



# TAKING THE PULSE: A RAPID SURVEY OF GENERATIVE AI APPLICATIONS IN INDONESIA'S DEVELOPMENT SECTOR

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# EXECUTIVE SUMMARY

## Background



- Generative Artificial Intelligence (Gen AI) is a specific branch of Artificial Intelligence (AI) that has garnered substantial attention since the end of 2022, and the global community is just beginning to explore and investigate its benefits and potential risks.
- In Indonesia, the government has shown a proactive stance towards AI, having developed a National Strategy for Artificial Intelligence as early as 2020.
- However, since Generative AI is a relatively new concept, little information is available regarding its application in the development sector in Indonesia and the specific risks that need to be considered.
- To gain insights into this topic, Kopernik carried out a quick survey to measure the state of Generative AI usage in the Indonesian development sector. The survey, which was distributed to over 2,000 individuals, garnered 121 responses between May 4 and May 19, 2023.

## Key Findings



- The survey found that 13% of respondents' organizations are very familiar with Gen AI, while an additional 46% possess a basic awareness. Among those who stated they had basic to good familiarity with Gen AI, 38% reported using it either daily or very frequently.
- The most common use of Gen AI was for research and idea generation, followed by content creation & copy editing, and translation.
- In terms of the platform, ChatGPT was by far the most widely used, followed by Bing AI, Midjourney, and Dall-E.
- The majority of respondents (94%) stated that they found Gen AI to be either very useful or somewhat useful. Furthermore 67% of respondents view the future of Gen AI as either very promising (22%) or promising (45%).

## Notable use cases



- Follow-up interviews with selected respondents, supplemented by additional research, highlighted that creative use cases for Gen AI are emerging. For example, a social enterprise harnessed ChatGPT to assist micro-businesses in developing a promotional campaign for Lebaran (Eid Al-Fitr). An aid agency used Dall-E as part of a foresight workshop for the new capital city. Key words generated through the workshop were fed into Dall-E, producing a visual and aspirational representational image of the new capital.
- ChatGPT was also utilized by a social enterprise to fix website glitches without the need for an unavailable website administrator. Another social enterprise experimented with ChatGPT to generate code for R studio, an open-source statistics software, facilitating data visualization.

## Challenges and Barriers



External research revealed that 93% of ChatGPT3's training data is sourced from English language data, despite the fact that only 19% of the world population speaks English as a first or second language. Consequently the outputs produced by Gen AI may exhibit a bias towards the English-speaking world. Given the multiple prerequisites necessary to benefit from Gen AI, including access to the internet and smartphones, disadvantaged communities may fall further behind in the digital divide.

## Concluding remarks



As a rapidly evolving field, the development sector can play an important role in advocating and promoting equitable Gen AI usage and in mitigating potential risks.



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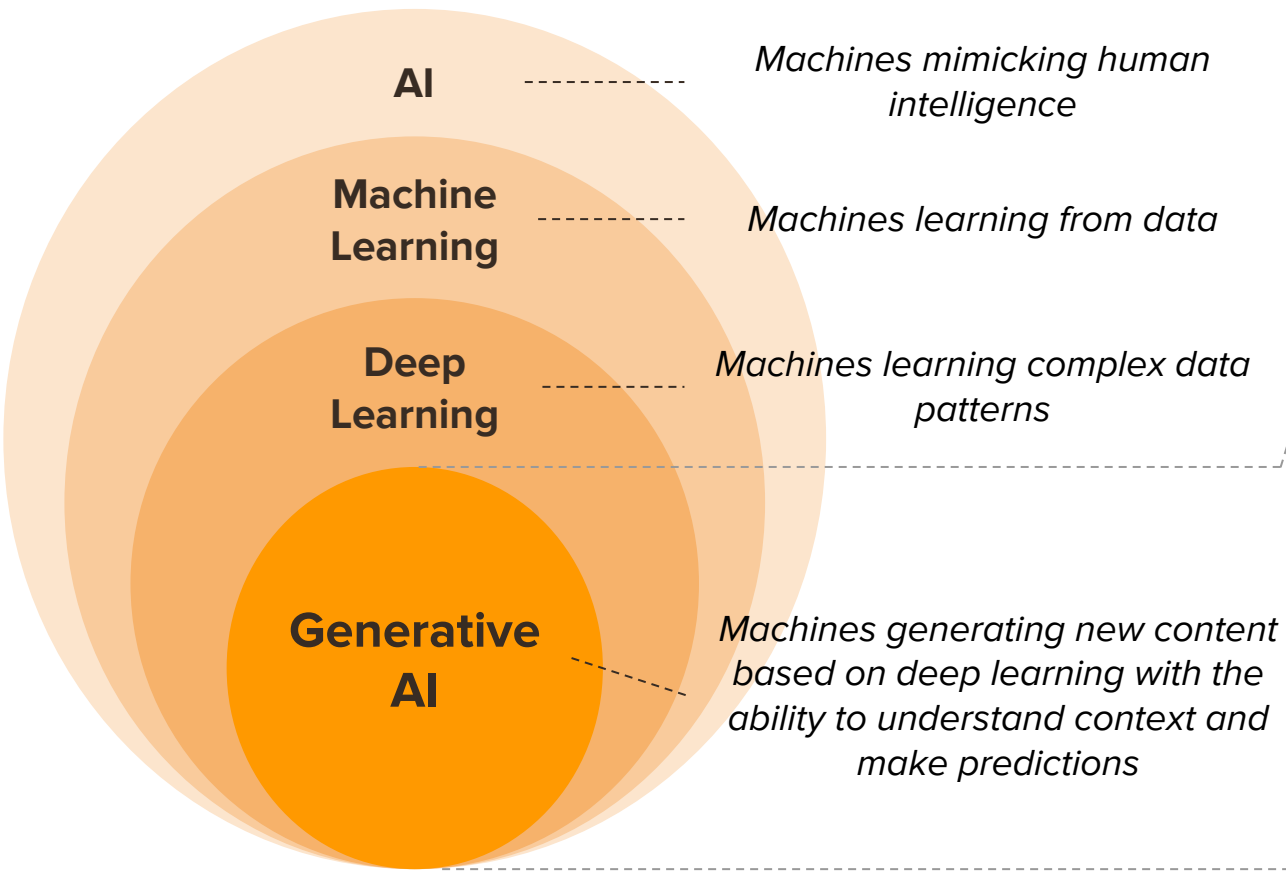
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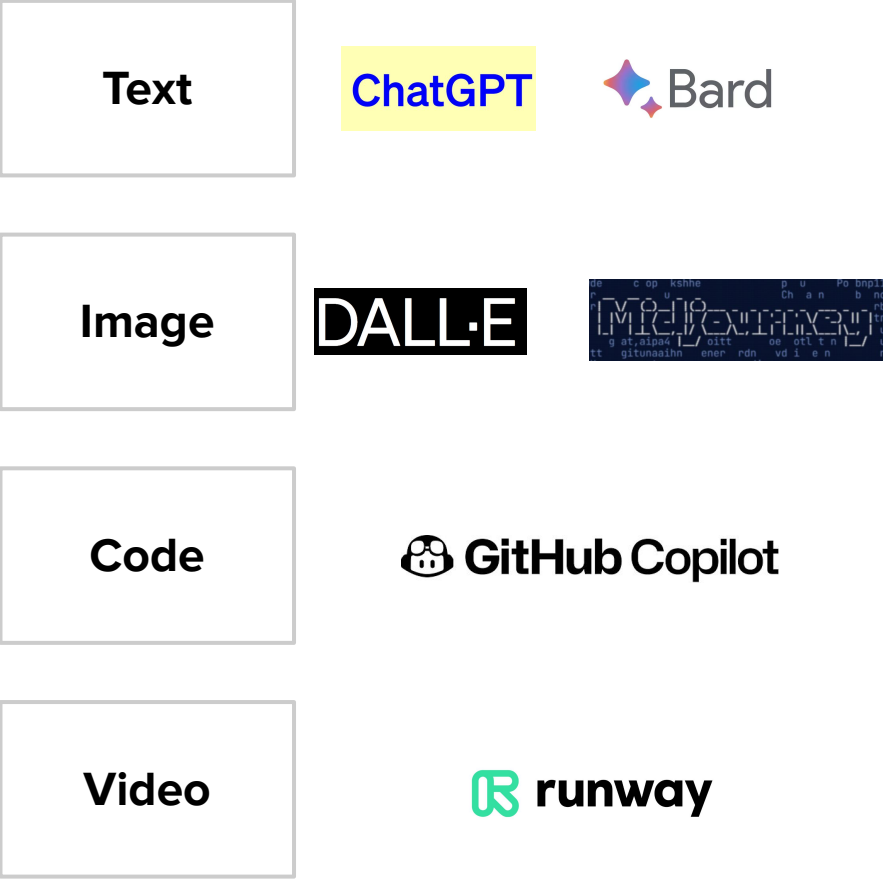
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# Generative Artificial Intelligence is a branch of Artificial Intelligence capable of creating diverse content in response to prompts...

## Generative AI is a branch of AI



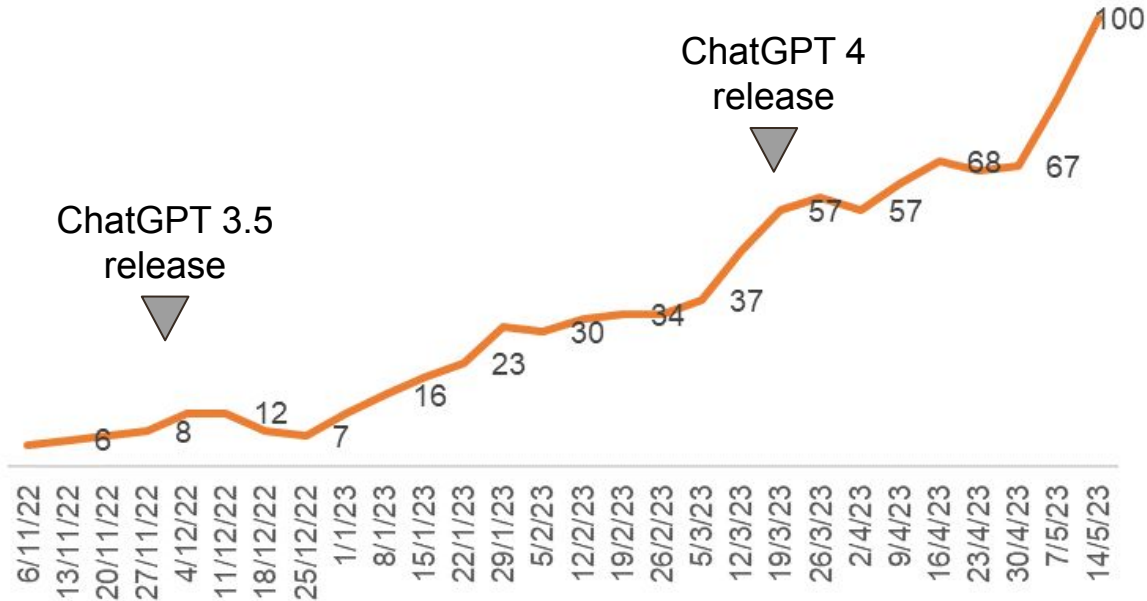
## Examples of Generative AI applications



# ... which has captured worldwide attention since late 2022

## Google trend analysis\*

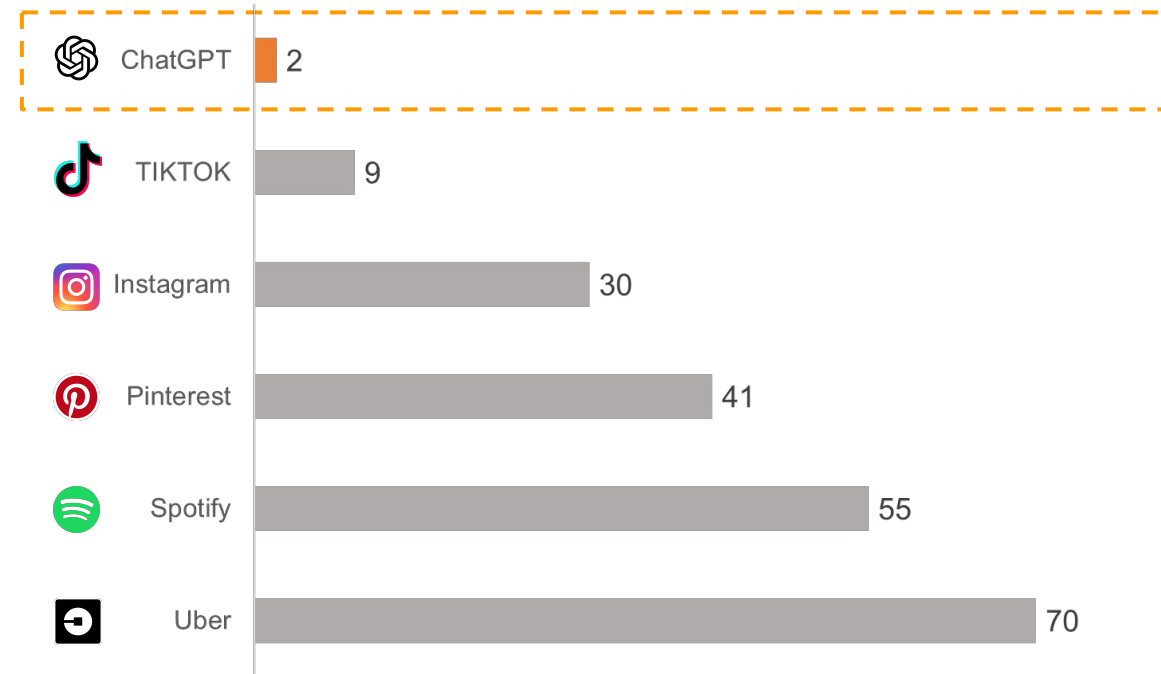
Key word - 'Generative AI'



\*Worldwide; All categories; Websearch

## Time to reach 100 million monthly users

# Months



Source: [Yahoo Finance](#)

# The global community is just beginning to explore the potential benefits and risks of Generative AI within the social and non-profit sector

## Benefits



“An **Indian farmer**, using one of the local languages... was **able to access a government program** by letting ChatGPT **find and complete an application form**”

- [Microsoft CEO](#), 2023



“A lot of grant writing is just translating the same information from one funder’s burdensome and self-indulgent application to another funder’s.... we can **save tons of time through AI-enabled grantwriting tools**... which will allow us to focus on service delivery and other tasks.

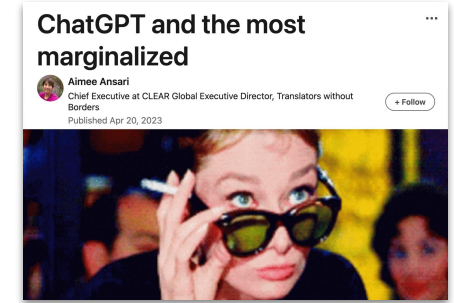
- [Nonprofit AF](#), 2023



“Ashoka wanted to support social entrepreneurs with a **Strategy Bot**, i.e. text generation model that could help writing these strategies (...) They tried the vanilla version of GPT-3 and **found the results promising**...”

- [TDS](#), 2023

## Risks



“Aid workers will **need to be vigilant** about the **potential for bias and discrimination**, and take steps to ensure that their use of language technology does not perpetuate these issues.’

- [ChatGPT and the most marginalized](#), 2023

# In mid 2020, the Government of Indonesia published its national strategy for artificial intelligence, indicating a proactive stance towards AI

## Indonesia's National Strategy for Artificial Intelligence (2020-2045)



### Use cases / Benefits

#### **Agriculture**

Predict food stock levels and potential harvest failures, while also recommending actions to maintain stock. This can enhance agricultural productivity, food security, and sustainability.

#### **Education**

Generate personalized learning content and assessment systems. This can improve the quality of education and extend its accessibility to everyone.

#### **Mobility and smart city**

Administer a citizen information system that can bolster individual participation in the community

### Risks / Prerequisites

#### **Ethics**

AI's decision-making processes should be transparent and understandable to users and those affected by them.

#### **Data Privacy**

Effective data protection regulations should be in place to ensure responsible handling of personal data, providing individuals with control over their personal data.

#### **Security**

Strong security protocols should be instituted to shield AI systems from potential threats.

Source: [Strategi Nasional Kecerdasan Artifisial Indonesia 2020-2045](#)





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The survey was distributed to approximately 2,000 individuals working in the Indonesian development sector to gain insights into the current use of Generative AI and future outlook.

## Survey Categories

## Questions

### Respondent characteristics

- Please write your name
- Please write your job title/role within the organization
- Please select the organizational type that best represents your organization
- Approximately how many employees does your organization have in Indonesia?

### Gen AI Familiarity

- How familiar is your organization with Generative AI technology?
- Does your organization use Generative AI technology?

### Usage & Impact

- Which Generative AI technologies have you used?
- In which areas of your organization do you use Generative AI?
- For what type of activities has your organization used Generative AI thus far?
- How useful has your organization found Generative AI thus far?

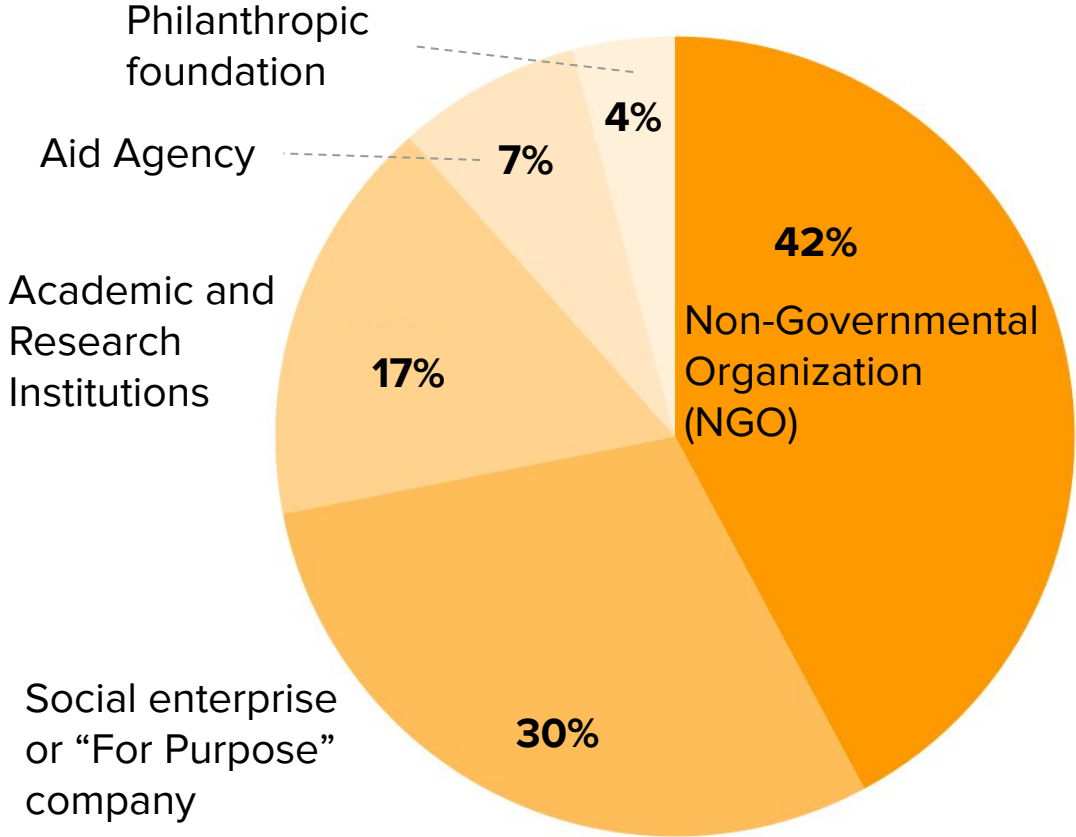
### Future outlook & concerns

- How do you view the future potential of Generative AI for your organization?
- Do you have any concerns that Generative AI technology may have a negative impact on the development sector?

Of the 121 respondents 72% work for an NGO or social enterprise. In terms of the size, 67% of respondents work at entities with fewer than 49 employees.

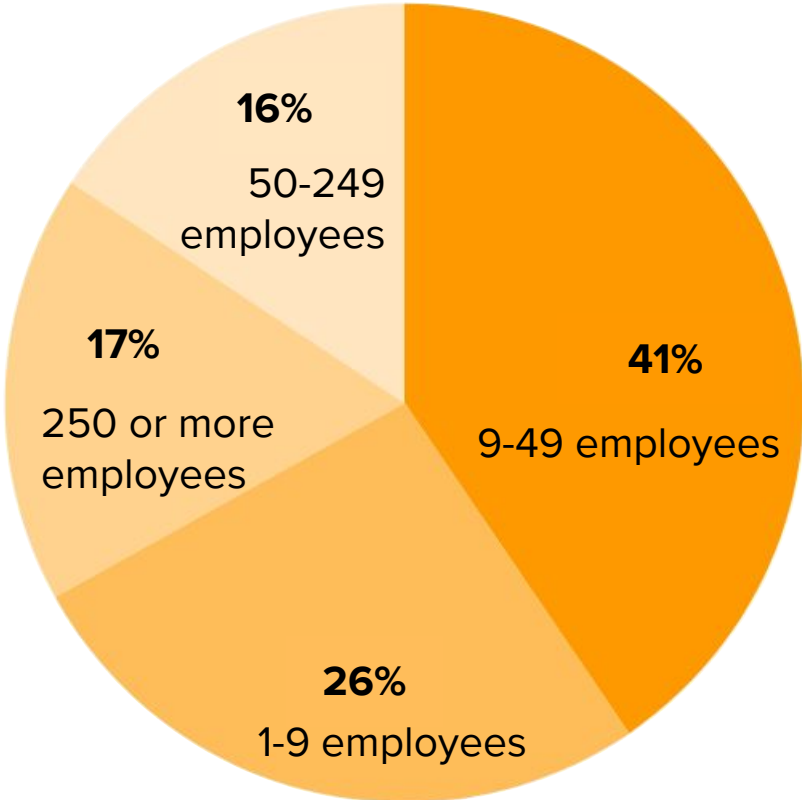
### Generative AI Survey Respondents

% (N=121 Respondents)



### Respondents based on Organization Size

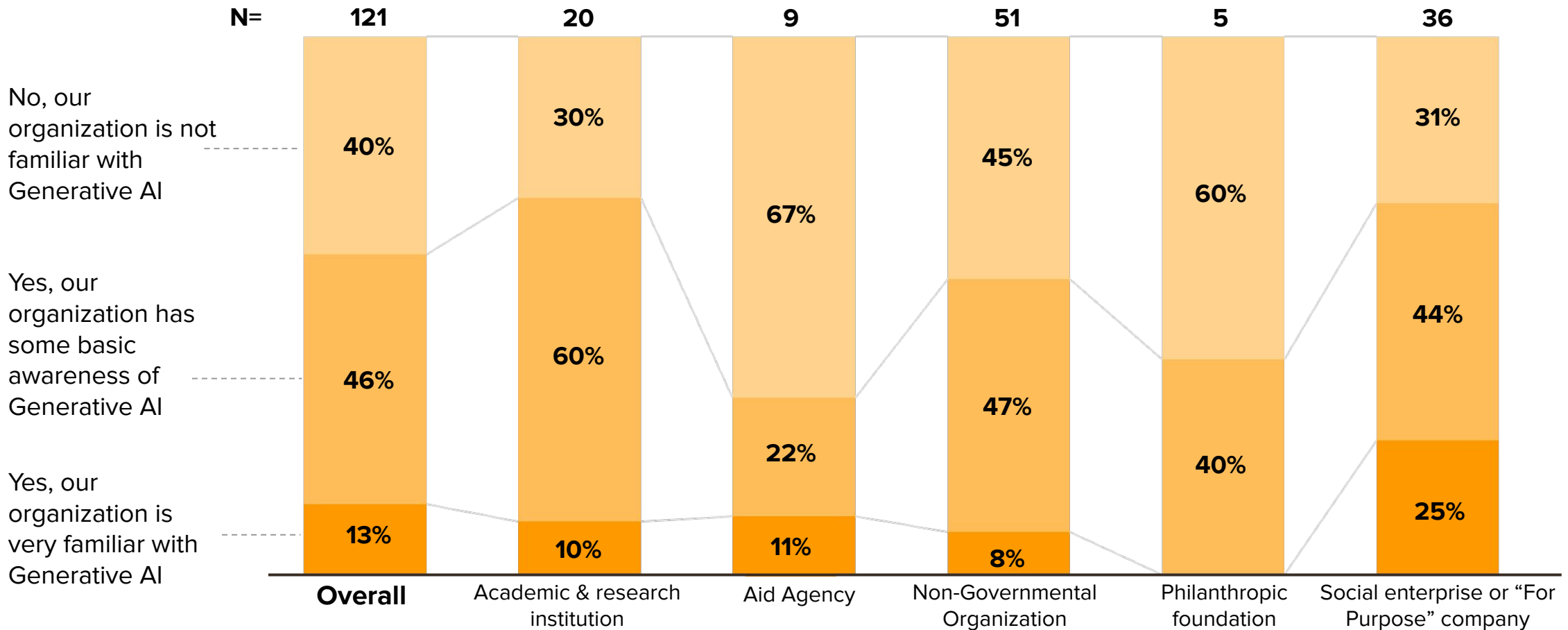
% (N=121 Respondents)



**13% of respondents reported that their organization is very familiar with Gen AI, while 46% indicated having a basic awareness of it.**

## Generative AI Familiarity

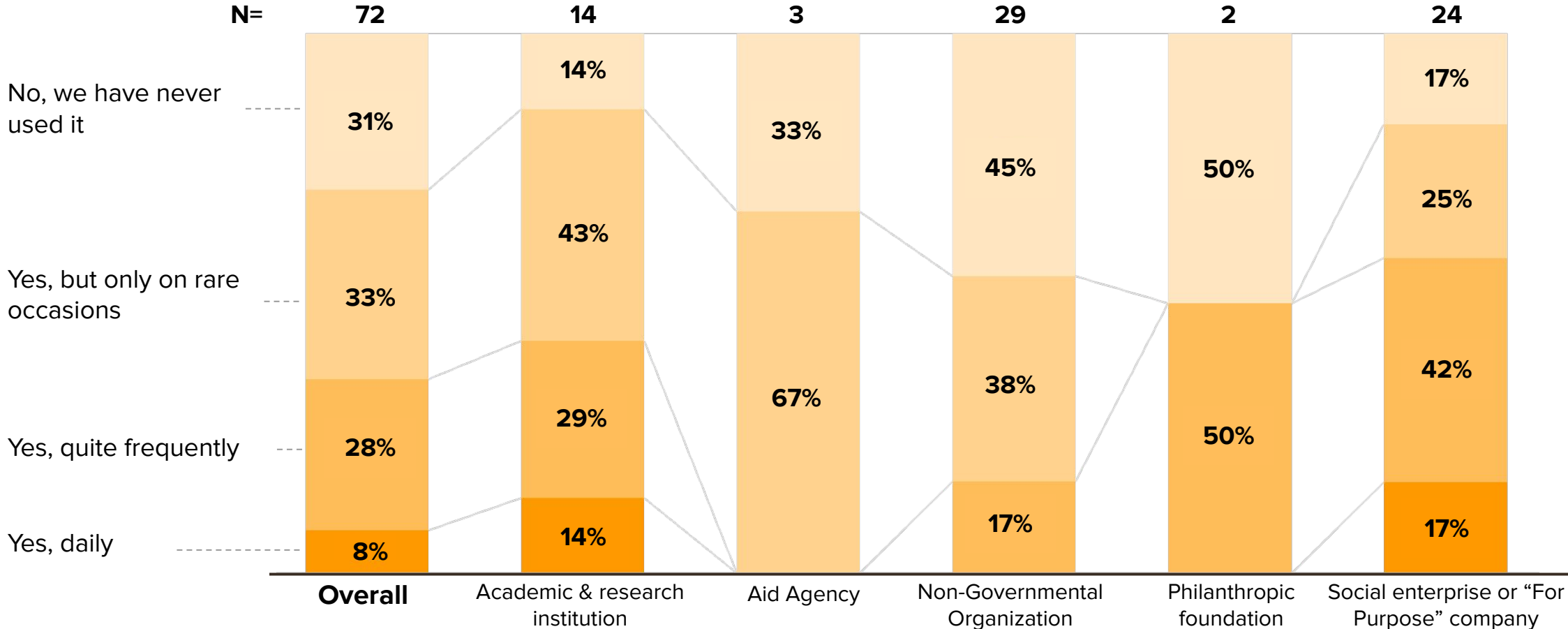
% (N=121 Respondents)



Overall, 36% of the respondents said they are using Gen AI daily or quite frequently.

### Generative AI Usage Frequency

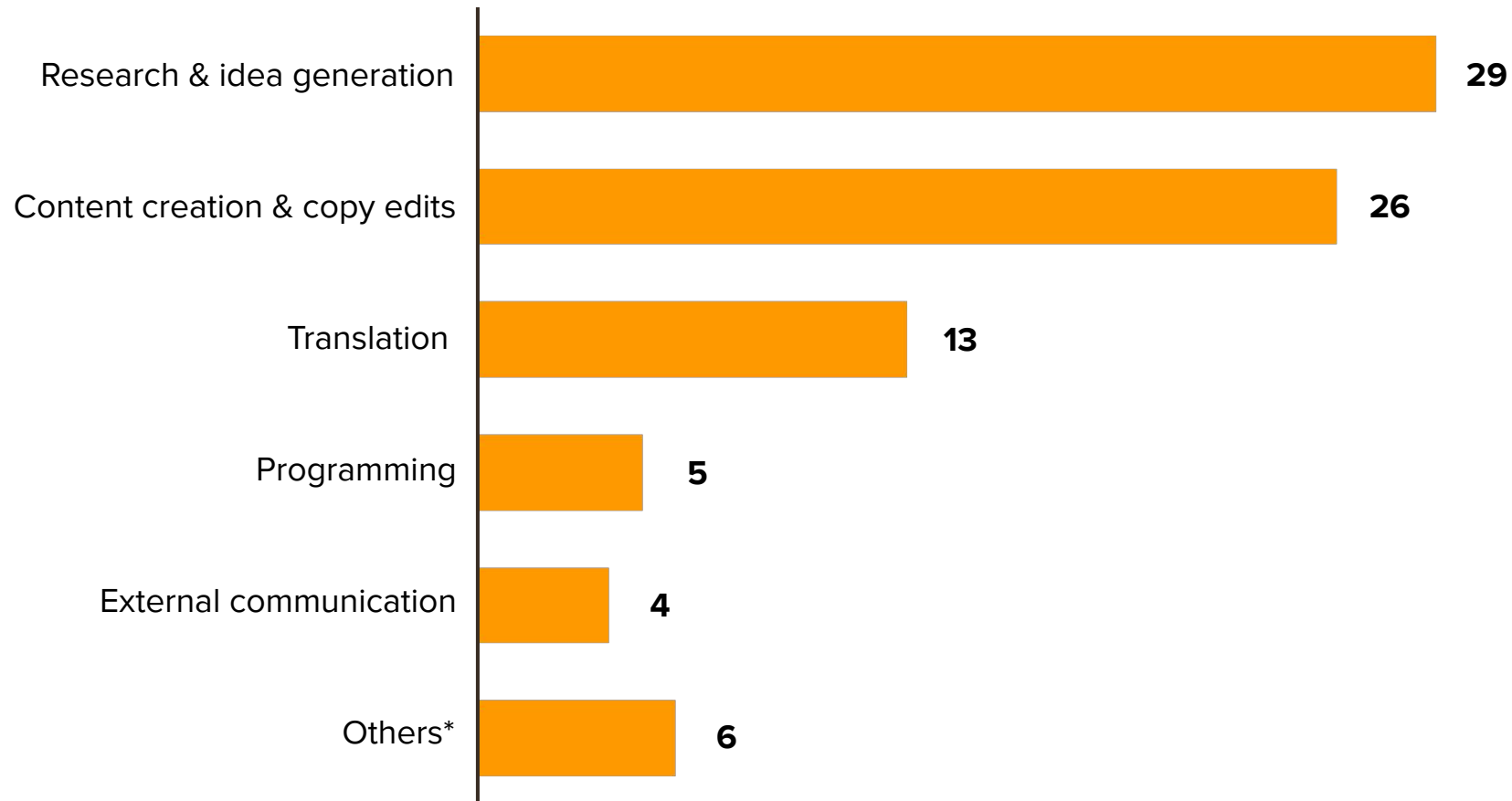
% (N=72 Respondents)



The most common applications revolve around research & idea generation, as well as content creation & copy editing, followed by translation and programming.

## Generative AI Type of Usage

(N= 49 Respondents, includes open-ended responses and multiple answers which were categorised by Kopernik)

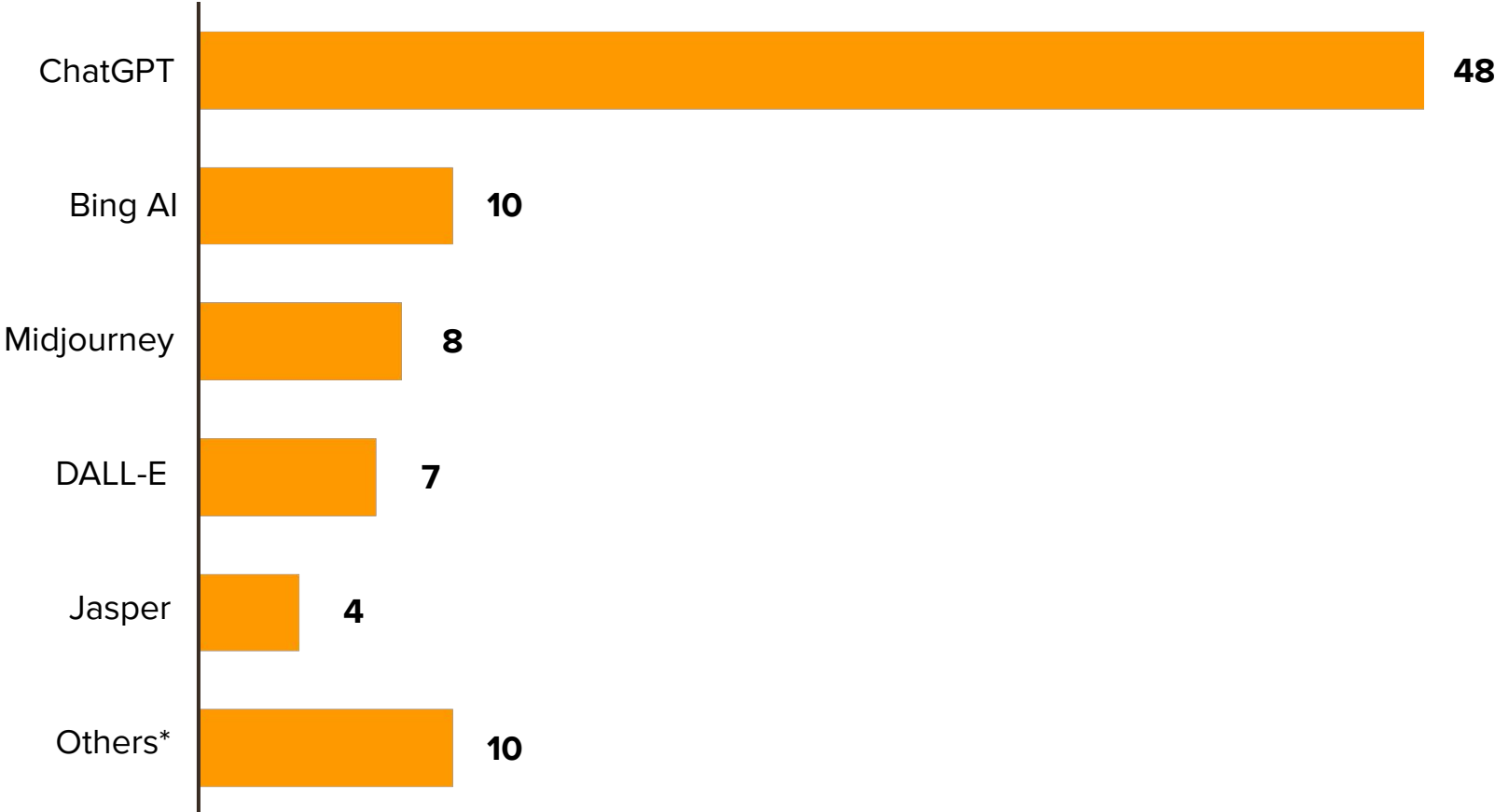


\*Others refers to internal management and map creation

# ChatGPT is the most widely used platform across all types of organizations.

## Generative AI Tools

(N= 49 Respondents, multiple answers)



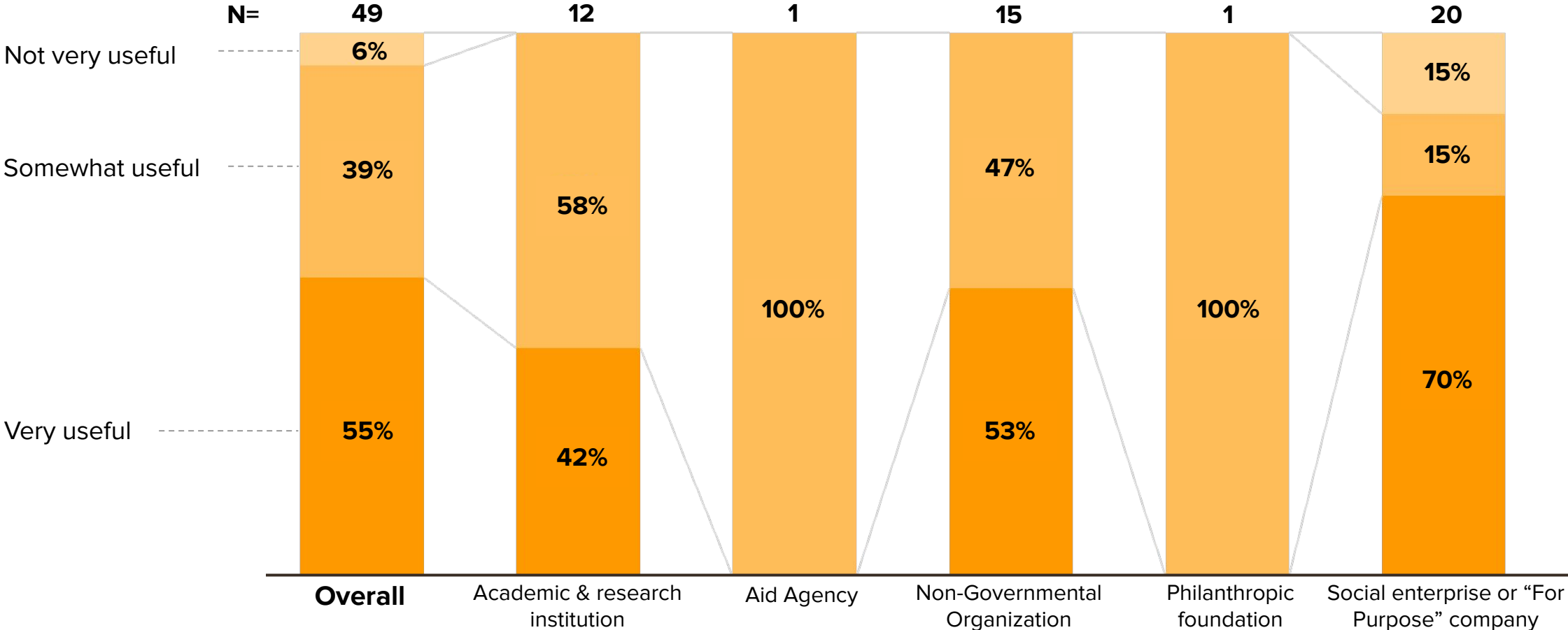
\*Others include DeepL, OpenAI, BARD, Canva Magic Design, Notion AI, Robotics



# Overall, Generative AI is generally perceived to be useful.

## Generative AI Usefulness

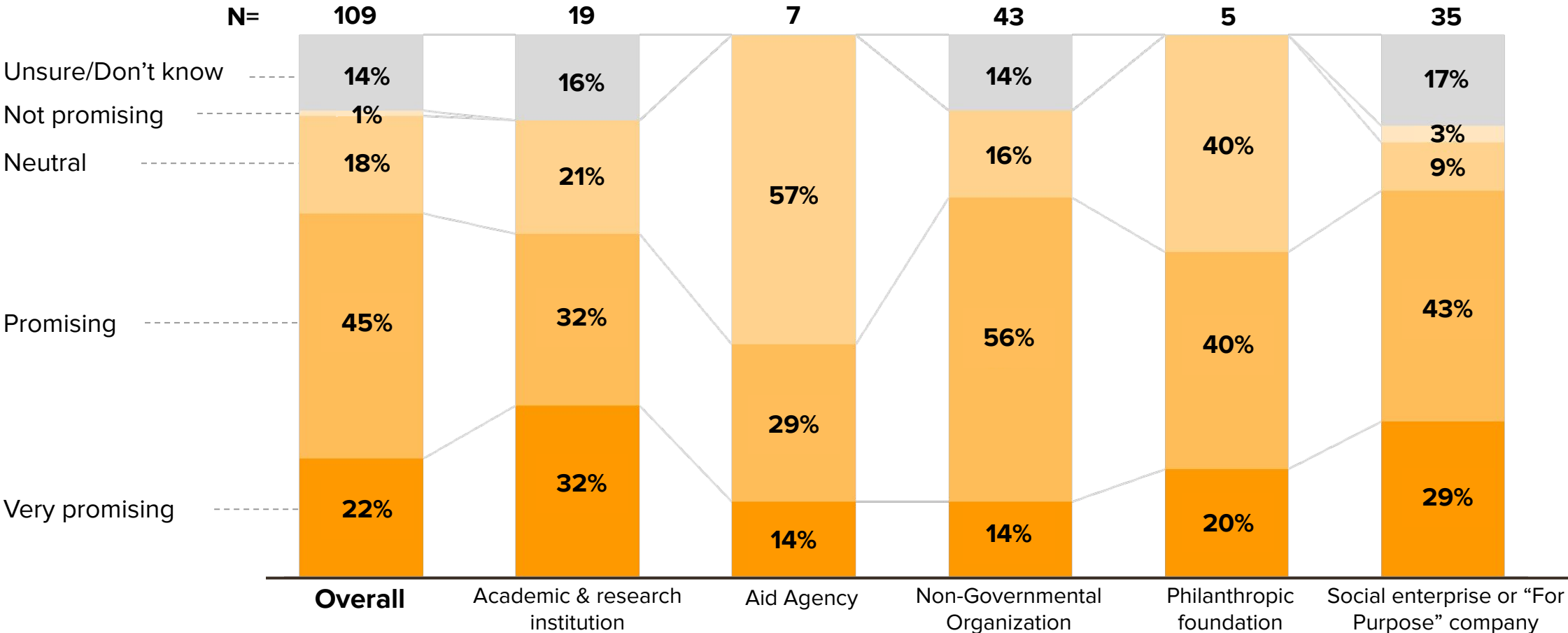
% (N=49 Respondents)



# 67% of respondents have a positive outlook on the future of Generative AI.

## Generative AI Future Outlook

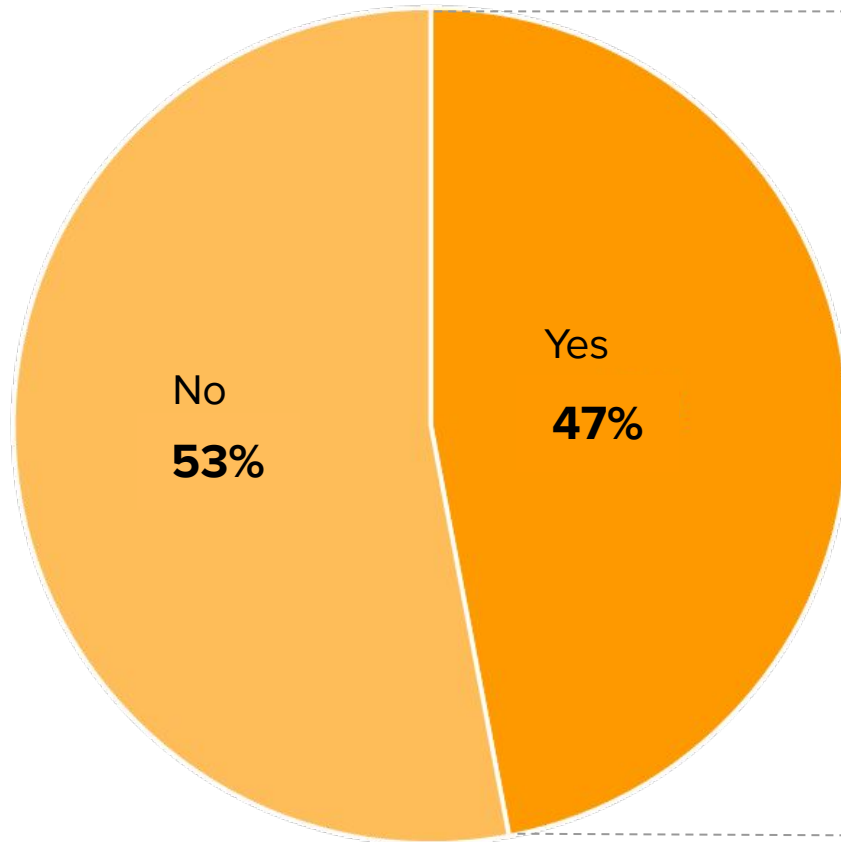
% (N=109 Respondents)



# 47% of respondents expressed concerns about the potential negative impact of Generative AI, particularly related to over-dependence, job displacement and data reliability.

## Concerns of negative impact on development sector

% (N=109 Respondents)



## Types of Concerns

(N=51 Respondents, open-ended responses and multiple answers which were categorised by Kopernik)

### Over dependence

Potential to limit the growth and development of human skills and abilities

15

### Job displacement

Potential job losses or reductions

15

### Information reliability & accuracy

Oversimplification, data bias, misinformation, and 'hallucination'

12

### Intellectual property

Potential neglect of original sources, creators, and generators of knowledge

6

### Privacy & security

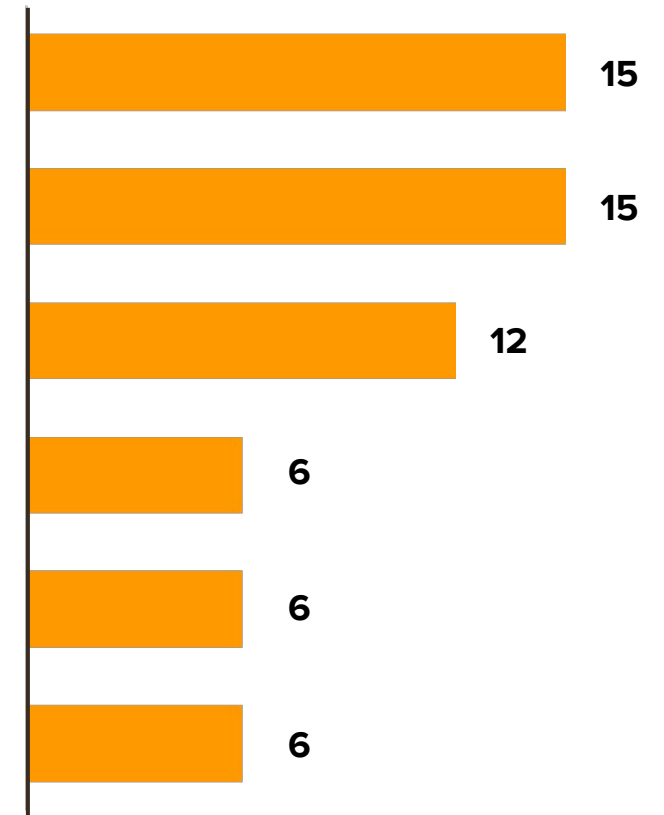
Data privacy and cyber security

6

### Others


Disruption of business models, reduction in human-to-human interaction, increased anxiety levels

6

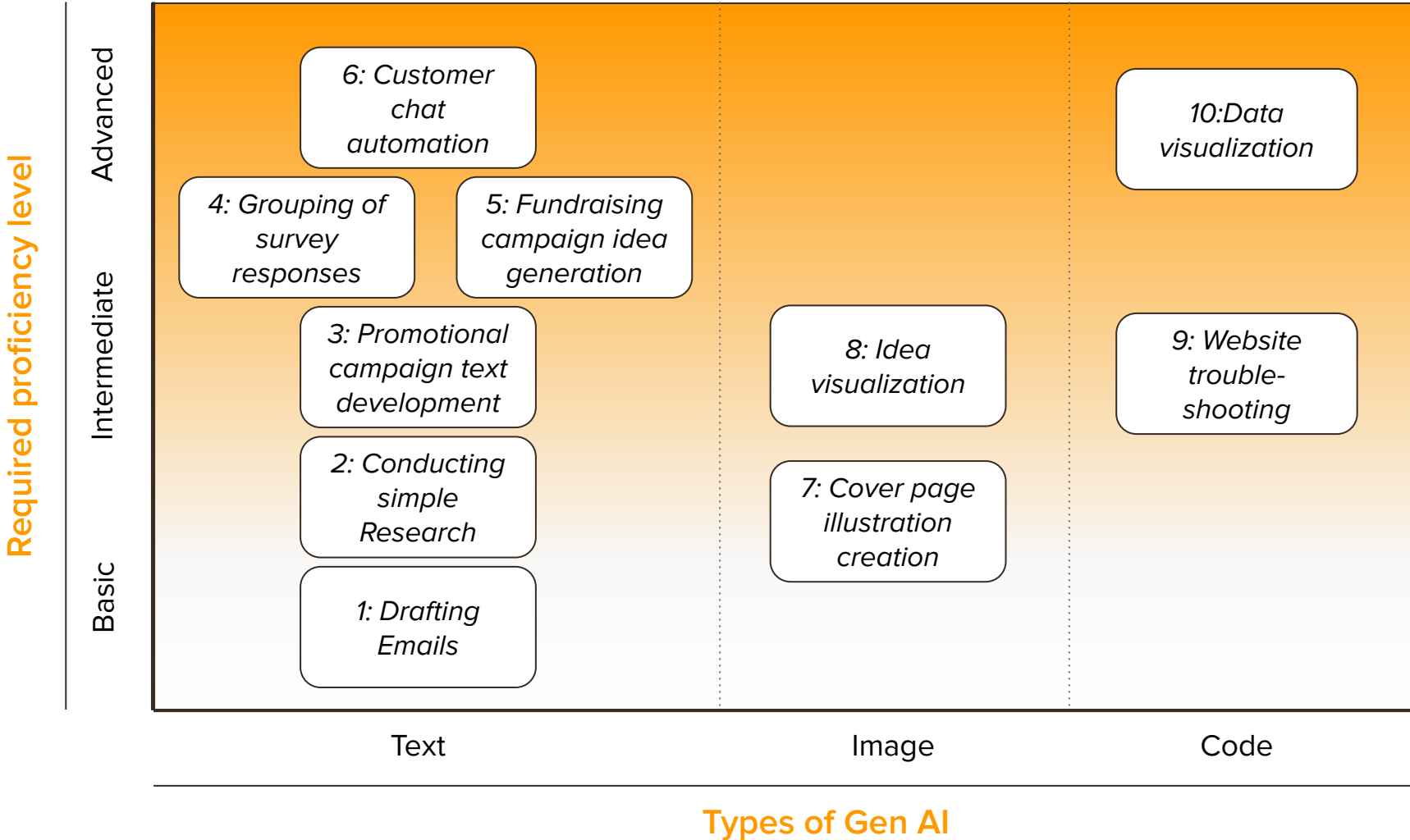




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From additional interviews, 10 notable use cases have been collected and documented, each employing different types of Gen AI applications and requiring varying degrees of Gen AI proficiency.



# Use Case 1 (Text): An NGO utilized ChatGPT to draft email messages to thank survey respondents for their participation.

## Objective of Gen AI usage

To copy edit emails thanking respondents of an online survey.

## Gen AI app used



## Prompt used

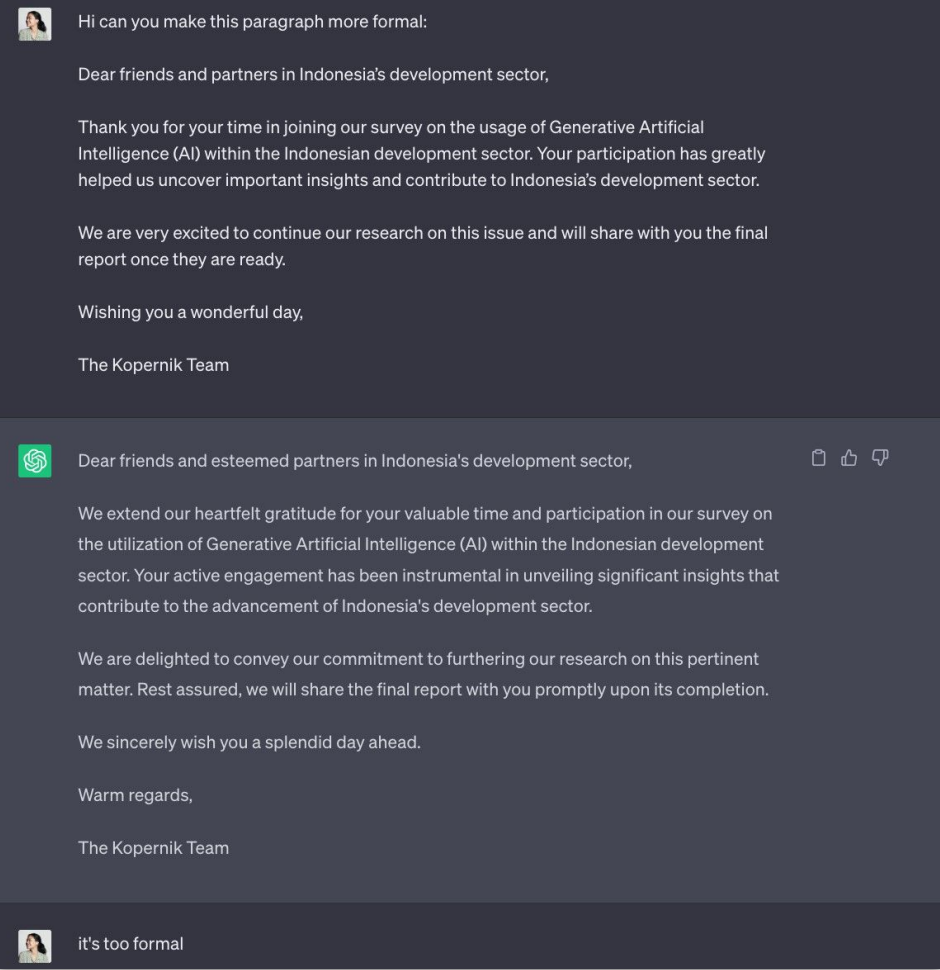
- *'Hi, can you make this paragraph more formal'*

*Draft email texts ...*

.....

- *'It's too formal. please revise'*

## Output



A ChatGPT user composed the initial draft then requested ChatGPT to copy edit the text.

Since the first output did not fulfill expectation, the user provided further instructions to improve the text.

# Use Case 2 (Text): An NGO utilized multiple prompts in ChatGPT to locate research articles on a specific subject.

## Objective of Gen AI usage

To identify and locate academic papers on the topic of 'sensory ethnography in an urban setting' written by female researchers.

## Gen AI app used

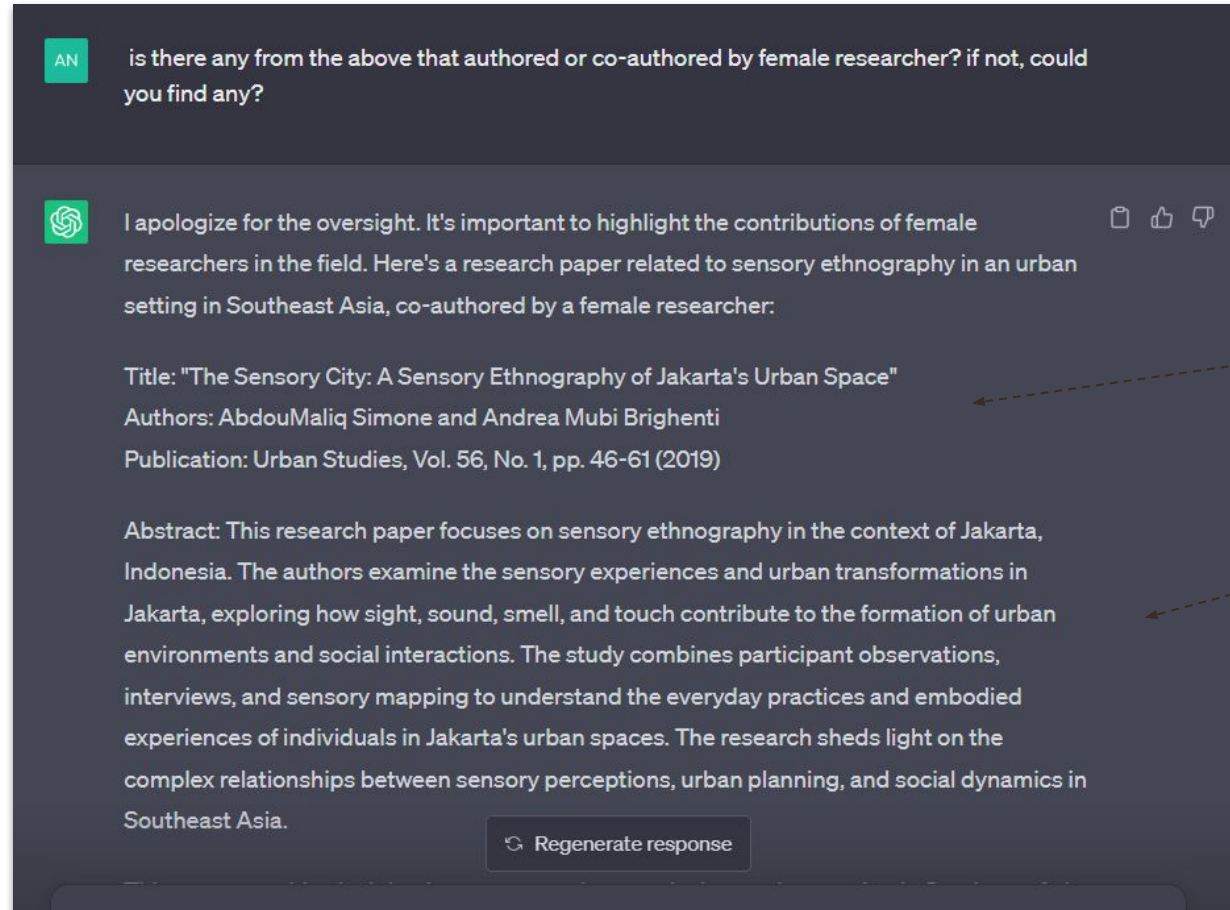


ChatGPT

## Prompt used

- *“Can you find me research on sensory ethnography”*
- *“Find me one that has been done in an urban setting (urban ethnography)”*
- *“Any from south east asia?”*
- *“Is there any from the above that authored or co-authored by female researcher? if not, could you find any?”*

## Output



Research article title and author

Abstract summary



# Use Case 3 (Text): A micro-business utilized ChatGPT to create special promotional campaign content for Eid-Al-Fitr (Lebaran).

## Objective of Gen AI usage

To help micro-businesses to create promotional messages for special Eid-Al-Fitr (Lebaran) campaigns.

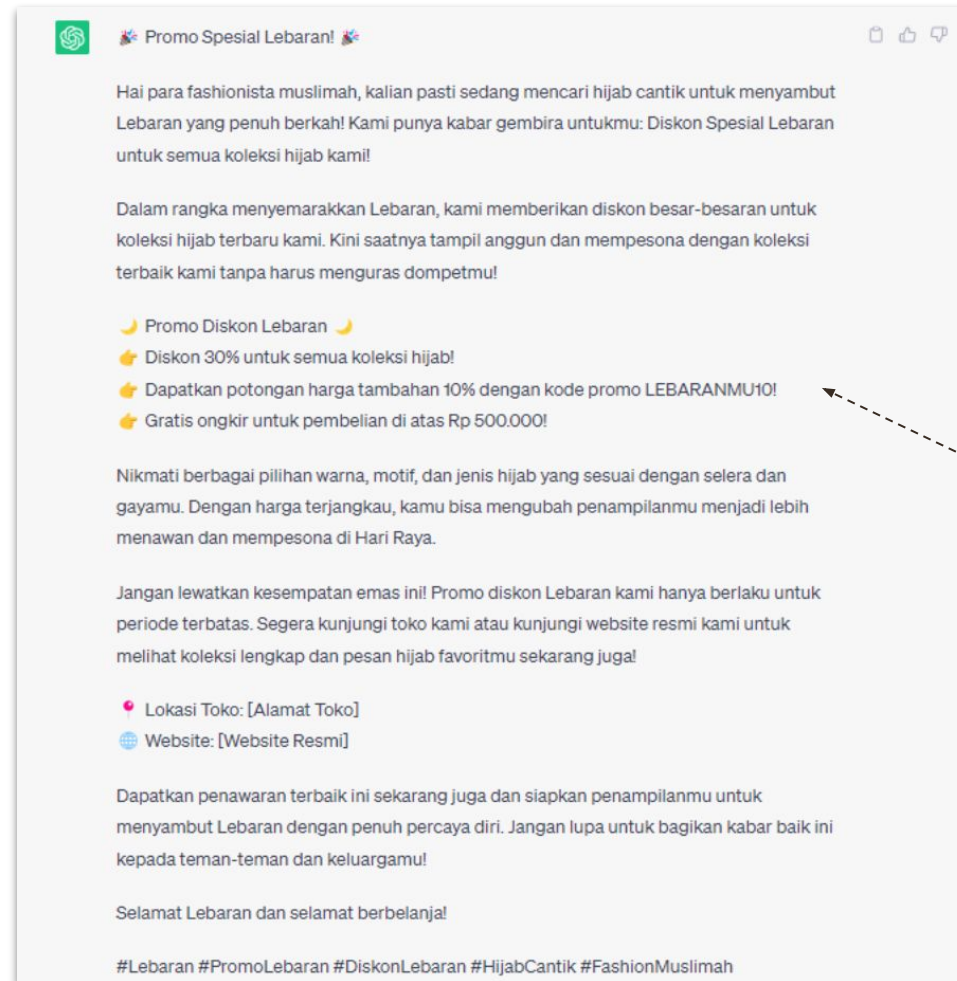
## Gen AI app used



## Prompt used

- *(In Bahasa Indonesia) "Generate promotional captions for Instagram to inform about discounts for hijab during Lebaran".*

## Output



Draft messages for Instagram posts about the Eid-Al-Fitr (Lebaran) discount campaign

The business owner then adjusted the text based on their specific needs, or provided additional prompts to further develop the content.

# Use Case 4 (Text): A social enterprise utilized ChatGPT to categorize open-ended survey responses into a more manageable number of groups.

## Objective of Gen AI usage

To categorize 50+ open-ended responses into meaningful groups for a better understanding of the nature of the responses.

## Gen AI app used



ChatGPT

## Prompt used

- 50 open-ended responses were copied from a Google Sheet (generated by Google Forms) and pasted into ChatGPT.
- The following prompt was used: *'Please categorize those individual responses to 5-8 categories, and give each a representative name.'*

## Output

Based on the responses, here are the categories into which I would organize the various uses of Generative AI in the development sector:

1. **Content Creation and Copywriting:** This category would include tasks such as drafting proposals, copy editing of external communications, drafting correspondence, content creation for social media and training materials, copywriting, brochures creation, and website development.
2. **Idea Generation and Brainstorming:** Here, I would include responses that involve using AI for generating ideas, brainstorming for new programs, outlining, and idea iteration.
3. **Translation and Localization:** This category covers uses of Generative AI for translating and localizing content, especially across different languages.
4. **Market and Academic Research:** This encompasses tasks such as literature review, market research statistics, academic paper search, basic research for project ideas, and more specialized research tasks.
5. **Data Search and Management:** This would include responses like data search and internal management, potentially covering a broad range of tasks from data gathering to organization and interpretation.
6. **Technical Assistance:** This category covers uses like asking technical questions, programming, troubleshooting, and similar activities where AI aids in technical or problem-solving tasks.
7. **Summarization and Report Writing:** Here, I'd include tasks like summarizing academic papers, writing reports, and similar tasks focused on distilling information into concise formats.
8. **Broad and Undefined Use:** Lastly, I'd add a category for broad or undefined use cases such as "everything", "all", "X", and responses that don't fit neatly into other categories.

These initial categories were reviewed, and further refined by the team

# Use Case 5 (Text): A social enterprise utilized ChatGPT to assist an educational NGO in formulating fundraising ideas and plans.

## Objective of Gen AI usage

To generate ideas and plans for a fundraising campaign for an educational NGO.

## Gen AI app used



ChatGPT

## Prompt used

- First (for AI training purposes) the fundraising organization name, type of work, the organization's social media platforms, as well as the objective, duration and budget of the campaign were inputted.
- Then the following prompt was used: *“can you provide a list of fundraising ideas for this organization including overall plan, marketing (offline and online), events”*

## Output (recreated based on information obtained during interview)

### Overall Plan:

1. **Set Goals:** Specify the amount (in IDR) to raise and its use.
2. **Identify Audience:** Focus on local Balinese community, expatriates, tourists, and businesses.
3. **Timeline:** Develop a plan to start in July and conclude by end of August 2023.

### Marketing Plan:

#### Offline:

1. **Direct Mail:** Distribute letters to potential donors within the local community and businesses in Bali.
2. **Local Media:** Leverage Bali's popular local media like Bali Post, Bali Advertiser, or regional radio and TV stations.
3. **Public Speaking:** Engage with community organizations, schools, and religious groups in Bali.

#### Online:

1. **Emails:** Use newsletters to regularly update supporters, many of whom may be tourists who visited previously.
2. **Social Media:** Utilize platforms popular in Indonesia, like Facebook, Instagram, and Twitter, sharing updates in both Bahasa Indonesia and English.
3. **Website:** Ensure your website is bilingual and includes an easy donation process, possibly through a platform like DANA or OVO.

#### Events:

1. **Charity Run/Walk:** Organize an event along Bali's famous beaches or through its cultural landmarks.
2. **Online Concert:** Collaborate with popular local musicians or Gamelan orchestras.
3. **Art Auction:** Auction donated artwork from Bali's renowned artists.


Additional follow up prompts were entered to generate more detailed responses.

# Use Case 6 (Text): A social enterprise experimented with WhatsAuto to automatically generate responses for customer interactions.

## Objective of Gen AI usage

To automate customer interaction for faster response times and improved handling of customer inquiries.

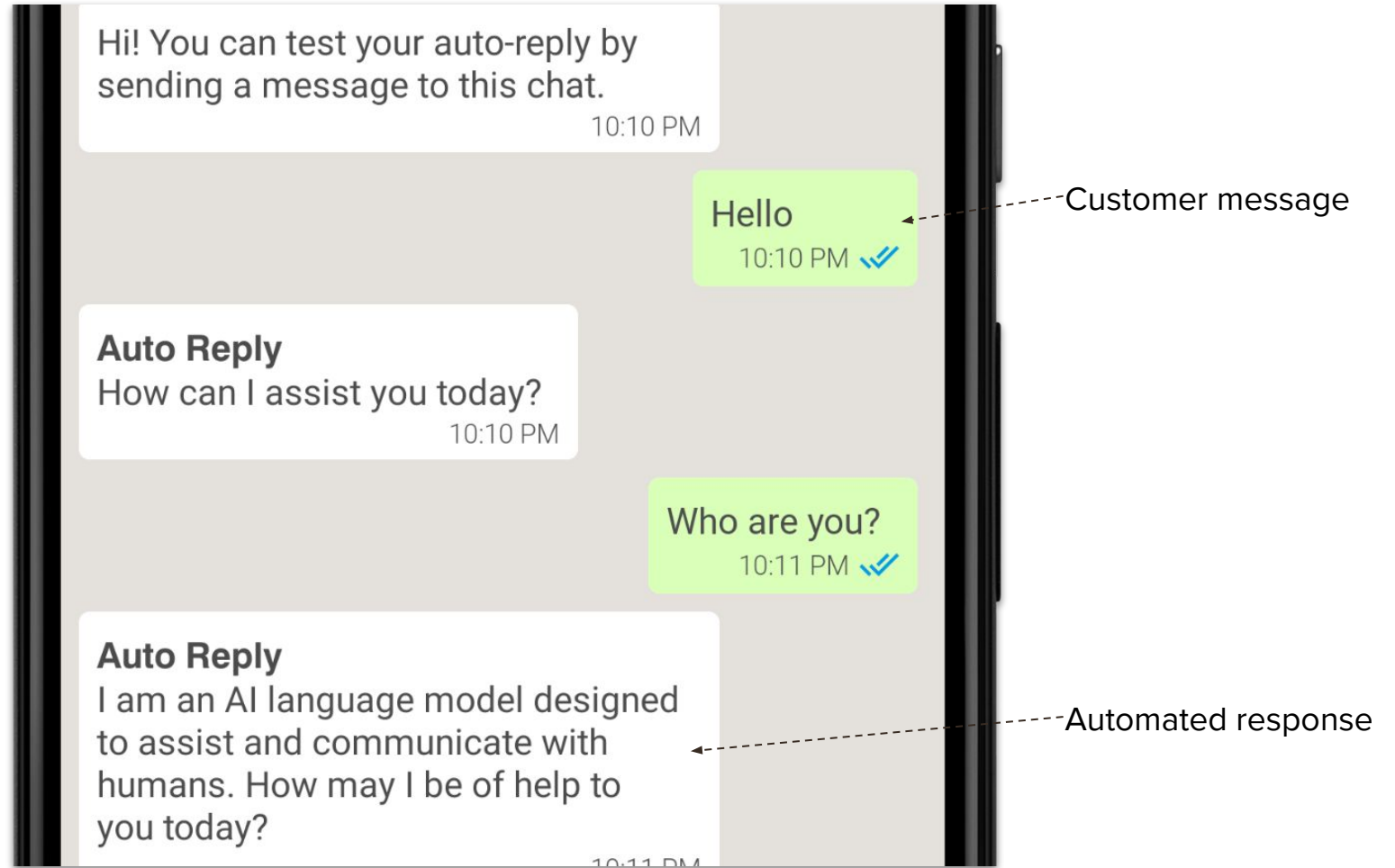
## Gen AI app used

 Whatsapp Auto  
(powered by ChatGPT)

## Prompt used

- Train WhatsAuto based on guidelines and potential inquiries described by keywords related to specific issues (e.g *refund*, *how it works*, *location*, etc.)
- Integrate the trained WhatsAuto system into WhatsApp business.
- Test for possible bugs and retrain as necessary when WhatsAuto fails to provide accurate responses.

## Output



# Use Case 7 (Image): The cover page image used for this report was generated by Adobe Firefly.

## Objective of Gen AI usage

To generate an illustration that reflects the objective and tone of this Generative AI report.

## Gen AI app used



## Prompt used

*'Generate an illustration for 'people conducting analysis on AI usage in the development sector in Indonesia'*

## Output



As the overall color scheme did not precisely match the user's preferences, the designer manually modified it.

## Use Case 8 (Image): An aid agency utilized DALL-E to visualize an aspirational image of inclusive forest city.

### Objective of Gen AI usage

To generate an aspirational image of the future capital city, using keywords generated from the results of a foresighting workshop.

### Gen AI app used

**DALL-E**

### Prompt used

*“Generate an image of a forest city that embodies connectivity, vibrancy, accessibility, low carbon emissions, circularity, resilience, security, technological efficiency and inclusive economic opportunities for all.”\**

*\*Indicative prompt only - not the exact prompt used.*

### Output



AI generated image of the future capital city

# Use Case 9 (Code): A social enterprise utilized ChatGPT to resolve website glitches independently by following its step-by-step instructions without the assistance of an IT Engineer.

## Objective of Gen AI usage

To fix website errors during a period when the organization's IT engineer was unavailable.

## Gen AI app used



ChatGPT for webflow

## Prompt used

- *"I have a website based on 'webflow', and it is currently facing an error 'HTTP Error 500 (Internal Server Error)'. I don't have a web developer, can you help provide steps on how to solve this issue?"*
- Additional questions were asked when needed such as *"can you provide more explanation on step 4?"\**

*\* Indicative prompt only - not the exact prompt used.*

## Output (recreated based on information obtained during interview)

1. Custom code: If you have added any custom code to your website, such as JavaScript, CSS, or HTML, it's possible that there is an error or conflict within that code. To disable custom code, follow these steps:
  - a. Log in to your Webflow account and go to your website's dashboard.
  - b. Click on the "Project Settings" icon (gear icon) in the left sidebar.
  - c. In the Project Settings panel, select the "Custom Code" tab.
  - d. Review the custom code sections, including the Head Code, Before Body End Tag, and Footer Code.
  - e. Temporarily remove or comment out the code by adding HTML or CSS comment tags around it (`<!-- code goes here -->`).
  - f. Save the changes and publish your website.

By disabling the custom code, you can determine if it's the source of the internal server error. If the error disappears after disabling the code, you can then re-enable and review each section of the custom code to identify and fix any issues.

# Use Case 10 (Code): A social enterprise utilized ChatGPT and R Studio to transform a set of raw data from an Excel sheet into a scatter plot.

## Objective of Gen AI usage

To visualize raw data from an Excel sheet without the need for coding using R studio.

## Gen AI app used



## Prompt used

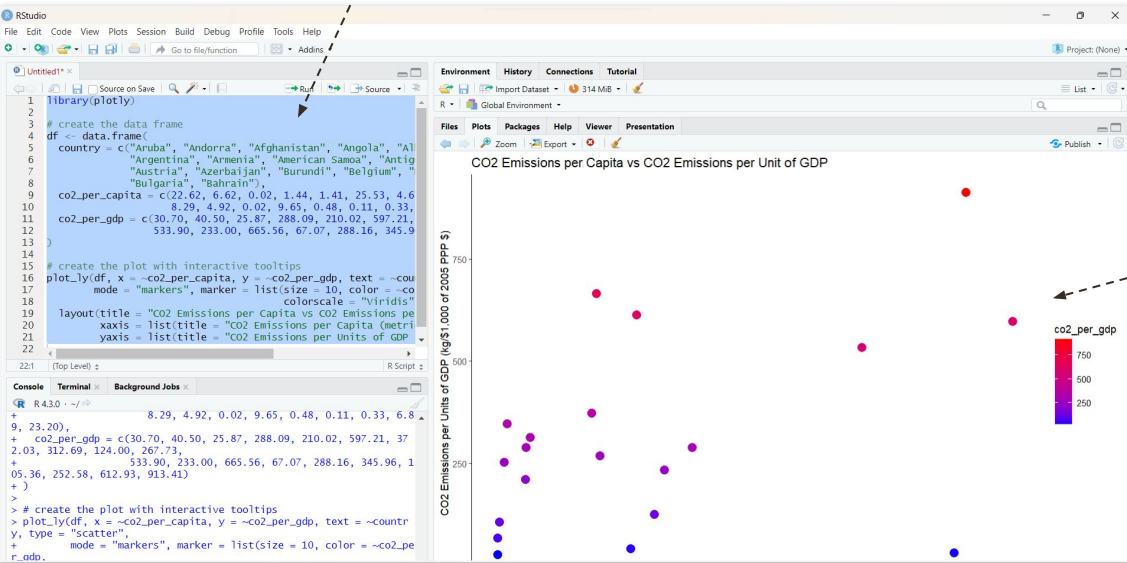
- 'Generate R code to visualise this dataset with scatter plot: [paste the original excel data].'
- 'Using the same dataset, make it more interactive, i.e. I can see the data when I hover on the chart.'
- 'Using the same dataset, instead of a scatter plot, create a stacked bar chart.'

## Output

```
R  
library(ggplot2)  
  
# create the data frame  
df <- data.frame(  
  country = c("Aruba", "Andorra", "Afghanistan", "Angola", "Albania", "United  
  "Argentina", "Armenia", "American Samoa", "Antigua and Barbuda",  
  "Austria", "Azerbaijan", "Buzundi", "Belgium", "Benin", "Burdki",  
  "Bulgaria", "Bahrain"),  
  co2_per_capita = c(22.62, 6.62, 0.02, 1.44, 1.41, 25.53, 4.67, 1.64, 7.77,  
  8.29, 4.92, 0.02, 9.65, 0.48, 0.11, 0.33, 6.89, 23.20),  
  co2_per_gdp = c(30.70, 40.50, 25.87, 288.09, 210.02, 597.21, 37  
  2.03, 312.69, 124.00, 267.73,  
  533.90, 233.00, 665.56, 67.07, 288.16, 345.9  
  05.36, 252.58, 612.93, 913.41)  
)  
  
# create the plot with interactive tooltips  
plot_ly(df, x = ~co2_per_capita, y = ~co2_per_gdp, text = ~country,  
  mode = "markers", marker = list(size = 10, color = ~co2_per_gdp),  
  colorscale = "viridis",  
  layout(title = "CO2 Emissions per Capita vs CO2 Emissions per Unit of GDP",  
  xaxis = list(title = "CO2 Emissions per Capita (metric tons per capita)",  
  yaxi = list(title = "CO2 Emissions per Units of GDP (metric tons of CO2 per unit of GDP)"))
```

R code generated by ChatGPT

Copy/paste in the R Studio




Scatter plot created





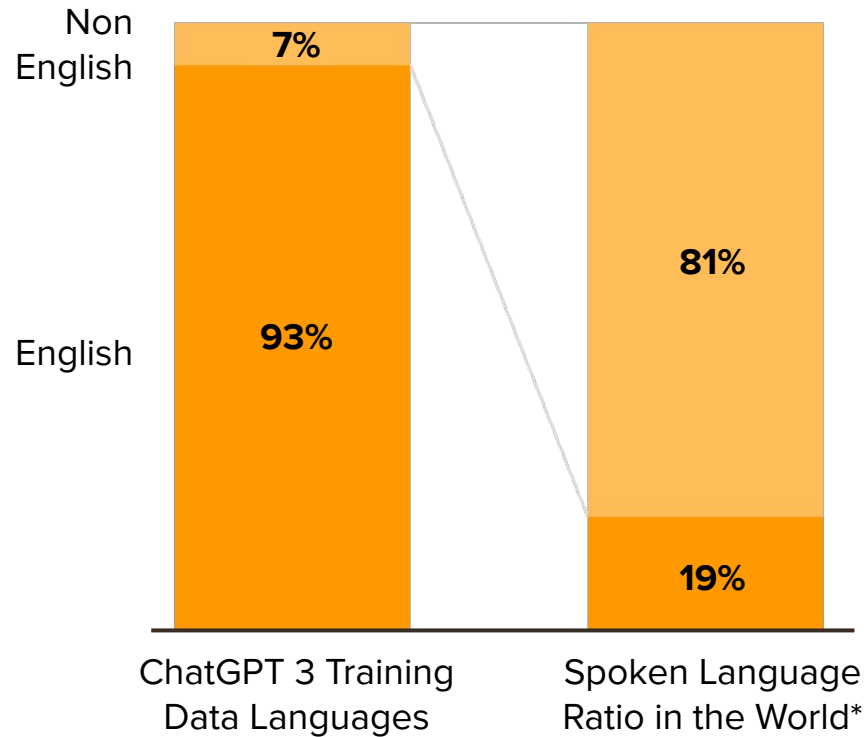
Source: [Reimagining Indonesia's New Capital City: Foresight Approaches for an Inclusive Smart Forest City](#)

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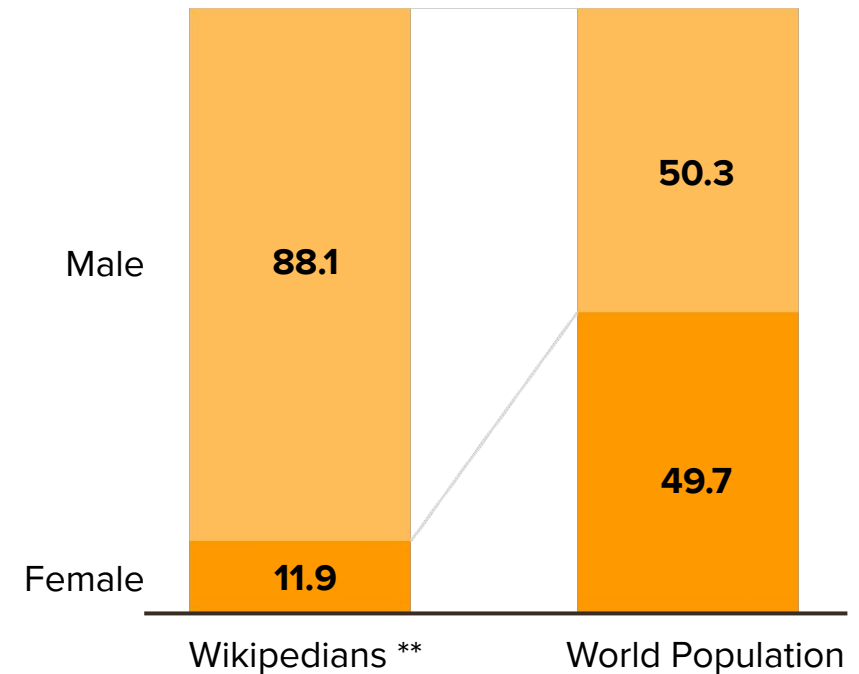
In terms of risks, Gen AI may inadvertently amplify existing language, cultural, and gender biases as it is built upon currently available internet content.

### ChatGPT 3 training languages



\*Represents the 1.5 billion out of 8 billion people who speak English as their first or second language

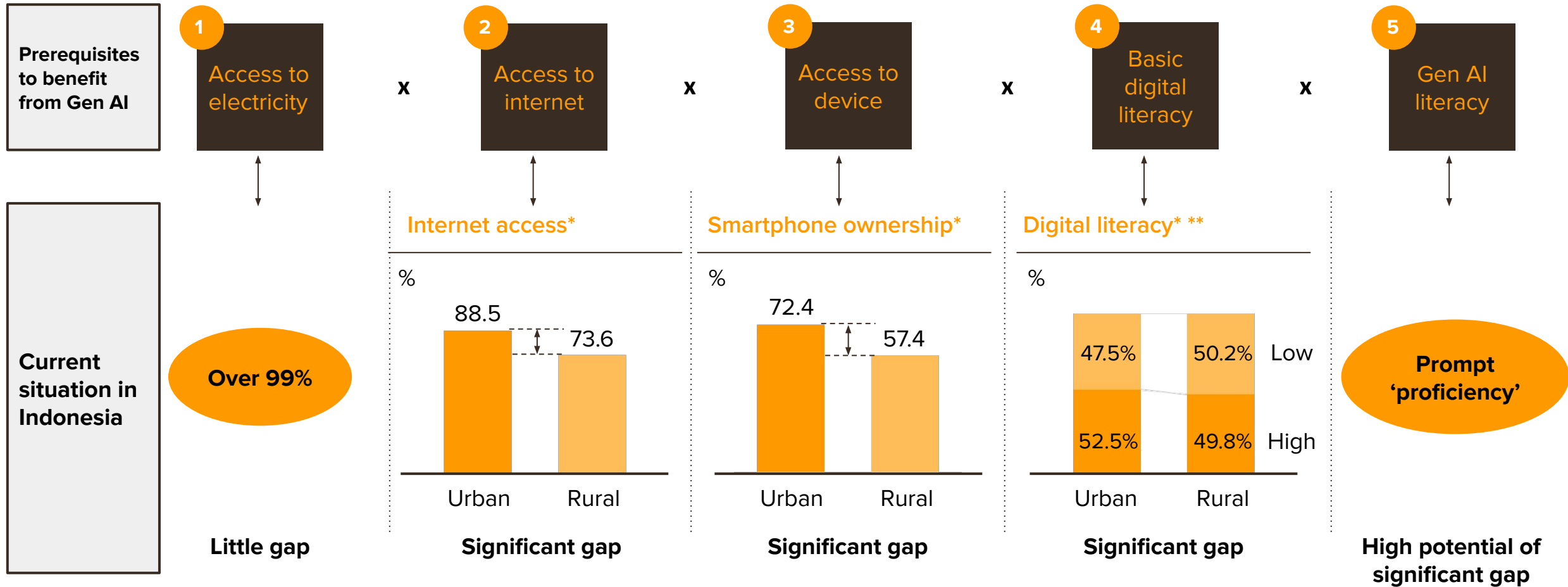
### Female-male ratio of 'Wikipedians'



\*\*The average ratio of female 'Wikipedians' ranges from 8.8-15%

Source: *The most spoken languages worldwide in 2022*; *On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? 2021*; *World Bank population data*, accessed in May 2023

There are several prerequisites for benefiting from Gen AI, and those who don't meet these requirements may be at a disadvantage, exacerbating the existing digital divide.




\*Data for Indonesia in 2021

\*\*Digital literacy is measured based on respondents understanding of digital skills, digital ethics, digital safety and digital culture

Source: <https://bps.go.id>, Chart of the week May 5, 2023: Urban-rural digital divide in indonesia, Statista.com, Status Literasi Digital di Indonesia 2021



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# The development sector has an important role to play to in narrowing the digital divide.



Some survey respondents have already begun using various Generative AI applications



Several **innovative use cases are emerging**, and according to the respondents, there is significant potential for Gen AI to enhance the efficiency and effectiveness of the development sector



At the same time, those of us working in the development sector must remain **mindful** of the **associated risks** of Gen AI, such as **increased biases** and the potential of **widening the digital divide**




One possible approach to bridge the digital divide is to develop and deliver **tailored training programs for disadvantaged communities** to better understand and engage with Gen AI, fostering **a more equitable utilization** of this technology across Indonesia





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-  **6. Annex**

# LIST OF INTERVIEWEES

Kopernik extends its gratitude to those individuals who kindly agreed to participate in interviews. Their insightful contributions were invaluable in the preparation of this report.

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| Carlos Crisóstomo  | CEO                                    | Xift.Ai                        |
| Carmen Van Zyl     | CEO                                    | PT Live Better Creatives       |
| Jason Tedjasukmana | Head of Communication                  | Google Indonesia               |
| Kazuki Sakamoto    | Project Formulation Advisor            | JICA Indonesia                 |
| Yos Rahmatullah    | Head of Business & Channel Development | Edufarmers                     |
| Zamnia Wahyuli     | Consultant                             | Alam Santi Design              |

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