The future of jobs

A study on the consequences of automation and increased use of robots
More jobs than ever are being lost to robots because they can be more precise than humans. The boom in artificial intelligence and machine learning has also helped increase the complexity of tasks performed by machines.

The equation here is simple: as we make advancements in this technology, we expect to lose jobs to machines.

However, this increased connectivity brings along cybersecurity concerns regarding the safety and reliability of these robots.
Goal

Kaspersky conducted a survey to gain opinions on robots in the workplace from people working in specific industries and understand if there are any setbacks or security concerns faced when it comes to robot adoption.

Respondents

4,582 interviews were conducted globally with representation across 15 countries: USA, France, Italy, Germany, Spain, South Korea, Japan, Singapore, Argentina, Brazil, Egypt, South Africa, Saudi Arabia, UAE, Turkey.
### Respondents: Who are they?

<table>
<thead>
<tr>
<th>Age</th>
<th>18-24: 5%</th>
<th>25-34: 33%</th>
<th>35-44: 33%</th>
<th>45-54: 19%</th>
<th>55+: 11%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment status</td>
<td>• 90% of respondents in full-time work&lt;br&gt;• 8% of respondents in part-time work&lt;br&gt;• 2% business owner</td>
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<tr>
<td>Gender</td>
<td>Male: 62%</td>
<td>Female: 38%</td>
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<tr>
<td>Department in which they work</td>
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<tr>
<td></td>
<td>• Administration - 22%&lt;br&gt;• IT / Technical Operations - 20%&lt;br&gt;• Finance &amp; Accounts - 14%&lt;br&gt;• Production - 14%&lt;br&gt;• Human Resources - 8%&lt;br&gt;• IT Security - 6%&lt;br&gt;• Research &amp; Development - 5%&lt;br&gt;• Purchasing / Procurement - 4%&lt;br&gt;• Strategy / Corporate development - 4%&lt;br&gt;• Enterprise Risk / Compliance - 1%</td>
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</tbody>
</table>
Respondents. Who are they?

<table>
<thead>
<tr>
<th>Organization classification</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>IT / Telecommunications / Related IT sales &amp; service</td>
<td>18%</td>
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<tr>
<td>Manufacturing (automotive, chemicals, consumer goods, high tech, industrial products, agriculture, etc.)</td>
<td>15%</td>
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<tr>
<td>Financial services (banks, insurance, trading)</td>
<td>11%</td>
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<tr>
<td>Construction, engineering or real estate</td>
<td>9%</td>
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<tr>
<td>Education</td>
<td>7%</td>
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<tr>
<td>Medical &amp; Health services</td>
<td>7%</td>
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<tr>
<td>Government / Public sector</td>
<td>7%</td>
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<tr>
<td>Transportation and logistics</td>
<td>5%</td>
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<tr>
<td>E-commerce / Retail</td>
<td>5%</td>
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<tr>
<td>Hospitality / Food &amp; beverage</td>
<td>3%</td>
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<tr>
<td>Entertainment (broadcast media, films, music, gaming)</td>
<td>2%</td>
</tr>
<tr>
<td>Utilities &amp; Energy (electricity, water, etc.)</td>
<td>2%</td>
</tr>
<tr>
<td>Military</td>
<td>1%</td>
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<tr>
<td>Media / Advertising</td>
<td>1%</td>
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<tr>
<td>Non-profit / Charity</td>
<td>1%</td>
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<tr>
<td>Oil &amp; Gas</td>
<td>1%</td>
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<tr>
<td>Pharmaceuticals</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
</tr>
</tbody>
</table>
Key findings

#1
The majority of employees (64%) believe their positions can be performed by robots within 10 years.

#2
52% of respondents suppose robots can help increase the efficiency of production processes and economic benefits in organizations.

#3
Employees would trust robots to do unskilled chores (88%) and to code software (75%) but they are very skeptical about robots’ opportunity to deal with critical tasks – less than half of respondents suppose that robots can perform a surgery (38%) or fly an airplane (31%).
The majority of the surveyed people (51%) believe that robots are vulnerable to hackers and know of such incidents in their or other local companies.

Only 13% of respondents believe that in case of a cyberattack the disabled robots can be fixed immediately. The majority of employees expect recovery operations would take a few weeks or longer.

Respondents split in their assessment of how protected robots are. The one half (44%) suppose that there is a high level of cybersecurity protection in organizations, the other half (40%) consider companies take not enough cybersecurity measures to protect themselves.

67% of employees are not ready to trust the management of a production process to an AI robot. They would like to see human oversight.
Current level of robotization in companies

41% employees said their organizations use robots, 29% is planning to use them in the future and 27% do not use them at all.

Are robotics used in your organization?

- Yes
- Not yet, but it is planned in 1-2 years
- No
- Don’t know

27.3%
41.4%
29.3%
2%

Employees whose organizations use robots named industrial robots, artificial intelligence and autonomous mobile robots as the most widespread. Other reported their organizations using or planning to use automated guided vehicles.

What kind of robotics are used or plan to be used in your organization?

- Industrial robots (robotic arms used at assembly lines): 48%
- Artificial Intelligence / Machine Learning: 47%
- Autonomous mobile robots (humanoids, hospitality robots, delivery robots): 43%
- Automated guided vehicles: 31%
- Don’t know: 2%
- Other: 1%
Respondents reported robotization level in their organizations has increased over the last 1-2 years.

Among those employees who had robots functioning in their organization, the majority (77%) reported increased robotization levels in their companies over the past 1-2 years.

Every fifth respondent (22%) said that the robotization level in their company remained the same, and only 1% said it decreased.

Has the robotization level in your organization increased or decreased over the last 1-2 years?

- Increased
- Remained the same
- Decreased

77% 22%
The majority of employees suppose their positions can be replaced by a robot or automation solution.

- 12% of respondents believe that their job can be fully performed by a robot, and 44% think robots can only do parts of their job.

- More than a third of employees are skeptical of robots being able to replace them at their job: 16% think that this is absolutely impossible, and 29% believe that currently it is not possible, but it may be possible in the future.

Do you think your job can be replaced by a robot or other automatization solution?

- Yes
- Yes, some parts of my job
- No, but possibly in the future
- No, this is impossible

43.6% Yes
15.8% Yes, some parts of my job
11.9% No, but possibly in the future
28.7% No, this is impossible
And they believe it will happen within 10 years

Among those employees who believe that their job could be done by a robot, almost a half (42%) consider that it will happen within 6 to 10 years, 22% are more optimistic and suppose that their positions will be replaced within 5 years.

19% answered that it will happen within 11 to 15 years and 10% that it takes more than 15 years.

When would it be possible for your job to be done by a robot or other automatization solution?

- 1-5 years
- 6-10 years
- 11-15 years
- More than 15 years
- Don’t know
Respondents suppose the loss of ordinary jobs because of robots will be countered by creation of new jobs.

Employees remain optimistic in view of robots taking away jobs: the majority of employees (58%) believe enough new jobs will be created to counter the loss of ordinary jobs to robots.

Do you think enough new jobs will be created to counter the loss of ordinary jobs to robots?
- Yes
- No

58%
42%
At the same time employees feel cybersecurity risks related to robots.

The majority (85%) believe robots can be hacked, and 51% know of such incidents in their or other local companies (specifically, 16% know of cybersecurity incidents with robots in their companies, 35% have heard of such incidents in other companies).

34% of respondents think that robots are vulnerable to hackers, but do not remember cybersecurity incidents with them.

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Do you think robots can be hacked?

- Yes – I’ve heard of cybersecurity incidents with robots in other companies: 35%
- Yes – but I can’t recall cybersecurity incidents with robots: 34%
- Yes – I know of cybersecurity incidents with robots in my company: 16%
- I don’t know: 9%
- No: 6%
They split in their assessment of how protected robots are.

Almost half of employees (44%) believe that not enough cybersecurity measures are in place to protect the robots in different industries.

At the same time, 40% believe that enough protective measures are in place, and 3% believe that cybersecurity for robots is not needed.

Do you think enough cybersecurity measures are taken to protect robots in different industries?

- No, more cybersecurity measures are required: 44%
- Yes, cybersecurity measures are in place: 40%
- I don’t know: 12%
- Cybersecurity for robots is not needed: 3%
The majority consider that disabled by a cyberattack, robots can’t be fixed immediately.

In case of a cyberattack that disables robots, more than half of employees (52%) expect that recovery operations would take a few weeks or longer.

26% think that operations could return to normal within a few days, and 13% believe the disabled robots can be fixed immediately.

How much time will your organization or an organization in your industry need to recover in case of a cyberattack that disables all robots?

- Can be fixed immediately
- A few days
- A few weeks
- 1-3 months
- 4-6 months
- 7 months to 1 year
- More than 1 year
- I don’t know
Employees would trust robots to do unskilled chores but they are very skeptical about robots’ opportunity to deal with critical tasks.

Employees split in their opinions on trusting robots to perform critical tasks. Generally, they would trust robots to do unskilled chores, such as housecleaning and order delivery. However, they are very skeptical about robots’ opportunity to deal with critical tasks such as creating new drugs, performing a surgery, or fly an airplane.

Do you trust robots in performing the below critical tasks?

- Cleaning your house: 88%
- Delivering your orders: 82%
- Coding a software: 75%
- Controlling transport in a city: 59%
- Helping with decisions for public services: 52%
- Managing dangerous manufacturing: 52%
- Driving a car: 51%
- Creating new drugs: 44%
- Performing a surgery: 38%
- Fly an airplane: 31%
Respondents also consider robots should be more widely used across different industries

79% of respondents consider robots should be more widely used across different industries. Only 21% are against of this statement.

81% of the surveyed employees think that robots can revolutionize entire industries.
They regard robot usage as a mean for making humans’ roles more safe and intellect-demanding, along with increasing the efficiency of production.

The majority of respondents (60%) believe that robotization can free people from hard or dangerous duties and reduce risks to life and health.

Half (52%) think that the efficiency of production processes and economic benefits for the organization increases due to robot use.

36% see robots doing jobs in production as an opportunity for employees to retain more interesting or highly paid positions.

More than a third (36%) of respondents believe that robot use reduces the likelihood of accidents due to the human factor.

What are the positive aspects of robotization in terms of production process and business?

- Freeing a person from hard and dangerous work: 60%
- Reducing risks to life and health at work for employees: 59%
- Increase the efficiency of the production and economic benefits for organization: 52%
- Reducing the likelihood of accidents due to the human factor: 36%
- An opportunity for employees to retrain to a more interesting and highly paid position: 36%
However they believe the overall management should always remain by human.

Just a quarter of employees (24%) are ready to trust the management of a production process to an AI robot.

The majority (67%) would like to see human oversight of management processes in that way or another.

Hypothetically, would you trust the management of a production process to an artificial intelligence robot/solution?

- Yes, but only a human checks all the AI's decision and approve it before implementing: 44%
- Yes, completely. I believe artificial intelligence can find the most efficient way for the production process: 24%
- Yes, but only parts of process. The overall management should be human: 23%
- No: 5%
Respondents suppose it is unclear who will bear responsibility if robots fail.

At the same time employees consider risks that rapid robotization may cause.

More than half (60%) say that it’s unclear who bears responsibility if robots fail in that way or another (for instance, in case of an equipment malfunction or a cyberattack).
Thank you!

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