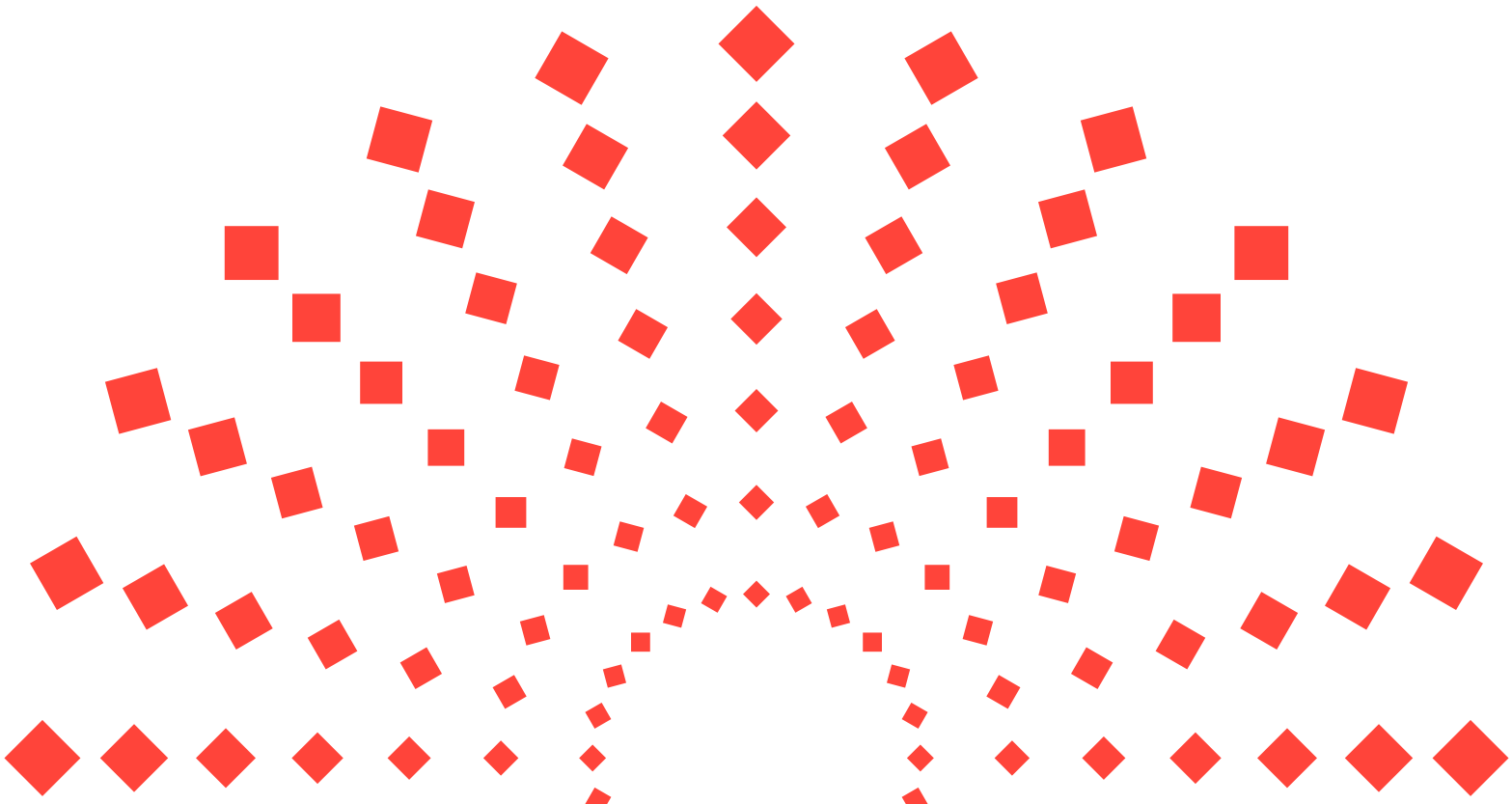
QNX

Report

The Age of the Robot

A Global Robotics Adoption Survey



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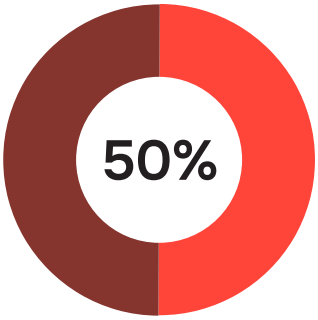
Foreword

Robotics usage today

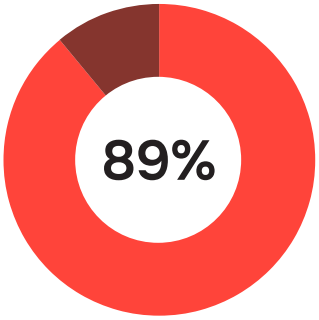
Most of us have been familiar with the idea – and to a lesser extent the reality – of robotics throughout our lives, from their appearances in science fiction books, TV shows, and films, to their integration within factories around the world from the 1970s onwards. Yet while other related technologies, such as machine learning and AI, have attracted more attention in recent years, robotics hardware and software has continued to advance at a remarkable rate, with countless examples of robotics delivering benefits to businesses in almost every industry sector during recent decades.

The value of the global robotics market will increase in value from $51bn USD in 2024 to $163.9bn by 2030, according to global technology intelligence firm ABI Research. As improvements in both robotics and AI continue, further market growth is inevitable. In a period of economic upheaval, the need for businesses to invest in technologies that really can improve productivity and efficiency has never been greater.

But there is also a need to develop an organisation's practical and cultural preparedness to use robotics. As part of an effort to help understand the extent to which different businesses are already using, or are considering using robotics for different tasks, QNX commissioned research based on a survey of technology decisionmakers in multiple industries and territories.



of respondents say their businesses are using robotics today



of businesses in China are using robotics today

Plans on implementing robotics

47%

of the businesses not yet using robotics plan to start doing so within the next two years.

71%

of all the businesses surveyed are either using robotics now or plan to introduce them within the next two years.

20%

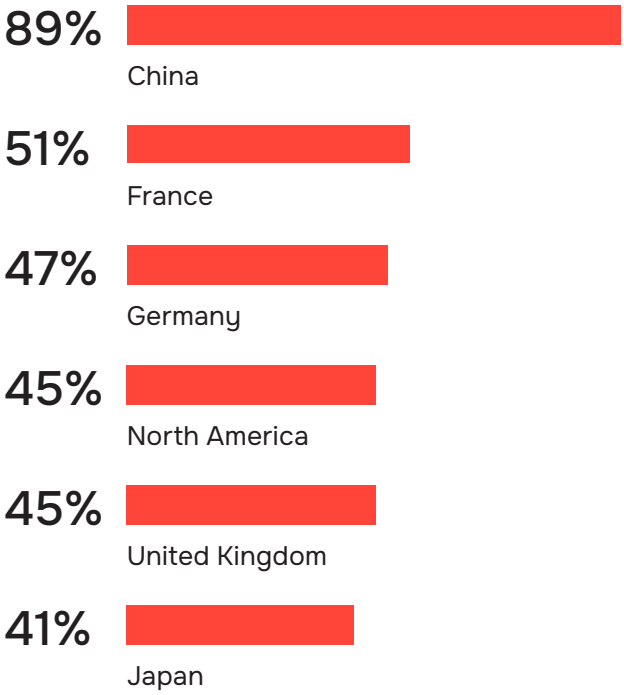
of the decisionmakers workforce is expected to be replaced by robotics during the next decade.

Key findings

Use of robotics varies by country

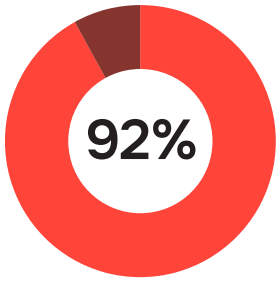
Our findings show that more than seven out of ten (71%) of the businesses surveyed across China, France, Germany, Japan, North America and the UK are either using robotics now, or plan to introduce them within the next two years. Half are already using robotics including almost nine out of ten (89%) of those in China. More than three-quarters (77%) of decisionmakers say they would trust these technologies to carry out essential functions within their businesses, including through automation, product, support and research and development roles.

Use of robotics by region:

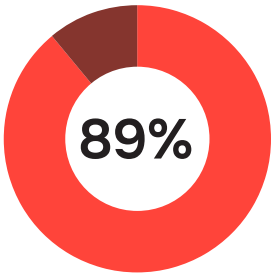


The most important factors influencing trust in robotics:

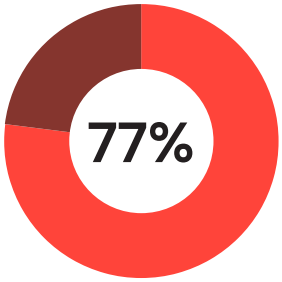
- Safety & Risk Mitigation
- Reliability & Performance
- Consistency in Outcomes



think it is important to involve employees in discussions about integrating robotics into the workplace



of those using robotics found their organisation's safety measures for preventing accidents effective



of decisionmakers would trust technologies to carry out essential functions

There are interesting variations between different territories and industries, but the underlying direction of travel is clear: we are entering the Age of the Robot. Yet further adoption and evolution of these technologies must be based on foundational software that will ensure they operate safely and reliably, and that they deliver the benefits they can offer human workers, including an evolution of their own roles within the business and a better work-life balance.

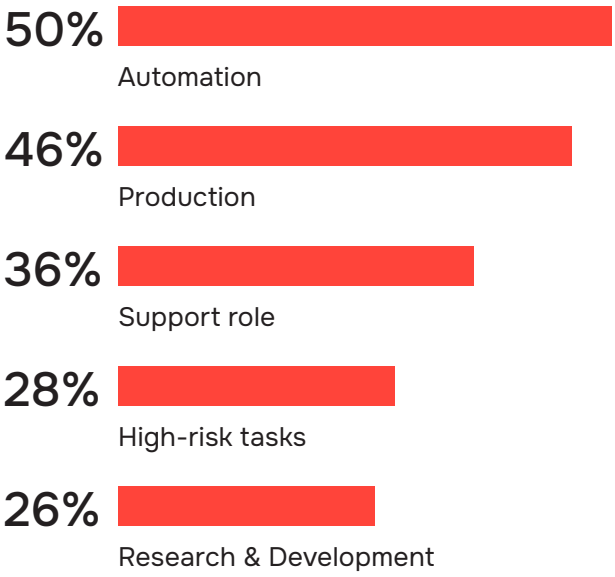
We hope the findings included in this report will help your business to harness the immense potential benefits these technologies can offer.

International Overview

Rise of the robots

Our research reveals the extent to which robotics and robotic systems are now used and trusted by businesses operating in a range of industry sectors within each of the territories surveyed.

The role robotics play in organisations already using robotics:



Use of robotics by sector:

73%
Energy & Utilities

71%
Industrial Automation

65%
Automotive

60%
Heavy Machinery

48%
Transport & Logistics

41%
Environment & Agriculture

40%
Healthcare

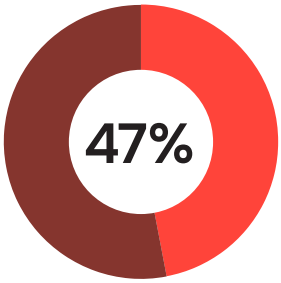
By industry, use of robotics is most common in Energy & Utilities (73%) and Industrial Automation (71%). The sector that uses robotics least is Healthcare (40%). Across all industries the most common use cases for robotics are in automation and production.

Plans to start using robotics

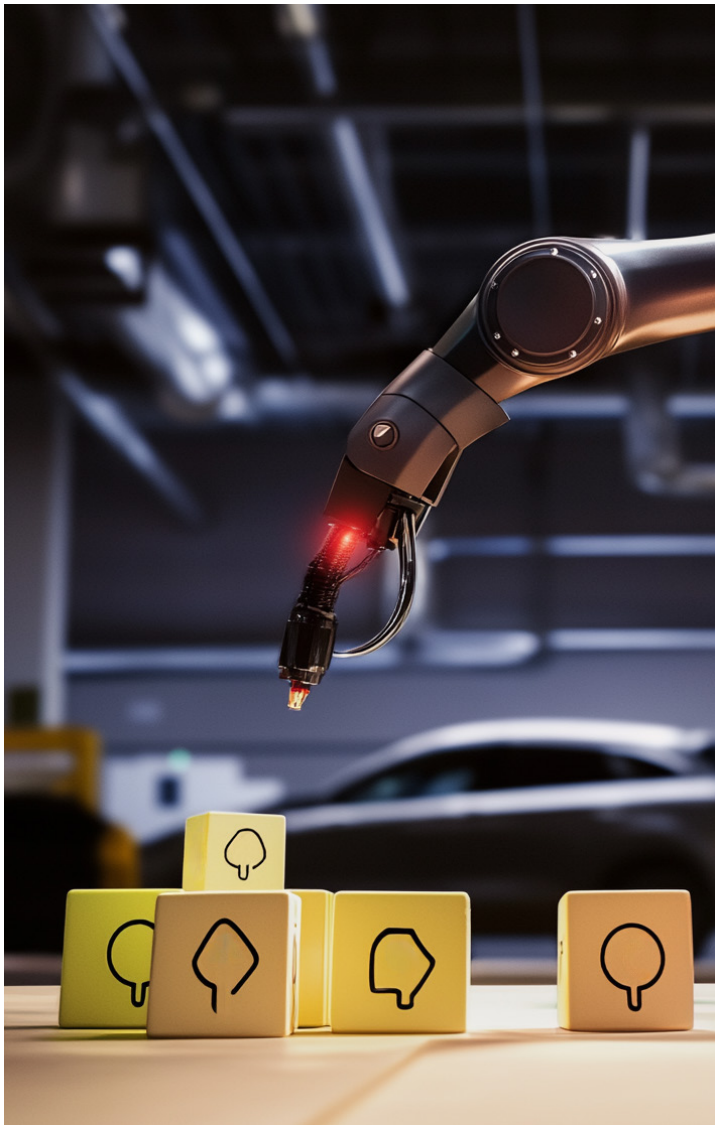
The average percentage of their workforce that respondents say they could reasonably expect to be replaced by robotics or automation during the next decade is 19.9%, rising to 32.1% among businesses in China.

Just over one in six businesses (17%) say they could replace around one third and half of their workforce with robotics and automation during the next decade. This includes 49% of respondents in China.

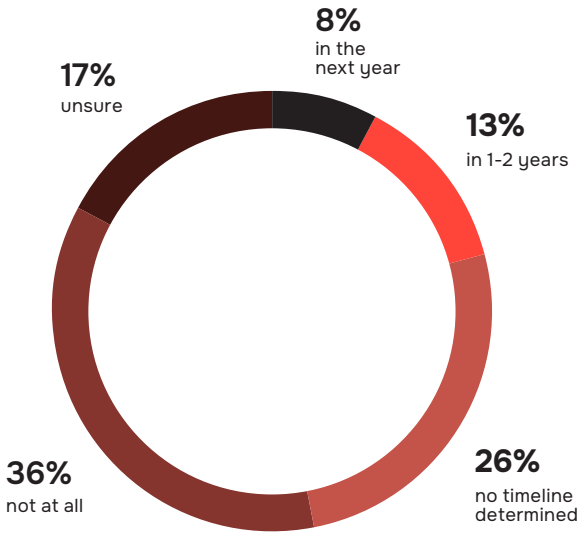
We also asked to what extent each of a list of factors had influenced the decision to deploy robotics. The factor cited most often as having had a 'great' or 'slight' influence is advancements in technology, which influenced 90% of decisions. The chance to improve safety, a need for enhanced quality or consistency and cost reduction were all also cited by most respondents.



of businesses that are not using robotics today plan to do so in future



When businesses not currently using robotics plan to introduce them:



Top factors for deploying robotics:

*based on percentage who said these factors drove the decision to a great extent

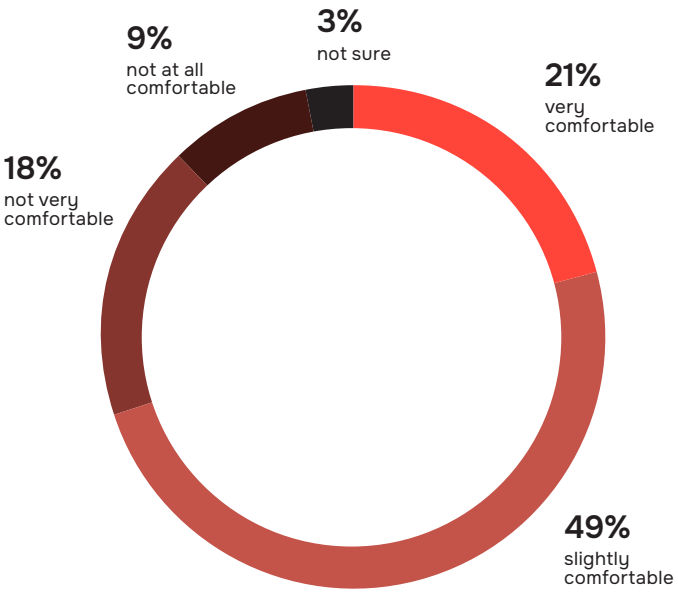
Putting trust in robotics

More than three-quarters (77%) of decisionmakers would trust technologies to carry out essential functions.

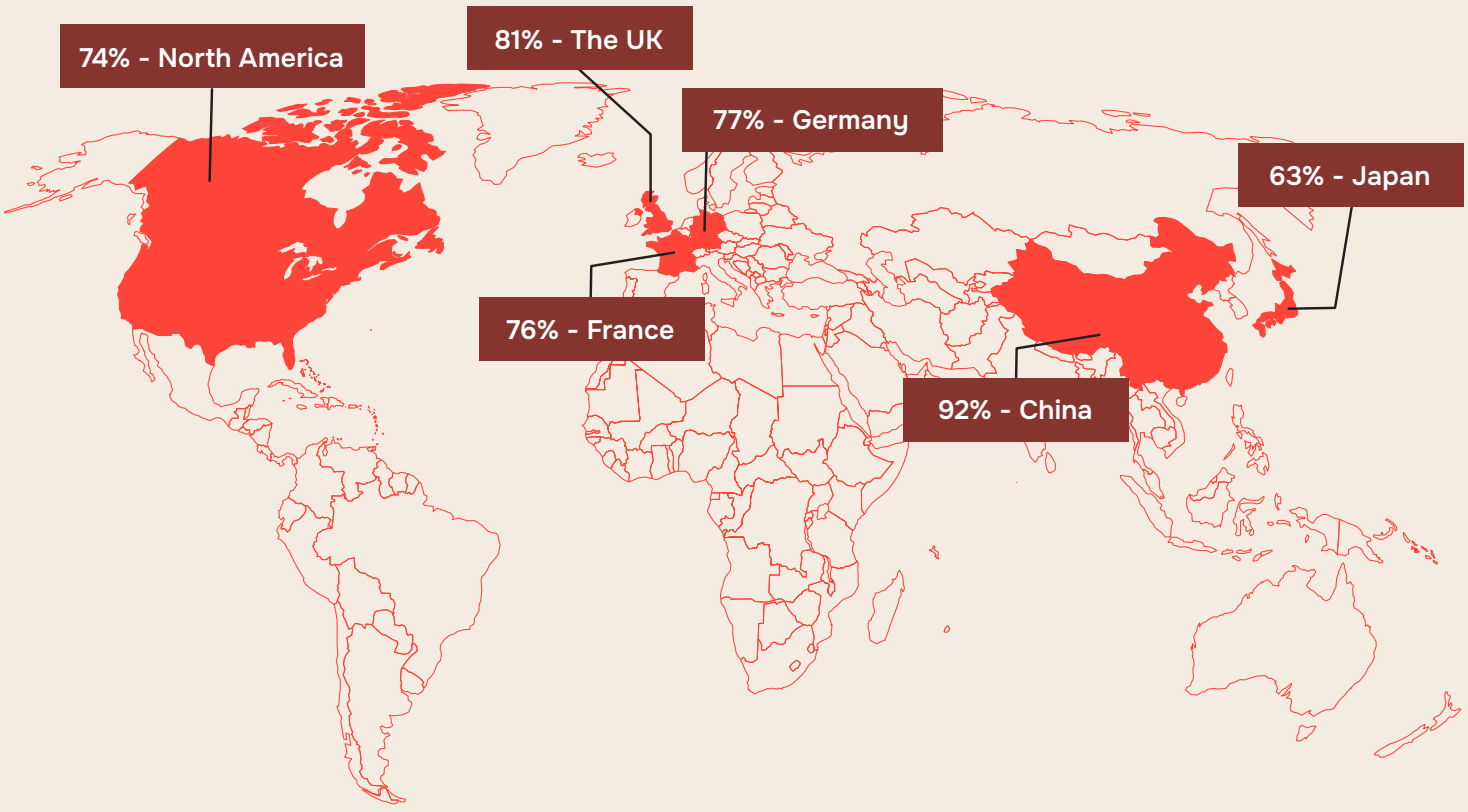
This includes 13% that “fully” trust robotics, where they are fully integrated into operations and “trusted to perform consistently and autonomously”; and 34% of businesses that place high trust in robots to perform these tasks “with minimal oversight”.

Organisations in China are most likely to trust robotics with these tasks, with 92% doing so. Businesses in Japan are least likely to trust robotics to complete these tasks, but even there almost two-thirds (63%) do so.

How comfortable are you working alongside a robot?



Percentage of people trusting robotics to carry out essential functions within their industry:

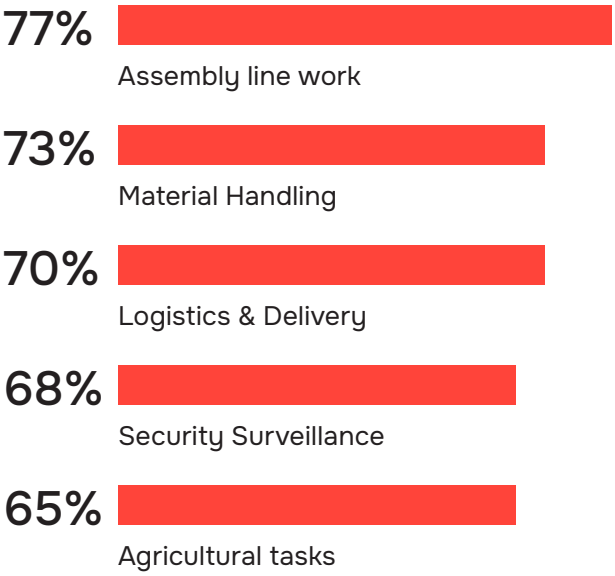


Trust varies by task

Large majorities (around three-quarters) of respondents are comfortable with robotics being used on assembly lines and for material handling tasks. But much slimmer majorities of respondents are comfortable with robotics being used to perform customer service or medical procedures.

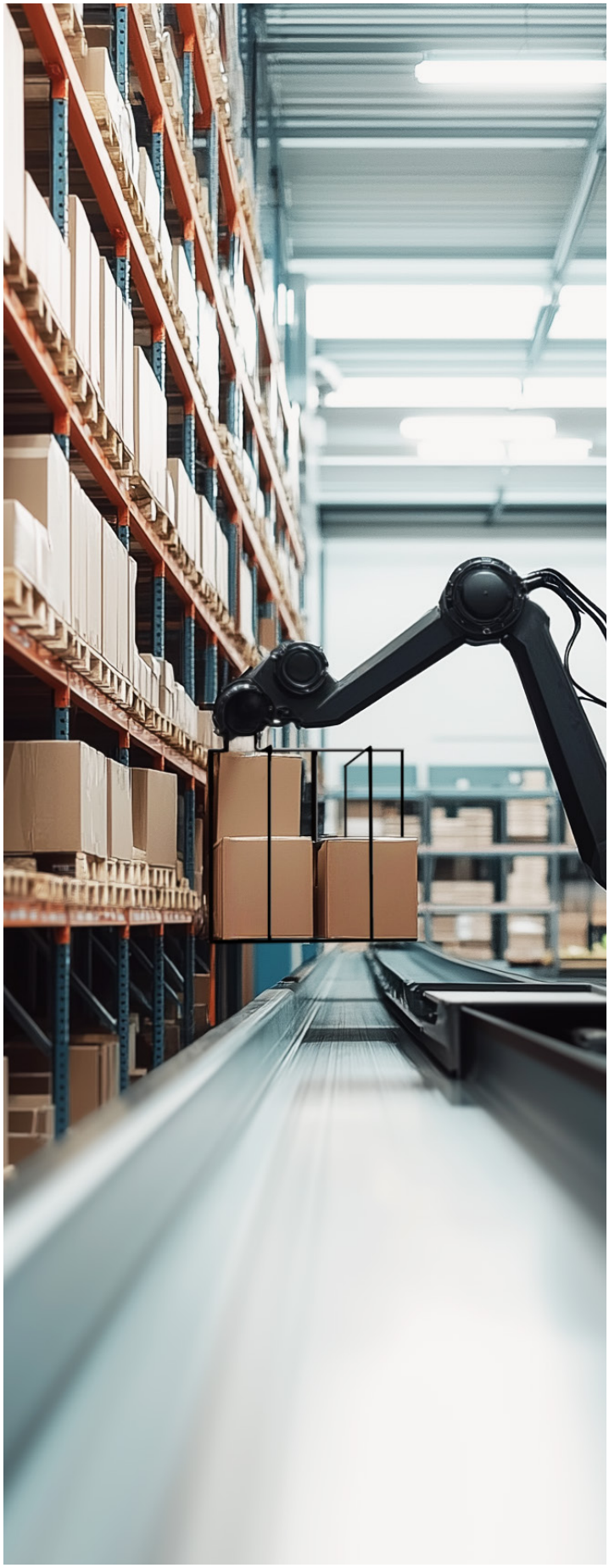
Respondents were also asked which factors have influenced their trust in robotics. Factors cited most often were safety and risk mitigation (by 42%) and proven reliability and performance (by 40%).

Tasks robotics are most trusted to handle



Top 5 factors influencing trust in robotics

- Safety & Risk Mitigation
- Reliability & Performance
- Consistency in Outcomes
- Security & Data Protection
- Transparency of the Technology



Preparation, implementation and the human impact

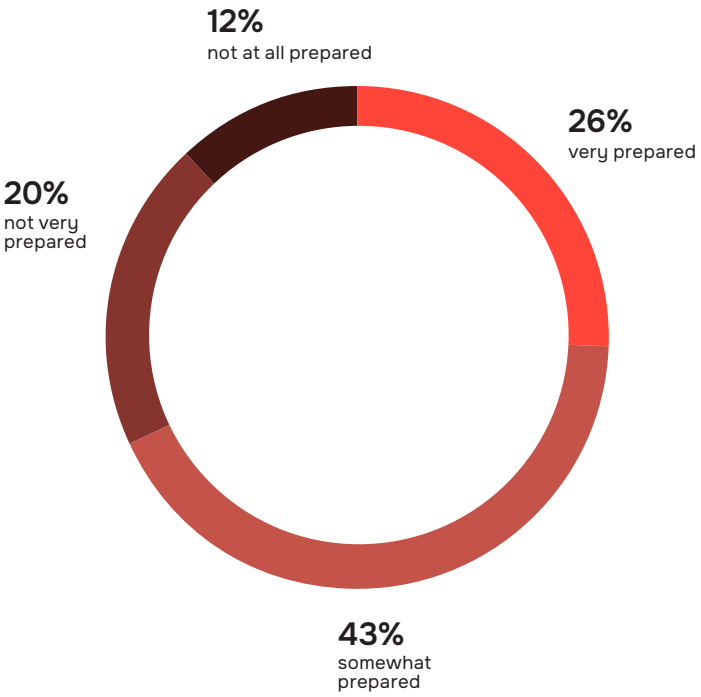
Almost one in three respondents (32%) say their organisation is not yet prepared to introduce robotics into their workplaces. But almost seven out of ten (69%) say their organisation is prepared, including 26% who are “very” prepared.

Levels of perceived preparedness are highest in China, where 94% of respondents say their businesses are ready; those in Japan are least likely to be prepared: only 42% say this.

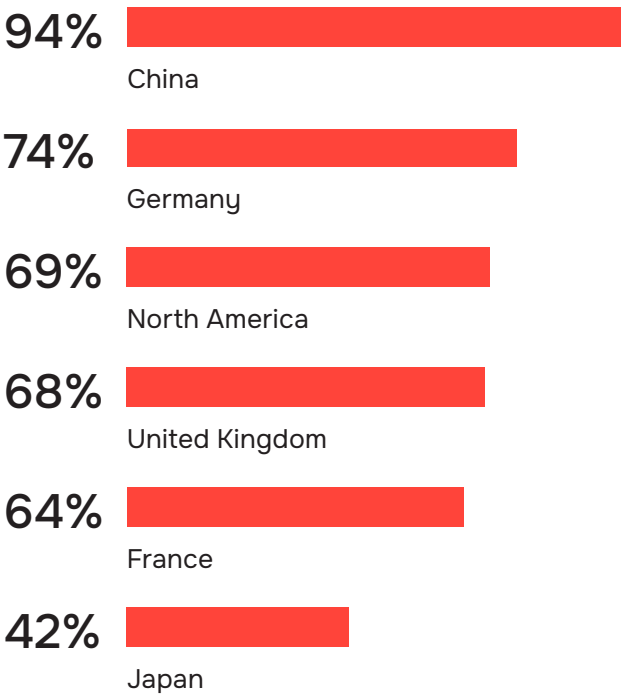
Challenges in implementation and management of robotics

Almost half (47%) of respondents that use robotics say high initial costs are one of the biggest challenges associated with their implementation and management.

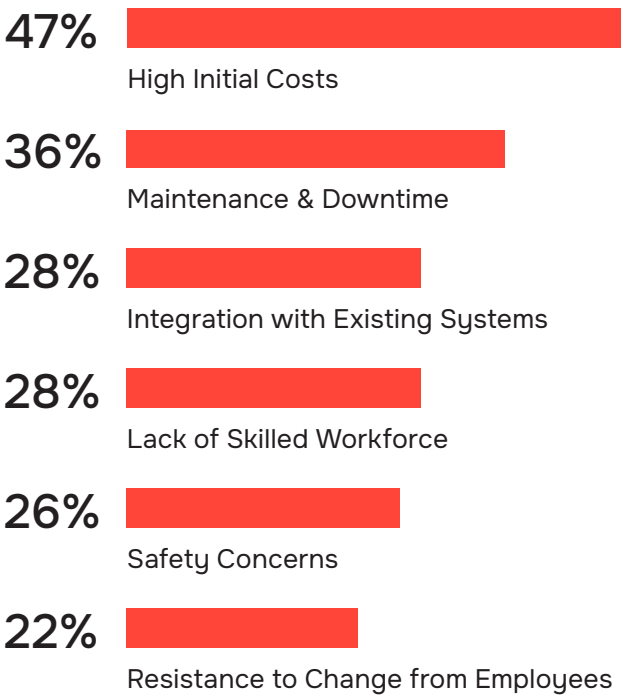
How prepared do you believe your organisation is to introduce robotics?



Prepared organisations by region:



Biggest challenges when planning to introduce and manage robotics:



Worker consultation about use of robotics

In most organisations there seems to be an understanding of the need to work with employees to ensure a smooth introduction of robotics. More than nine out of ten (92%) respondents think it is important to involve employees in discussions about integrating robotics into the workplace, including almost one in three (30%) who say it is “extremely important”.

We also asked respondents about the biggest potential threats and opportunities for employee morale and job satisfaction associated with the long-term use of robotics.

The biggest threats were seen as:

37% Replacing jobs

35% Decreasing human interaction

31% Over-reliance on technology

29% Increased job insecurity

The biggest opportunities were seen as:

37% Increased productivity and efficiency

35% Removing dangerous or repetitive tasks

31% Improving work-life balance

26% Creating new job roles

Safety and security concerns

Almost three out of ten (29%) of respondents whose employers use robotics say someone in their business has experienced a safety risk or dangerous situation while working with these technologies. But almost nine out of ten (89%) say they believe the business has implemented effective safety measures to prevent accidents involving robotic systems.

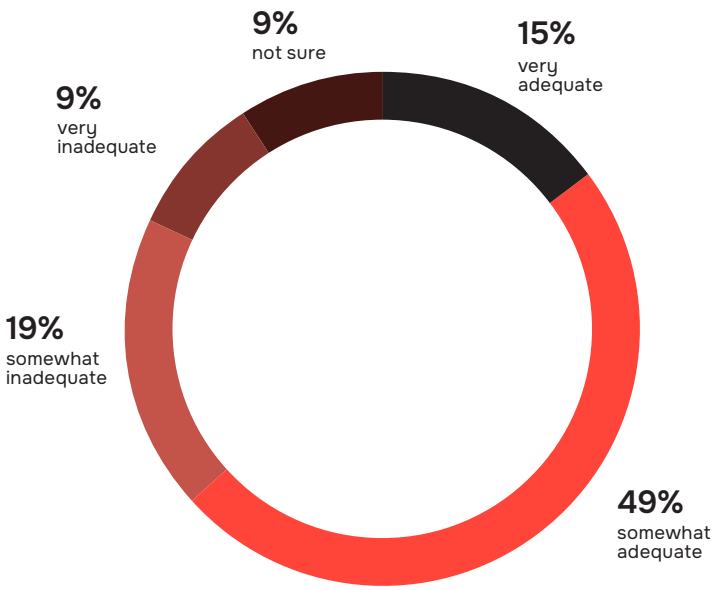
There is greater concern about potential security risks associated with use of robotics. Almost six out of ten respondents (58%) are concerned about these risks, including 61% in North America, 63% in the UK, and 69% in Germany. More than six out of ten (64%) of respondents in the healthcare sector express such concerns.

Room for regulatory improvement

Some respondents also expressed concern about government policies and regulation around AI and robotics within their countries. Almost two-thirds (64%) of respondents think these policies and regulations adequately address the ethical implications of using these technologies.

However, 27% think they are inadequate, including more than three out of ten respondents in both the UK and France.

How adequate do you believe your government's AI and robotics regulations are?



Reasons for this perceived inadequacy:

48% Unclear guidelines on ethical use of AI and robotics

40% Lack of comprehensive training and education programmes

36% Lack of public awareness and engagement

34% Lack of transparency and accountability mechanisms

32% No integration with existing industry standards

30% Weak data privacy and security measures

Respondents in the energy, industrial automation and automotive sectors are most likely to see these regulations as adequate:

82% Energy & Utilities

69% Industrial Automation

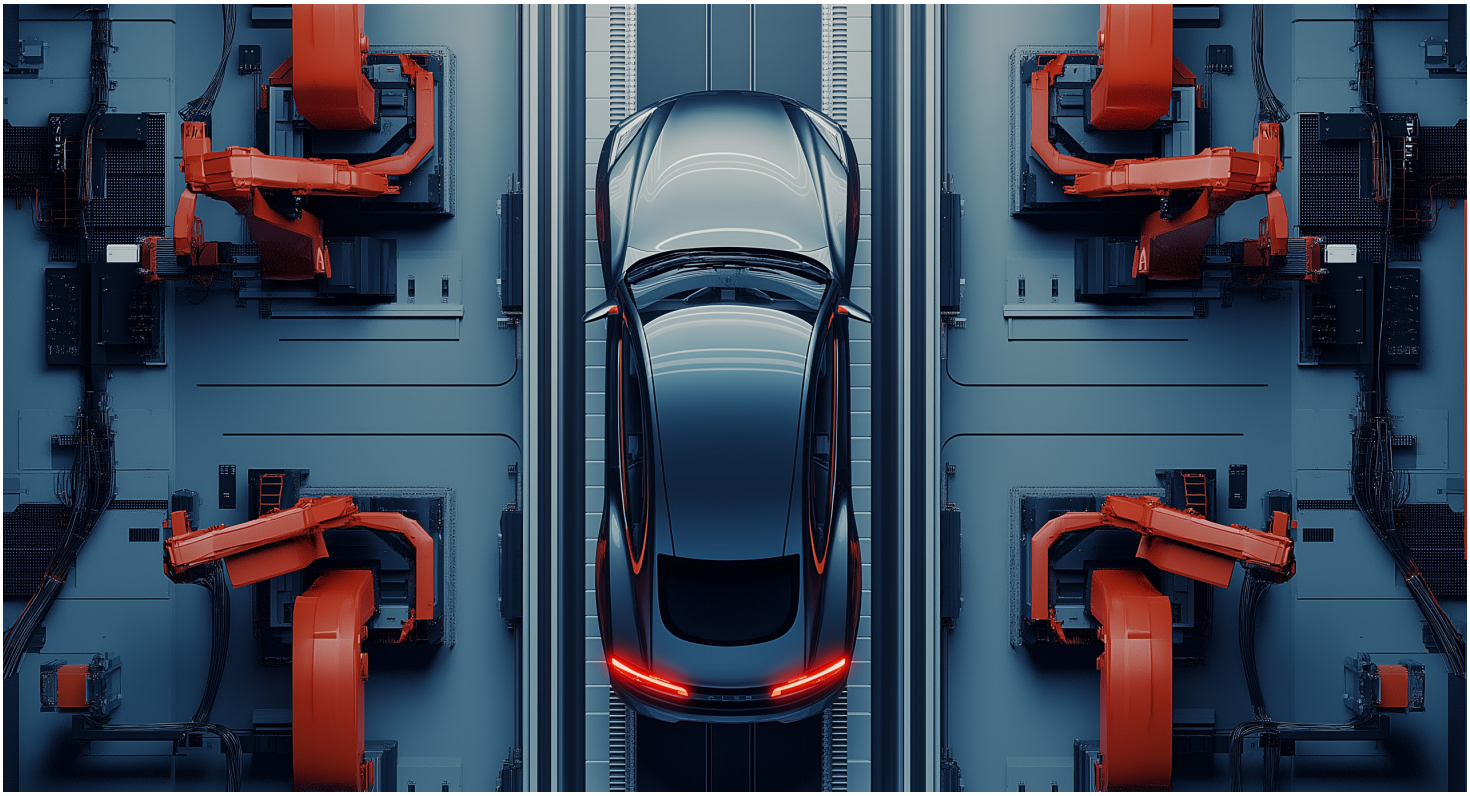
68% Automotive

65% Transport & Logistics

61% Healthcare

60% Heavy Machinery

49% Environment & Agriculture



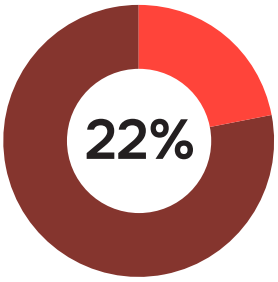
Use of robotics globally

The UK

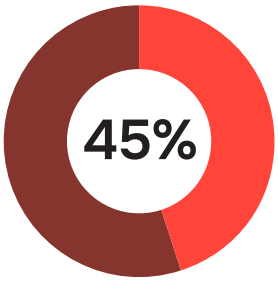
Since coming into office in July 2024, the UK's new government has emphasised the importance of emerging technologies to boost economic growth and productivity. Yet many UK businesses seem uncertain about how and when to take advantage of the opportunities robotics can offer.

Almost two-thirds (64%) of businesses not yet using robotics plan to start doing so within the next two years. But only 12% of them plan to do so within the next 12 months, and 29% say the timeline is uncertain.

When asked if the UK's current policies and regulations address ethical implications of the use of AI and robotics, 62% of UK decisionmakers say they think policies and regulations are adequate, but 31% think they are inadequate – the joint highest total (with France and Canada) among different territories surveyed.



of UK businesses surveyed use robotics for high-risk tasks



of UK businesses surveyed use robotics - compared to 50% internationally

Top roles for robotics in UK businesses:

Automation	47%
Production	31%
Support roles	28%

France

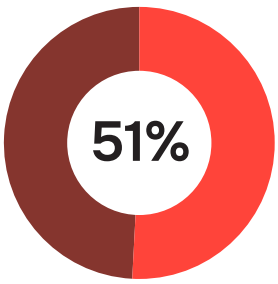
France is a country with a proud history of technological innovation, but our research suggests it is not currently a leader among countries adopting use of robotics. Just under half (48%) of businesses in France that are not yet using robotics plan to start doing so within the next two years. But just 5% plan to do so within the next 12 months, and more than one in three (35%) say the timeline for an introduction is uncertain – only businesses in China that are not yet using robotics express more uncertainty about this.

62% of respondents in France say they would be comfortable working alongside a robot – a smaller percentage than in any other country surveyed.

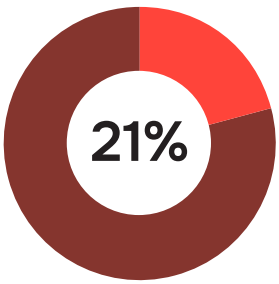
French respondents are also less comfortable than those elsewhere about robots performing assembly line work – although just over two-thirds, 67%, say they are comfortable with this – and agricultural tasks: 53% say they are comfortable with this, compared to an international total of 65%.

Top roles for robotics in French businesses:

Automation	40%
Production	39%
Support roles	32%



of French businesses surveyed use robotics

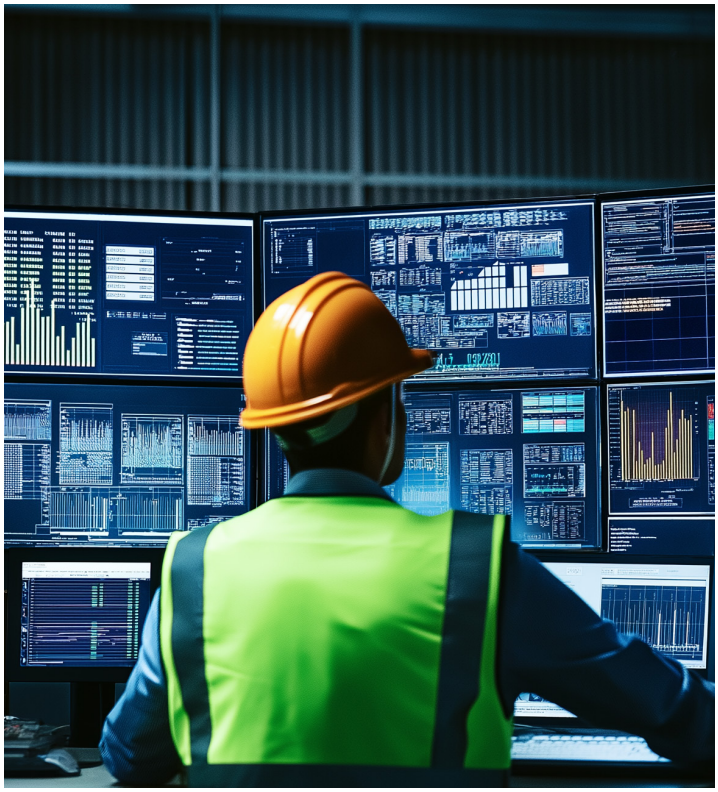


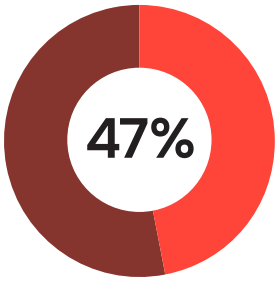
of French businesses surveyed use robotics for high-risk tasks

Germany

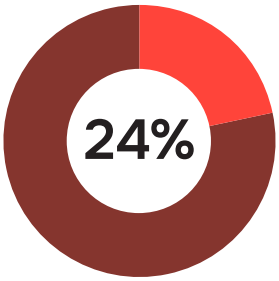
Our findings suggest Germany, the great industrial power of Europe, is not yet at the cutting edge in adoption of robotics. Half of businesses in Germany that are not yet using robotics plan to start doing so within the next two years. But only 7% plan to do so within the next 12 months, and 28% say the timeline for an introduction is uncertain.

Even so, our research also suggests a widespread willingness to accept these technologies if their capabilities are proven. 77% of German businesses now trust robotics to carry out essential functions within their industries, in line with those elsewhere. While 11% "fully" trust robotics to perform these functions "consistently and autonomously", just below the international total of 13%, 42% say their businesses place high trust in robots to perform these tasks "with minimal oversight", compared to an international average of 34%.





of German businesses surveyed use robotics



of German businesses surveyed use robotics for high-risk tasks

In addition, more than half (52%) of German decisionmakers cite "proven reliability and performance" as a top three influence on trust in robotics – a bigger percentage than cited for any potential influence by respondents in any country. The other influences on trust cited most often by German respondents are safety and risk mitigation (cited by 39%), and security/data protection, cited by 34%.

But German decisionmakers are also the most likely to say they are concerned about security risks associated with use of robotics: 69% say this, compared to an international total of 58%.

Top roles for robotics in German businesses:

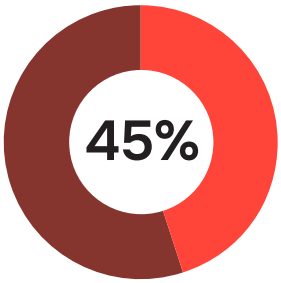
Automation	54%
Support roles	44%
Production	41%

North America

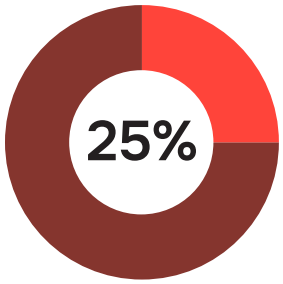
Our findings revealed a mixed picture in North America. Its businesses are less likely to be using robotics than those in a number of the other territories, and 45% of businesses that are not yet using robotics plan to start doing so within the next two years – again, a smaller figure than the international total. Only 9% plan to introduce robotics within the next year, while 22% say the timeline for an introduction is uncertain.

But it is notable that the two biggest influences on trust in robotics differ from those cited most by other respondents: the two factors cited most often in North America are safety and risk mitigation, and consistency in outcomes/accuracy, each cited by 41% of decisionmakers. Proven reliability/performance is the next most cited influence (36%). Where these qualities are proved, decisionmakers are clearly ready to trust robots to perform high risk tasks.

25% of North American businesses use robotics for high-risk tasks: more than anywhere except China or Japan.



of North American businesses surveyed use robotics



of North American businesses surveyed use robotics for high-risk tasks

Respondents in North America are also more likely than those based anywhere else to cite the possibility that robotics will replace jobs as one of the top three long-term threats its use poses to employee morale and job satisfaction. 45% cite this as one of the biggest possible threats, compared to an international total of 37%. They are also more likely to cite an increased workload as one of the biggest threats, with 21% citing this, compared to 18% or fewer of respondents elsewhere.

However, an above average number of North American respondents cite increasing productivity and efficiency, removing dangerous or repetitive tasks, improving work-life balance and creating new job roles as being among the biggest potential opportunities for improving employee morale and job satisfaction when considering the long-term impact of robotics. Decisionmakers in this territory appear to have a strong understanding of both the potential risks and upsides to increased use of robotics.

Top roles for robotics in North American businesses:

Production	49%
Automation	46%
Support roles	34%

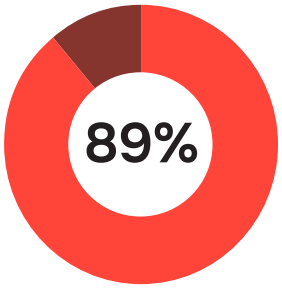
China

Our research suggests China is a world-leader in the adoption of robotics in business. 94% of Chinese decisionmakers say their organisation is prepared for use of robotics in the workplace, a far higher number than elsewhere.

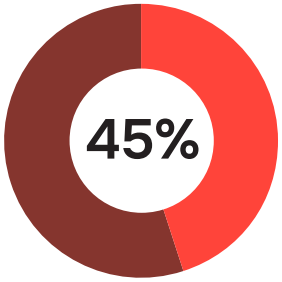
Almost half (49%) of decisionmakers in China believe that between 31% and 50% of their workforce will be replaced by robotics and automation within the next decade – a far greater percentage than elsewhere. On average, Chinese respondents expect 32.1% of the workforce to be replaced in this way, well ahead of the international average (19.9%).

Chinese respondents are most likely to trust robotics to carry out essential functions within their industry: 92% do so, compared to an international total of 77%; while 38% "fully" trust robotics to perform "consistently and autonomously", compared to 13% across all territories.

Almost nine out of ten (89%) of Chinese respondents say they would be comfortable working alongside a robot in their industry, a considerably larger share than in any other territory. Chinese respondents were more likely than any others to say they would be comfortable with robots performing each of nine specific workplace tasks.



of Chinese businesses surveyed use robotics - a bigger percentage than anywhere else



of Chinese businesses surveyed use robotics for high-risk tasks

Decisionmakers in China are the most likely to say it is important to involve employees in discussions about the integration of robotics in the workplace: a remarkable 99% do so. They are also most likely to believe in the effectiveness of safety measures put in place by organisations to prevent accidents involving robotics, although levels of effectiveness across the full sample are also very high. But it is striking that Chinese decisionmakers are much less likely than others to express concern about security risks associated with use of robotics in their industry: only 31% do so, compared to 58% globally.

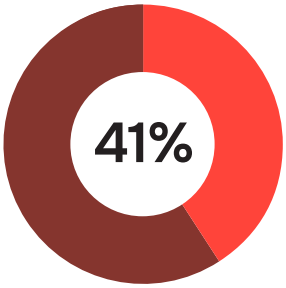
Chinese decisionmakers are also more likely to say their government's AI and robotics policies and regulations adequately address ethical issues. 81% say this, compared to 63% or fewer elsewhere.

Top roles for robotics in Chinese businesses:

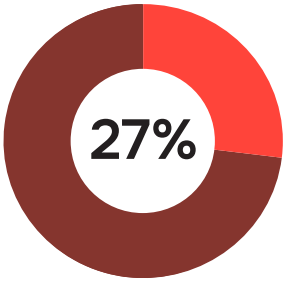
Automation	64%
Production	60%
Support roles	46%

Top roles for robotics in Japanese businesses:

Automation	54%
Production	51%
Support roles	32%



of Japanese businesses surveyed use robotics - a smaller percentage than anywhere else



of Japanese businesses surveyed use robotics for high-risk tasks

Japan

In Japan, historically a country at the forefront of development in electronics, economic and cultural forces have combined to create a complex pattern of robotics use. Japanese decisionmakers working for businesses not yet using robotics are the least likely to say their organisations are planning to introduce robotics within the next two years. Just 24% say this, the vast majority of whom also say the timeline for an introduction is still uncertain. Only 42% say their organisations are prepared to handle the use of robotics in the workplace, compared to 69% of all organisations surveyed across all territories.

Japanese decisionmakers are least likely to trust robotics to carry out essential functions within their industries: 63% do so, compared to 77% across the full sample. They are also most likely to say that either they would trust robots only to a limited extent (14% say this, compared to 15% across the full sample), or that robots are not trusted with these functions at all (23% say this, compared to 8% internationally).

Yet when asked to cite the top three long-term threats use of robotics could pose to employee morale and job satisfaction, Japanese respondents are least likely to cite the possibility that robotics could replace human workers' jobs (just 11% cite this); and most likely to say that they do not believe any such threats exist: 19% say this, compared to 7% across the sample.

They are also the most likely to cite both increased productivity and efficiency and improving work-life balance as being among the biggest opportunities robotics offers to improve employee morale and job satisfaction – but the least likely to agree that it is important to involve employees in discussions about the integration of robotics in the workplace.

Respondents comfortable with robotics performing the following tasks:

	The UK	France	Germany	North America	China	Japan
Assembly Line Work	83%	67%	75%	77%	94%	71%
Quality Inspection	65%	61%	62%	64%	81%	57%
Material Handling	76%	68%	74%	75%	87%	59%
Customer Service	52%	49%	51%	55%	85%	45%
Medical Procedures	47%	47%	57%	50%	74%	37%
Maintenance & Repairs	66%	61%	60%	65%	80%	46%
Security Surveillance	74%	61%	59%	69%	90%	54%
Agricultural Tasks	65%	53%	60%	68%	86%	59%
Logistics & Delivery	73%	61%	71%	71%	90%	58%

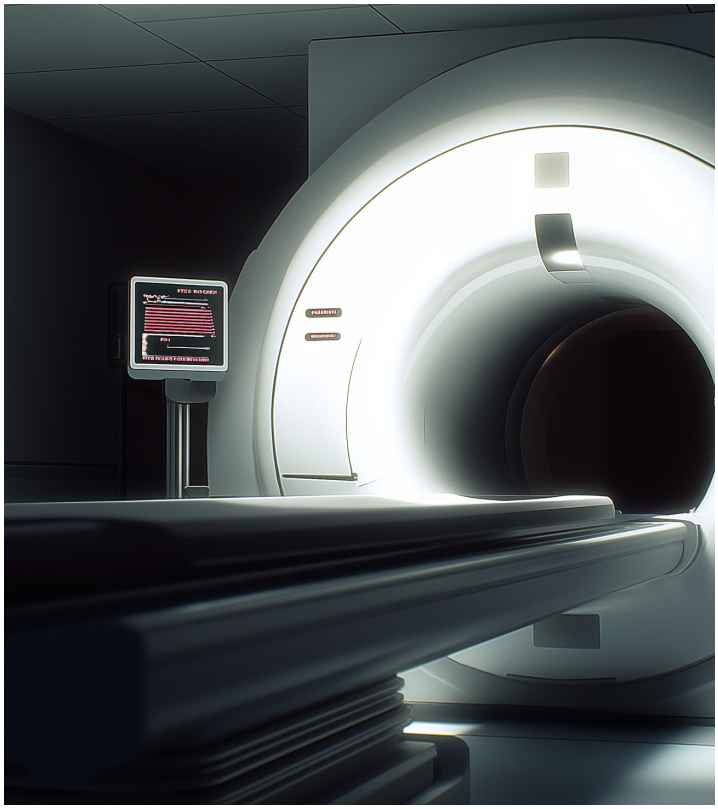
Industry breakdown

Healthcare

Only 40% of healthcare sector businesses surveys are using robotics at present: a lower share than in any other sector. But healthcare businesses are most likely to be using robotics in support roles.

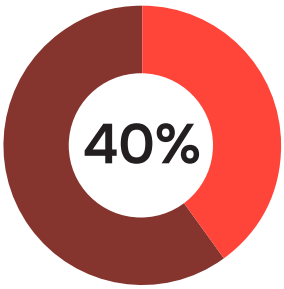
Top roles for robotics in Healthcare businesses:

Support roles	45%
Automation	32%
High-risk tasks	30%



Overall levels of trust in robotics are lower in healthcare businesses than in several other sectors. Just over seven out of ten (72%) of decisionmakers in these businesses say they trust robotics to carry out essential functions, including just 9% who say robotics are fully trusted to perform these tasks consistently and autonomously.

Almost two-thirds (64%) of decisionmakers working in healthcare express concern about security risks associated with use of robotics, compared to 58% across the full sample. It is reasonable to assume these concerns relate in part to the sensitive nature of healthcare work and the data held by these businesses.



of Healthcare businesses surveyed use robotics

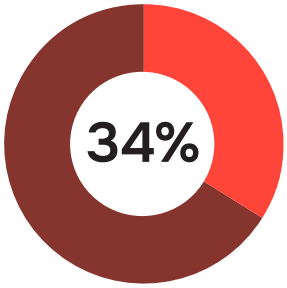
More than a third (36%) of healthcare respondents cite security and data protection as one of the three most important influences on the level of trust they are willing to put in robotics – more than in any other sector except energy.

Automotive

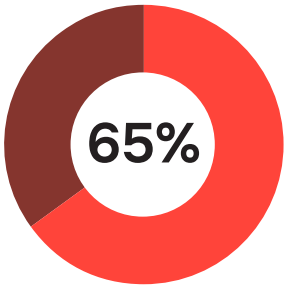
Respondents working in the automotive sector are more likely to anticipate further use of automation replacing some of their workforce during the next decade. The average percentage of their workforces these respondents thought might be replaced by automation was 23.3%, a higher figure than every other sector except energy and utilities.

There is a relatively high level of trust in robotics within automotive businesses, with 82% of decisionmakers saying robotics are trusted to carry out essential tasks, including almost a quarter (24%) saying robots are "fully" trusted to carry out these tasks consistently and autonomously.

Seven out of ten decisionmakers in the automotive sector say they would be comfortable working alongside a robot, including 33% who say they would be "very comfortable" doing so – more than in any other industry.

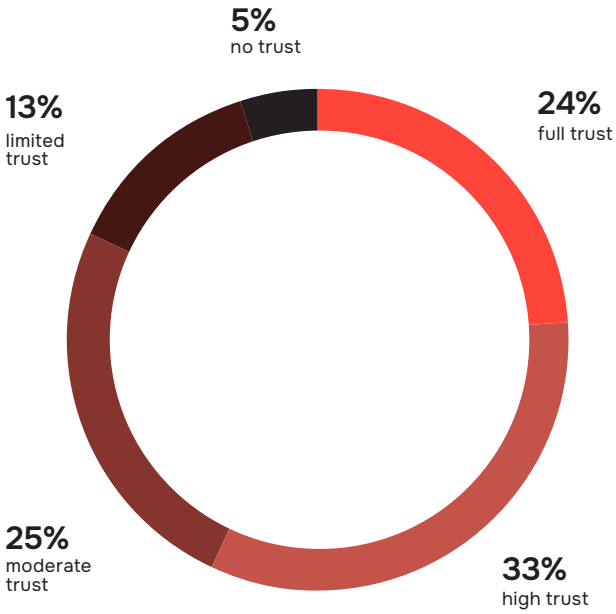


of Automotive businesses surveyed use robotics in research and development – a larger percentage than in any other sector



of Automotive businesses surveyed use robotics

Trust in robotics in the automotive sector:



Top roles for robotics in Automotive businesses:

Automation	69%
Production	64%
Support roles	39%

Automotive business decisionmakers have a high degree of confidence in safety measures their companies have implemented to prevent accidents involving robotics, with 83% saying they are effective, including 45% who say they are "very effective" – more than in any other sector.

The acceptance of robotics within this industry may also be indicated by the fact that 45% of respondents working in the automotive industry say they are concerned about security risks associated with robotics: a smaller percentage than in any other industry.

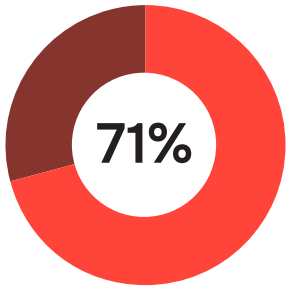
Industrial Automation

Almost nine out of ten decisionmakers working in industrial automation (88%) say robotics are trusted to carry out essential functions.

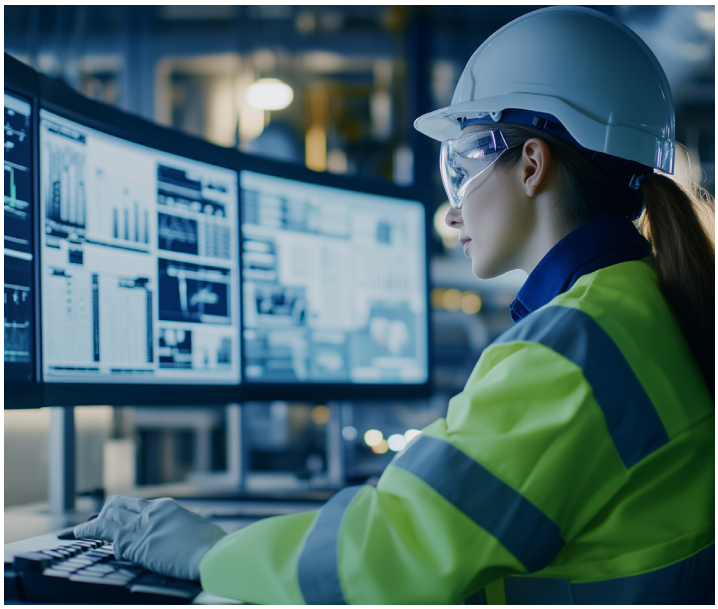
84% say they would be comfortable working alongside a robot in their industry – a higher percentage than in any other industry. 91% say they are comfortable with robotics performing tasks on an assembly line, the highest percentage seen in any industry.

Top roles for robotics in Industrial Automation businesses:

Production	62%
Automation	57%
Research & Development	32%



of Industrial Automation businesses surveyed use robotics



Energy & Utilities

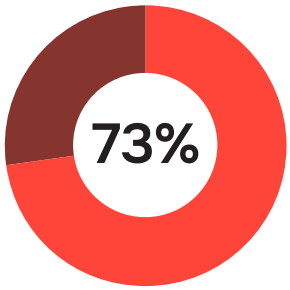
*low sample (less than 80 respondents)

Nine out of ten (91%) of decisionmakers working in energy and utilities businesses with say robotics are trusted to carry out essential functions for their organisations, more than in any other sector.

More than eight out of ten (82%) of decisionmakers working in energy and utilities say they would be comfortable working alongside a robot, a figure exceeded only in the industrial automation sector.

Top roles for robotics in Energy & Utility businesses:

Automation	69%
Production	50%
Support roles	31%

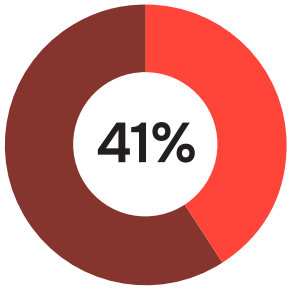


of Energy & Utility businesses surveyed use robotics

Environment & Agriculture

*low sample (less than 80 respondents)

Respondents working in the environment and agriculture sectors are most likely to say they do not expect any of their workforce to be replaced by robotics during the next decade, with 29% saying this.



of Environment & Agriculture businesses surveyed use robotics

Top roles for robotics in Environment & Agriculture businesses:

High-risk tasks	41%
Production	35%
Automation	29%

Methodology

This report is based on research conducted on behalf of QNX by OnePoll in March 2025. Surveys were conducted of 1,000 decisionmakers working for healthcare, automotive, industrial automation, energy & utilities and environment & agriculture businesses, based in China, France, Germany, Japan, North America (USA and Canada) and the UK.

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May 2025

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