Insights: Researcher attitudes toward AI

Key Findings

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Contents

Introduction

> "The development of AI is as fundamental as the creation of the microprocessor, the personal computer, the Internet, and the mobile phone. It will change the way people work, learn, travel, get health care, and communicate with each other."

Bill Gates[1]

Artificial intelligence is a rapidly developing technology, most recently with GenAI tools like ChatGPT growing at an unprecedented rate. Today's research professionals are already using AI. In Elsevier's *Research Futures 2.0* report (2022), 8% of researchers were already using AI extensively in their research, principally to help with analysis and processing large data sets.[2]

What is GenAI?

GenAI, short for generative artificial intelligence, refers to a category of artificial intelligence systems and models that have the ability to generate data, content, or other outputs that are similar to those created by humans. These AI systems are designed to produce new and original content rather than simply process or analyze existing data.[3]

As the AI landscape continues to evolve, and the range of potential applications for researchers grows, it is important to monitor the views and behaviors of those who could be using it. In the full report, *Insights 2024: Attitudes toward AI*, we aimed to do this, by surveying nearly 3,000 people, including researchers and clinicians. This *Key Findings* report focuses on the views of just those working in research.

The research examines the attitudes of researchers toward artificial intelligence (AI), including generative AI (GenAI), covering its attractiveness, perceived impact, the benefits to them and wider society, the degree of transparency to be comfortable using tools that capitalize on the technology, and the challenges they see with AI. It also looks at the current usage, and what respondents think would help them trust AI tools.

The full report explores these themes across three chapters and covers the views of clinicians and researchers. You can read an overview of the researchers' views in this report.

Online survey

Insights 2024:
Attitudes toward AI

When: December 2023 to February 2024
What: 15-minute online quantitative survey
Who: 2,999 respondents from across 123 countries

Key Findings based on 2,284 researchers
(of whom 292 are clinicians)

Results: To improve representativeness of our sample, we weighted responses at the regional level against OECD researcher populations.

Highlights

Almost all researchers are familiar with AI tools, and many have used them for work, with expectations that this will grow. Institutions have begun to prepare for AI, but almost half of researchers are unaware of the measures they are taking.

97%
Have heard of AI (including GenAI) – subsequent statistics exclude the 3% not familiar with AI

59%
Aware of AI have used it; 37% have used it for work purposes

14%
Are very familiar with AI (including GenAI), and have used it often

52%
Who have not used AI cite a lack of time as the reason

Overall, researchers are positive about AI, with most expecting an impact as a result of the technology. Researchers think will help...

97%
Change the way students are taught and study in universities and medical schools

94%
Accelerate knowledge discovery

92%
Rapidly increase the volume of scholarly and medical research

86%
Increase work quality overall

Researchers think AI will also...

74%
Have a transformative or significant impact on their area of work.

Researchers are concerned about misinformation and other areas, highlighting points of attention for developers and institutions.

94%
Believe AI could be used for misinformation

86%
Make critical errors or mishaps

81%
Erode critical thinking skills

80%
Cause disruption to society

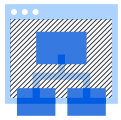
Specific actions can help increase trust, and by taking and communicating them, providers of AI tools can increase users' comfort.

81%
Expect to be told whether the tools they are using depend on generative AI

68%
Not using AI expect to use it within the next two to five years

Future uses of trusted AI tools amongst those who believe AI can benefit their work: likelihood of using a reliable and secure AI assistant to...

Generate a synthesis of research articles in a specific area
– 89% of researchers



Review prior studies, identify gaps in knowledge and generate a new research hypothesis for testing
– 92% of researchers

Chapter 1:

The current GenAI landscape

> "AI is here, and it works. We need to think how to use it properly."
>
> Survey respondent, researcher, Kazakhstan

- 97% have heard of AI (including GenAI) – subsequent statistics exclude the 3% not familiar with AI
- 59% of those aware of AI have used it; 37% have used it for work purposes
- 14% are very familiar with AI (including GenAI), and have used it a lot
- ChatGPT is by far the most well-known AI product (94%)
- 31% have used ChatGPT for work purposes
- 52% of those who have not used AI cite a lack of time as the reason
- 41% of researchers say AI is a welcome advancement

Almost all researchers are familiar with AI, including GenAI, and many of them are already using it – a substantial proportion for their work. Although relatively few say they use it a lot, the proportion is high compared to clinicians, for example. Of the reasons shared for not having used AI yet, lack of time is the most common, while one-quarter of researchers say it's concerns about the technology that are holding them back.

Awareness of AI tools

While awareness of AI is high among researchers globally (97%), it is higher in China and the USA, where 99% of researchers have heard of it. Globally, only 14% of researchers are very familiar with AI, having used it a lot. 54% have used AI, with 37% having used it for work (see detailed findings in researcher databook).

ChatGPT is by far the most well-known AI product among researchers, with 94% having heard of it, and nearly one-third (31%) have used ChatGPT for work.

Next in line when it comes to familiarity is Bing Chat (44%), then Bard (42%), Gemini (26%) and MS Copilot (24%). However, aside from ChatGPT, usage remains low for all these tools. The majority (68%) of those that have not used AI expect to in the near future.

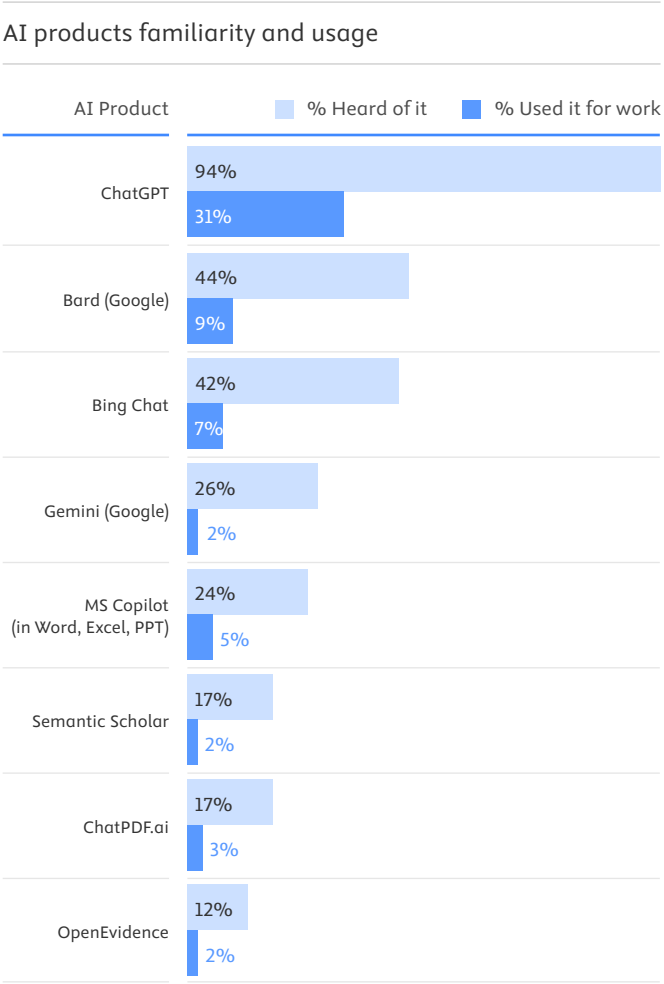


Fig 1. **Question:** Which of these AI products, if any, have you heard of before today? n=2,284
Question: Which, if any, AI products or AI features have you used for work purposes? Shown to only those aware of tool base variable % shown is proportion of 2,284.

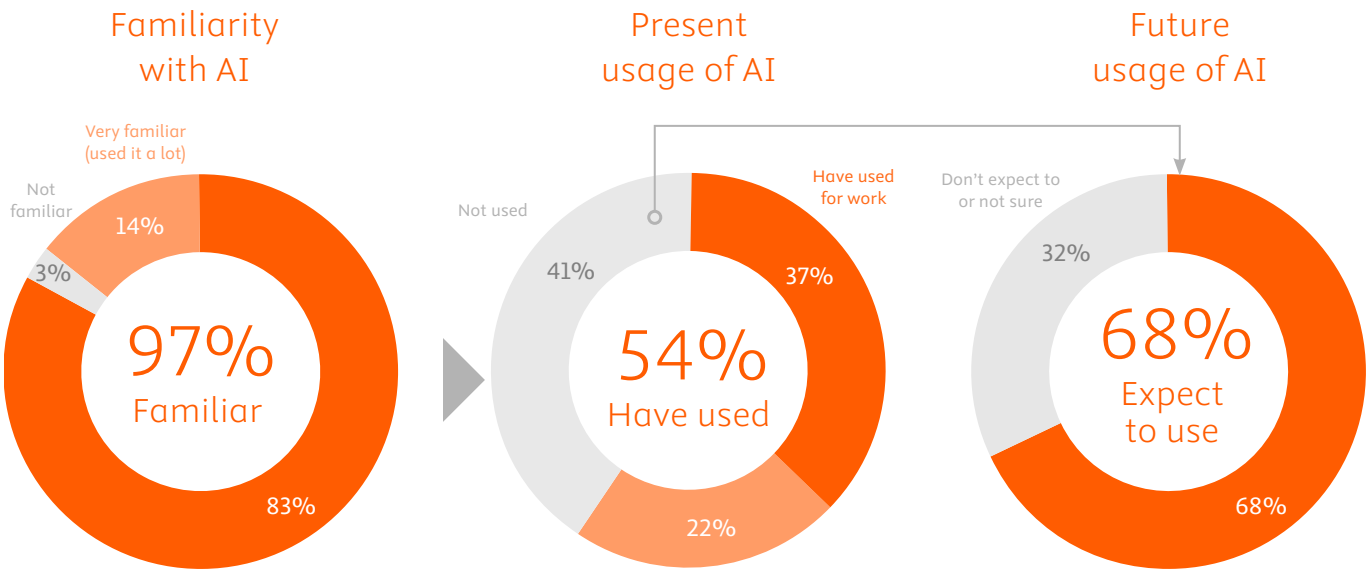


Fig 2. **Question:** To what extent are you familiar with AI (including GenAI)? n=2,355
Question: Have you used an AI (including GenAI) product or an AI feature on a product you use regularly? n=2,284
Question: Do you expect you will choose to use AI (including GenAI) in the near future? n=944

Perceptions of GenAI

> "All emerging technologies, including AI, have both advantages and disadvantages. It is essential to further develop and regulate these technologies, aiming to extract maximum benefits."
>
> Survey respondent, researcher, Canada

When it comes to the impact of AI, sentiment is generally more positive than negative: 41% of researchers say AI is a welcome advancement, compared to just 1% who see mostly drawbacks. However, researchers are more likely to have mixed feelings (48% globally). Researchers are most likely to be positive in APAC (47%), particularly in China (52%), and least likely in Europe (34%) and North America (31%).

Echoing this, researchers in APAC are most likely to think AI will be transformative (33%, compared to 28% globally), and those in Europe significantly less likely to think this (20%). Overall, 74% of researchers expect AI to bring a level of change that is significant or transformative. This is highest in the Middle East and Africa, at 84%.

Overall feelings towards AI (including GenAI)

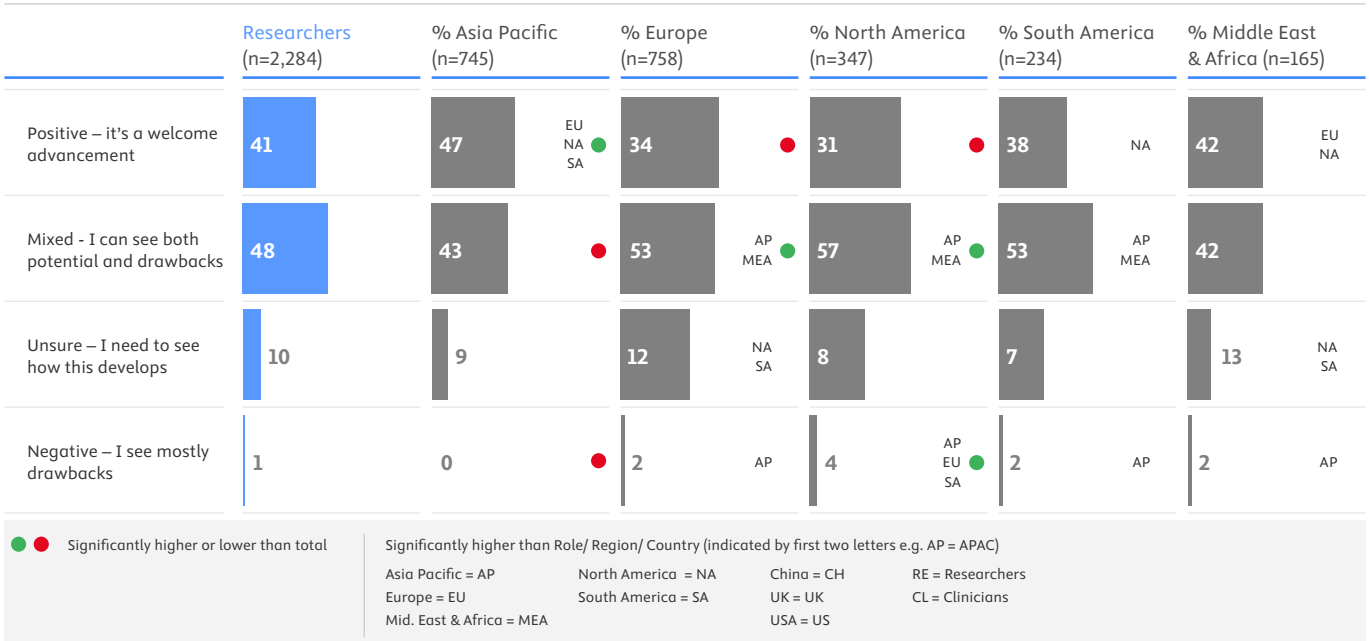


Fig 2. **Question:** What are your overall feelings about the impact of AI on your area of work?

GenAI in practice

Despite being most aware of AI, researchers in North America are also most likely not to have used the technology, at 42%. Of the 97% of researchers who have heard of it, 59% globally have used it, 37% for a specific work-related purpose. Work-related usage is highest in APAC (39%) and lowest in the Middle East and Africa (30%).

Over half (52%) of researchers who haven't used AI say it's due to lack of time; this is the most common reason across all regions. Notable regional differences include: 33% of researchers in APAC haven't found a tool yet that meets their needs (compared to 28% globally), researchers in North America have more concerns about the tools (39% versus 25% globally) and for researchers in the Middle East and Africa, not having a subscription or access is a more common reason not to use AI, at 31% compared to 24% globally.

Of researchers who have not used AI, more than two-thirds (68%) expect to use it within the next two to five years. This is highest in the Middle East and Africa and China (both 78%) and lowest in North America (54%).

Many don't know if their institution has restrictions in place on the use of AI. Budget is the biggest restriction to use in South America (32%) and the Middle East and Africa (39%).

Overall, 44% of researchers are unaware of any institutional plans for preparing for AI usage.

Reasons for not using AI products or AI features

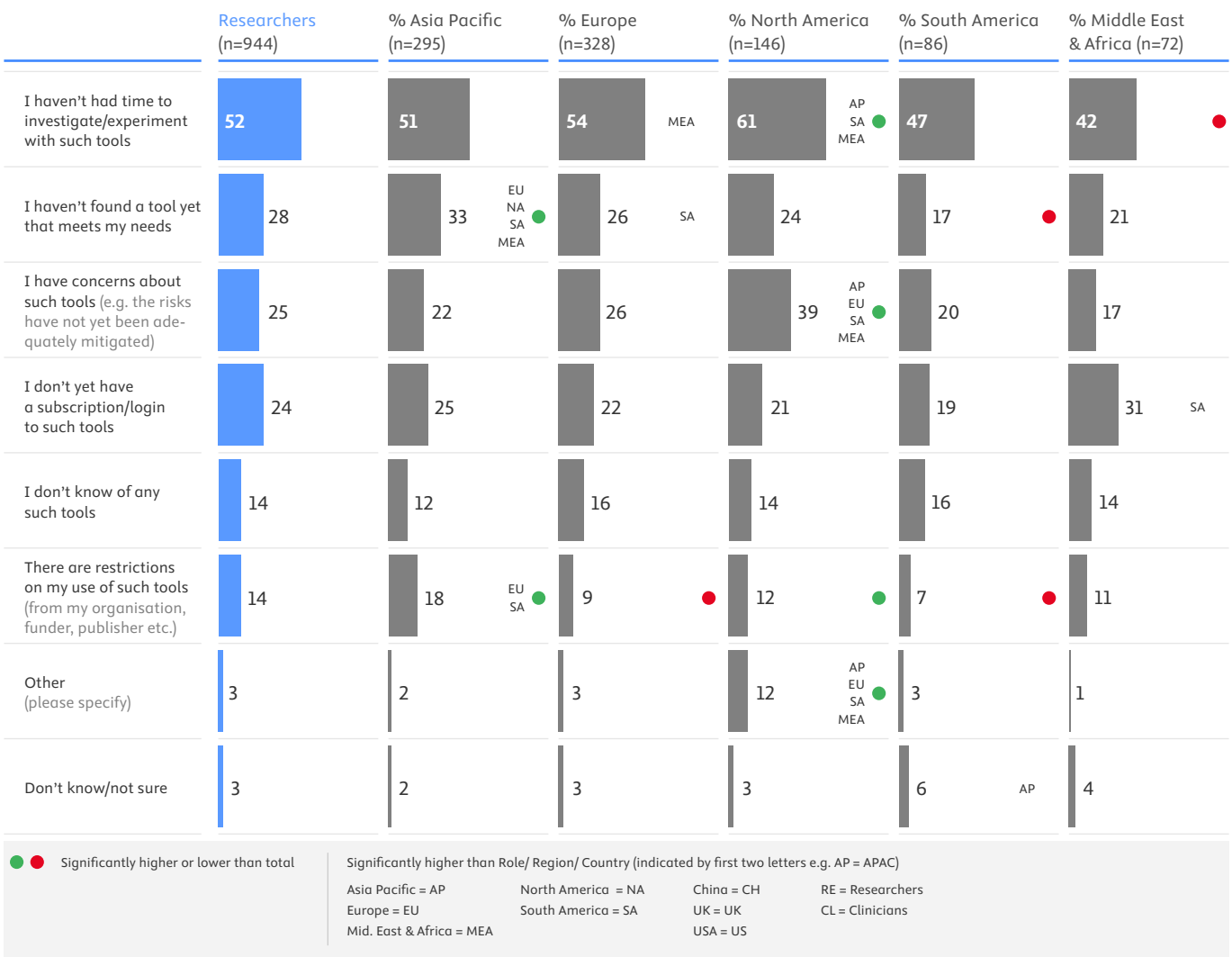
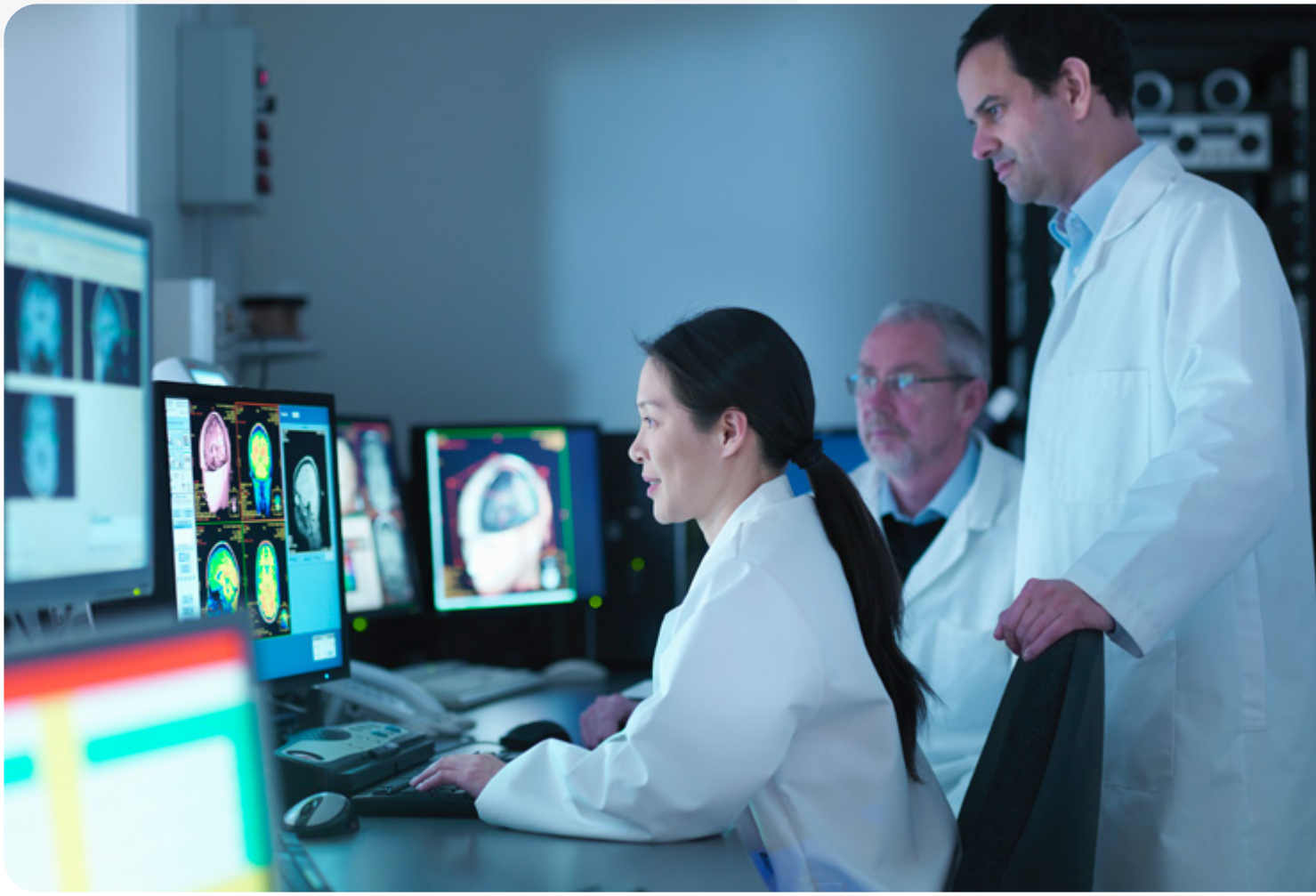


Fig 3. Question: Which of the following describes why you haven't used an AI product or AI feature?

Chapter 2:

A future lens on AI



- 97% think AI will change the way students are taught and study in universities and medical schools
- 94% think AI will help accelerate knowledge discovery
- 92% think AI will help rapidly increase the volume of scholarly and medical research
- 68% of those not using AI expect to use it in the next two to five years
- 74% believe AI (including GenAI) will have a transformative or significant impact on their area of work

As the technology develops, researchers' use of AI increases. Of the 41% of researchers who are yet to use AI tools, 68% expect to use them in the near future. However, this expectation varies greatly, from 54% in North America to 78% in the Middle East and Africa. Some of the biggest expected benefits are accelerating knowledge discovery, changing the way students are taught at university, and increasing the volume of research. But respondents have concerns too, including the potential for misinformation.

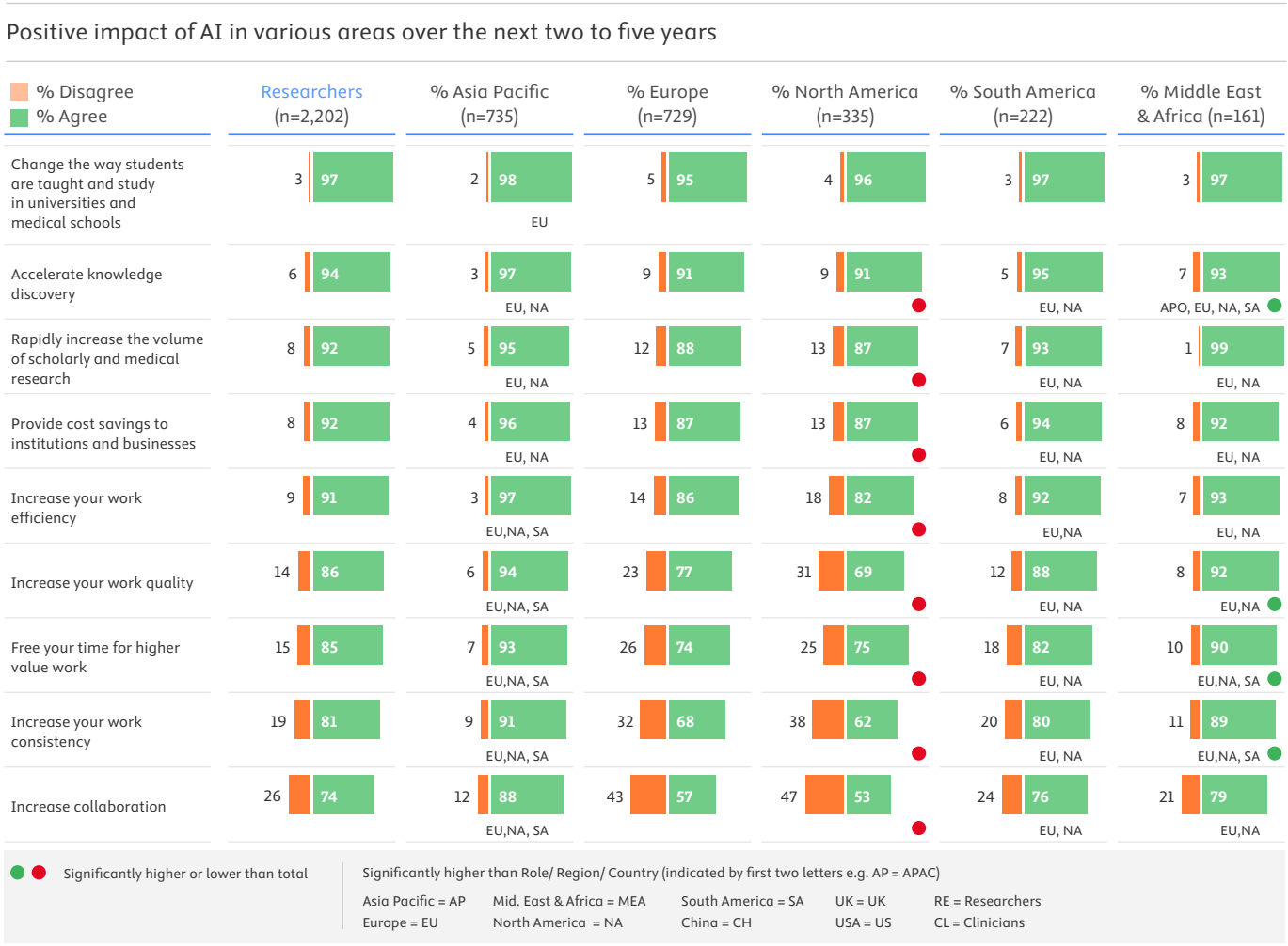


Fig 4. Question: Thinking about the impact AI will have on society and your work, to what extent do you think over the next 2 to 5 years it will...? A great extent, some extent, not at all.

Perceived impact and benefits

In the survey, we explored researchers' views on the specific impact they expect AI to make across a range of areas, and the results provide the detail behind their generally positive outlook of AI. Views tend to be broadly consistent across regions with the exception of North America, which has statistically lower scores across most areas, and the Middle East and Africa, which are statistically higher in several areas.

Research: 94% of researchers think AI will help accelerate knowledge discovery and 92% expect AI will help rapidly increase the volume of scholarly and medical research. About three-quarters (74%) expect AI to increase collaboration, which is valuable to research success. Overall, 95% of researchers see at least some benefit for research-related activities. They are less optimistic about funding, though: 83% expect some benefit, while 17% expect no benefit.

Publishing: 92% of researchers believe AI will bring at least some benefit in publication and monitoring the impact of research, for example in authoring and reviewing. And 78% expect to be informed if the peer-review recommendations they receive about their manuscript utilized generative AI, even if alongside human oversight.

Work: Most researchers expect AI to have a positive impact on their work by improving their work efficiency (91%), the quality of their work (86%) and the consistency of their work (81%). This is connected to time: 85% say AI will help free up their time for higher value work.

Education: The vast majority (97%) of researchers expect AI to change the way students are taught at university in the next two to five years, suggesting it will continue to impact future generations of researchers. Globally, 95% of researchers see at least some benefit in the technology for teaching and lecturing activities. The proportion who expect a lot of benefit is highest in South America (57%) and lowest in North America (32%), where 12% expect no benefit.

Perceived drawbacks

> "I'm distrustful of all AI tools at present. It would take a lot of transparency along with concrete examples of the tool in action to convince me it is trustworthy. My career and my scientific integrity are too valuable to hand-over to anyone or anything else. I am also not protected by tenure so any slip-ups and I will lose my career."
>
> Survey respondent, researcher, Canada

Although they shared their expectations of the benefits of AI across a wide range of areas, researchers also shared concerns in the survey (see detailed findings in researcher databook).

Accuracy: Almost all (95%) researchers believe AI could be used for misinformation at least to some extent, and 86% are concerned it will cause critical errors or mishaps, with agreement highest in North America (94%). Hallucinations are of particular concern, with one-quarter (25%) of researchers globally, and 37% in North America, saying outputs being factually incorrect and/or non-sensical is a top-three disadvantage of AI. One in five (21%) also rank being too dependent on outdated data and/or information as a top disadvantage.

Impact on people: Most researchers think AI has the potential to erode human critical thinking skills (81%) and cause disruption to society, such as through unemployment for large numbers of people (80%), reflecting concern that the technology will impact people. At the same time, 39% of researchers see AI being unable to replace human creativity, judgment and/or empathy as a top-three disadvantage of the technology.

Regulation and accountability: Almost two-fifths (39%) of researchers consider the lack of regulation and governance as a top-three disadvantage of AI, with the percentage rising to 50% in South America. About one-third (32%) rank the lack of accountability over the use of generative AI outputs as a top-three disadvantage.

Expectations

Generally, researchers predict continued growth: of those who have yet to use AI, 68% expect to start using it in the coming two to five years. This expectation varies greatly by region, in line with regional perceptions. In North America, where fewest researchers see AI as a positive development, 54% of those yet to use AI expect to start using the technology, while expectation is higher in more positive regions – the Middle East and Africa (78%) and Asia Pacific (76%) (see detailed findings in researcher databook).

Researchers shared several expectations when it comes to the development and use of AI in research, many of which revolve around transparency and accountability. Globally, 81% of researchers expect to be informed whether the tools they use depend on GenAI, and 78% want to be informed if the peer-review recommendations they receive about their manuscript used GenAI.

They also want control: 76% of researchers want to be given a choice to turn off GenAI in the tools they use. Of researchers who believe AI can be a benefit, 89% are likely to use a reliable and secure AI assistant to generate a synthesis of research articles in an area.

Institutions dictate to a great extent how researchers use AI for their work. In the survey, 28% of researchers say they are prohibited from uploading confidential information into public generative AI platforms, 11% are prohibited from using certain tools and 1% are prohibited from using it at all.

Although almost half (44%) of researchers are unaware of any institutional plans relating to AI, there are indications of development. Globally, 17% say their institutions are setting up a community of practice around AI, 15% are building a plan or protocol to evaluate the purchase of tools that include it, and 15% are providing ethics courses (for detailed findings see researcher databook).

Expectations of AI

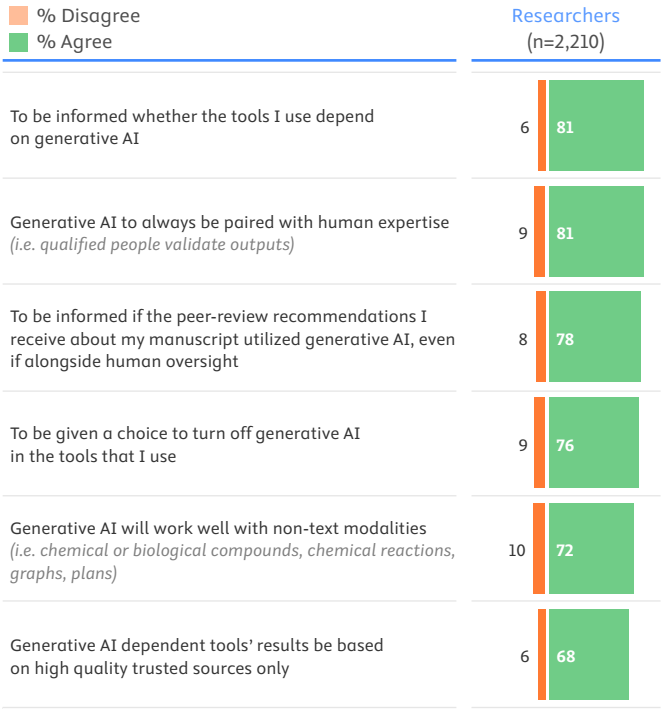
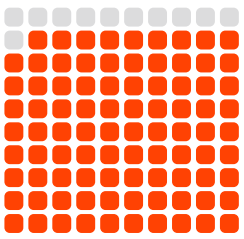


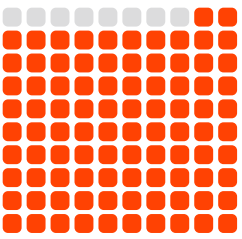
Fig 5. Question: Thinking about the use of generative AI in your area of work, how much do you agree or disagree with the following either presently or in the near future? By near future, we mean in the next two to five years.

Likely uses of a reliable and secure AI assistant



89%

of researchers who believe AI can bring benefit when using scientific content are likely to use such an assistant to generate a synthesis of research articles in a specific area.



92%

of researchers who believe AI can bring benefit when completing research related activities are likely to use such an assistant to review prior studies, identify gaps in knowledge and generate a new research hypothesis for testing.

Chapter 3:

Shaping an AI-driven future

- Many researchers believe AI will be used for misinformation (95%), could cause critical errors or mishaps (86%) and erode critical thinking (81%)
- 57% say training an AI model to be factually accurate, moral and not harmful (safety) would strongly increase their trust in that tool
- 39% consider the lack of regulation or governance a top-three disadvantage
- Robust governance on data and information used to train the model is ranked highest by researchers for increasing their comfort in using an AI tool

Given the concerns researchers share about AI and GenAI tools, notably including their potential to be used for misinformation, a concern that was identified in Elsevier's *Confidence in Research* global survey[4], it is important to understand the factors that would build their trust in the technology and comfort using it. Researchers are keen to see better regulation around AI, as well as the data and information used to train tools. In general, they are looking for transparency, accountability, privacy and choice.

Factors impacting trust in and comfort using GenAI tools

> "Technology, as always, should be used and developed responsibly and ethically."

Survey respondent, researcher, Thailand

Reflecting concerns about misinformation, and potential for critical errors, as well as the top-three disadvantages researchers identified around factual inaccuracy (25%) and discriminatory or biased outputs (25%), the biggest factor that would increase their trust in an AI tool is training the model to be factually accurate, moral, and not harmful, with 57% of researchers agreeing this would strongly increase their trust (for detailed findings see researcher databook).

Other factors affecting trust and comfort using AI tools can be grouped into a few main areas:

Transparency: 56% say citing references by default would strongly increase their trust in an AI tool. When it comes to increasing comfort using a tool, 29% of researchers ranked the way the solution works being explained as a top-three comfort factor.

Reliability: For 56% of researchers, only using high-quality peer-reviewed content to train the model would strongly increase their trust, and 52% feel the same about training the model for high coherency outputs. Globally, 37% of researchers ranked the information the model uses being up-to-date as a top-three factor for comfort.

Governance: In line with their concerns regarding a lack of regulation and governance being the tope disadvantage of AI, more than half (52%) of researchers say abidance by any laws governing development and implementation would strongly increase their trust in an AI tool. Top-three factors for comfort using AI include robust governance on data and information used to train the model (37%) and accountability through human oversight (36%).

People and their privacy: For over one-quarter (27%) of researchers, consideration of the real-world impact on people is a top-three comfort factor. Privacy is a major concern too, with 55% of researchers saying keeping the information input confidential would strongly increase their trust, and many ranking privacy as a top-three comfort factor, both of inputs (35%) and outputs (25%).

Actions for a GenAI-powered future

Based on the survey findings and secondary research, recommended actions for providers and institutions.

Providers dependent upon AI technology can:

- Enhance accuracy and reliability
- Increase transparency
- Strengthen safety and security

Institutions employing researchers and clinicians can:

- Establish policies and plans and communicate them clearly
- Build governance and expertise
- Provide training and capacity
- Ensure access

References

1. Bill Gates. The Age of AI has begun. Gates Notes. 21 March 2023. https://www.gatesnotes.com/The-Age-of-AI-Has-Begun

2. Elsevier. Research Futures 2.0. April 2022. Page 64. https://assets.ctfassets.net/zlnfaxb2lcqx/47ncumZe63BnUGl0PGkQbV/c3b2d1df821ff03c52d8fd4360dd5751/Research-Futures-2_0-Full-Report.pdf

3. OpenAI. ChatGPT. April 2024. https://chat.openai.com/chat

4. 4. Elsevier. Confidence in Research. 2022. Page 9 https://confidenceinresearch.elsevier.com/

Notes

For a detailed methodology, including sample bases by region/country, see the appendices of the main report.

https://tinyurl.com/attitudes-ai

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