

# A study on how demographics affect the use, attitude and understanding of AI

[Undertitel]

# 1. Preface

This report is written by and published by Tekna Big Data in collaboration with NTNU. Data was collected between May and September 2024.

In an era where artificial intelligence (AI) is rapidly transforming various aspects of our lives, understanding how different demographics engage with these technologies is crucial. The primary objective of this study, was to investigate how individuals from diverse demographics and professional background engage with AI tools, focusing on their experiences, challenges and sentiments.

The study, encompassing different participants, including seniors, low-income individuals, and non-native Norwegians. By employing a mixed-method approach that combines focus groups, surveys, and metadata analysis, we have endeavored to provide understanding of user engagement with AI.

Our findings reveal significant insights into generational differences in digital skills, the impact of cultural and linguistic barriers, and the varying levels of satisfaction among experienced and novice AI users. These insights are not only valuable for advancing AI technology but also for ensuring its equitable and inclusive adoption.

We hope this report serves as a valuable resource for researchers, policymakers, and practitioners who are committed to fostering an inclusive digital future. By addressing the challenges and leveraging the opportunities presented by AI, we can work towards a society where everyone benefits from technological advancements.

We extend our gratitude to all the participants who generously shared their time and experiences, and to the dedicated team at Tekna Big Data and NTNU for their unwavering commitment to this project.

## 2. Summary

These are the key findings of the study:

**Generational Differences:** Younger participants generally had higher digital skills and more positive attitudes towards AI compared to older participants.

**Cultural and Linguistic Barriers:** Non-native Norwegians faced unique challenges due to language barriers and cultural differences.

**Work Experience:** Participants with prior experience using AI tools were more adept and satisfied with their interactions.

**Inexperienced Users:** Those with limited AI experience often used the tools for basic tasks and found them valuable for streamlining information.

Participants expressed concerns about privacy, security, and the reliability of AI tools. They emphasized the need for training and education to improve AI literacy and reduce skepticism.

The report highlights the potential of AI tools to enhance efficiency and provide personalized responses. It calls for inclusive training programs to bridge the digital divide and ensure equitable access to AI technologies.



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# Methodology

This study employed a mixed-method approach combining focus groups, surveys, and metadata analysis to comprehensively explore participants' experiences with AI tools. Focus groups allowed for in-depth insights through real-time interactions with ChatGPT, while surveys provided structured feedback on AI's usefulness, combining quantitative data with qualitative responses. Metadata analysis added an objective layer, capturing usage patterns and outcomes. These methods were chosen for their ability to combine qualitative depth with quantitative rigor, offering a triangulation of understanding of user engagement with AI.

Data from the focus groups were transcribed, systematically coded, and analyzed to identify key themes and insights related to participants' experiences and perceptions of AI tools. This qualitative approach allowed for a detailed exploration of patterns and participant behaviors. In addition, quantitative analyses were conducted to produce descriptive statistics, providing a structured overview of key variables and trends. Metadata was also gathered to analyze their usage of AI tools. This mixed-methods approach ensured a balanced understanding of both individual experiences and broader patterns across the participant groups.

**Focus groups:** Interviews were conducted either in-person or virtually, depending on participant availability. Each session lasted approximately two hours, during which participants were given specific tasks to solve using ChatGPT, allowing for an in-depth exploration of their interactions with the tool.

**Sign-up survey:** Collecting users' basic demographic information including age, gender, profession and previous experiences with AI tools.

**Surveys:** The survey comprised four questions, including both open-ended and close-ended formats, designed to evaluate how useful participants found AI for completing the tasks assigned during the focus groups. The surveys were distributed through Microsoft Forms, ensuring ease of access and streamlined data collection. The survey questions were as followed:

- (1) How satisfied are you with the answers to task 1? (scale from 1-5)
- (2) How satisfied are you with the answers to task 2? (scale from 1-5)
- (3) How useful do you think AI tools are for finding answers to the questions?
- (4) How likely will you use similar AI tools again when you deal with similar tasks?

**User metadata:** Participants' interactions with ChatGPT were analyzed to understand their experiences and perceptions of AI tools. Metadata from their usage included task types, queries, and reflections on outcomes, providing insights into how individuals with varying levels of AI familiarity engage with and envision the technology in practical and exploratory contexts. We also measured participants digital skill by tracking: (1) total turns, (2) conversation duration, (3) message length, (4) number of questions, (5) number sentences, (6) sentiment scores, (7) repetition in questions, (8) number of help requests and (9) response time.

However, identifying participants for the quantitative analysis posed significant challenges due to the anonymity of the surveys. This lack of identifiable information restricted our ability to associate individual responses with specific variables (e.g. age, education), thereby limiting the depth and precision of comparative analyses across these variables.

## Participant selection and challenges

In designing the study, we wanted to capture a diverse range of perspectives on AI tools by focusing on three key demographic groups:

- (1) Seniors (60+) – Older adults who may have distinct attitudes toward AI due to generational differences in technology adoption,
- (2) Low-Income Individuals – A group often underrepresented in research, but whose perspectives are essential in understanding accessibility issues related to AI and,
- (3) Non-native Norwegians – Providing a cross-cultural perspective on AI usage and attitudes.

This selection was made as these groups are often considered vulnerable populations with lower levels of digital skills, making their inclusion critical for understanding the broader implications of AI adoption and equity in its use. Through the sign-up survey we also mapped their previous experience with AI tools, gender and Tekna membership status.

Category	Details
<b>Total Participants</b>	54
<b>AI Tool Users</b>	30 participants (used AI tools like ChatGPT, Copilot for tasks such as coding, emails, trips), 24 non-users
<b>Tekna members</b>	Tekna members 24 Non-Tekna members 30
<b>Native and non-native</b>	36 Norwegians 18 non-native Norwegians
<b>Age Groups</b>	Younger Adults: 13 (20s–30s) Middle-aged Adults: 14 (40s–50s) Seniors: 24 (60s and above)
<b>Gender Distribution</b>	Females: 29 (53.7%) Males: 25 (46.3%)

However, the study faced challenges in recruiting low-income individuals, largely due to stigma surrounding economic status and other related factors. Additionally, selection criteria for the different groups were not developed sufficiently, which limited the ability to identify distinct differences between groups. Future research should address these limitations by prioritizing the inclusion of low-income individuals and tackling barriers to AI engagement through grassroots

organizations, trust-building initiatives, and alternative recruitment strategies, and dedicating more time to develop mutually exclusive selection criteria.

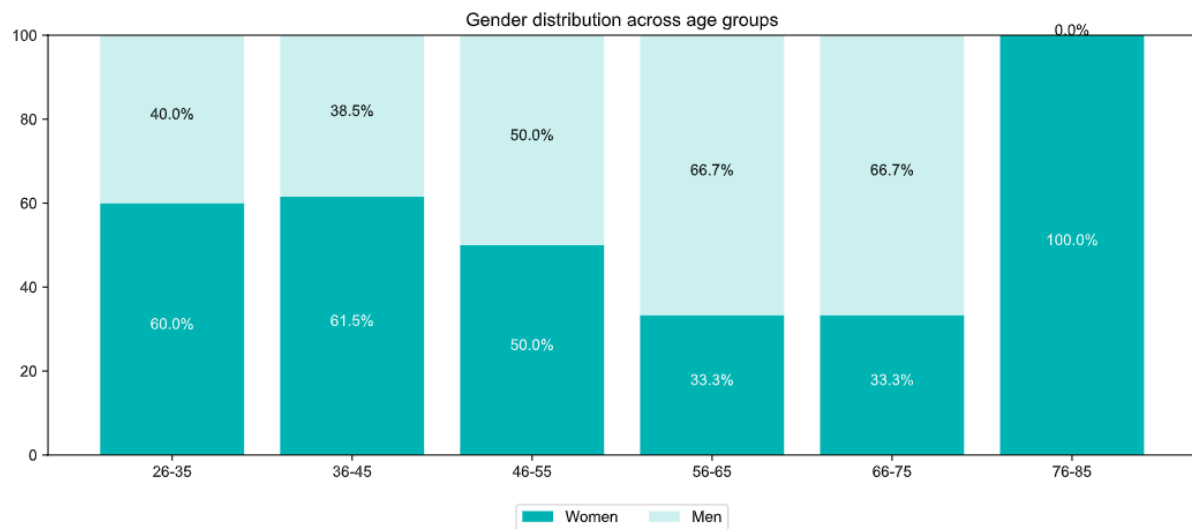


Figure 1 Gender Distribution across age groups

Figure 1 shows the gender distribution across age groups. The 26–35 and 46–55 groups are gender-balanced (50% each). Men dominate the 36–45 group (58.3%), while women lead in the 56–65 group (66.7%). The 66–75 group is nearly balanced, and the 76–85 group consists entirely of men (100%).

## Ethical considerations

Ethical approval was obtained from Norwegian Agency for Shared Services in Education and Research (SIKT), and informed consent was obtained from all participants prior to the start of the study. Participants were informed about the purpose of the research, their right to withdraw at any time, and the confidentiality of their responses. All data was anonymized by replacing each participant name with unique code identifiers.



# The results

The following sections of this report present our findings based on the data gathered during the study. These findings explore the relationship between participants' characteristics, such as age, professional background, and digital experience, and their usage patterns and sentiments toward AI. By analyzing these factors, we aim to provide a deeper understanding of how different user groups interact with and perceive AI technologies.

During the focus groups participants were engaged in discussions and tasked with solving specific problems using ChatGPT. These tasks were designed to simulate practical applications of AI, such as travel planning, and resume writing and job searching, allowing participants to explore the tool's functionality and relevance to their needs.

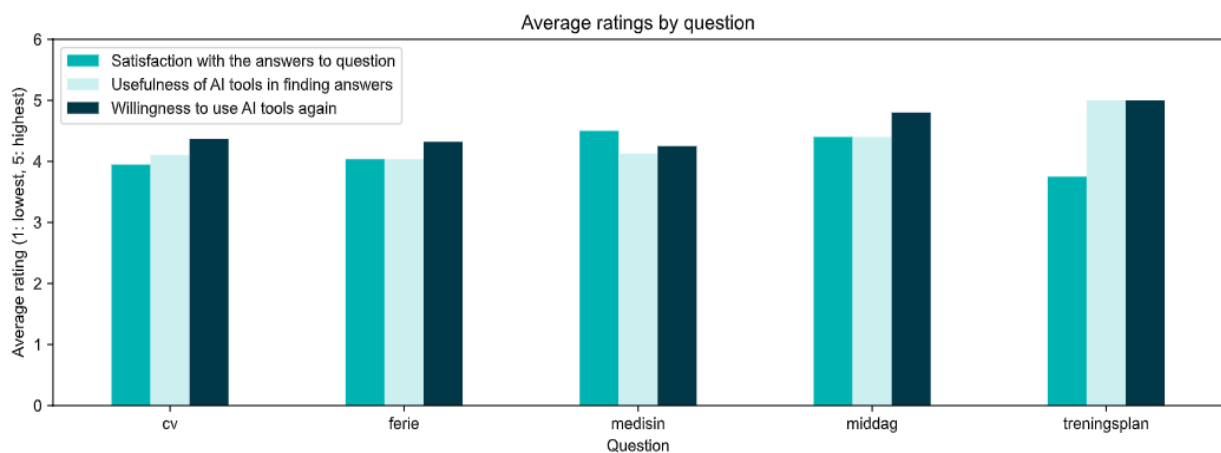


Figure 2 Users score of AI to various tasks

Figure 2 illustrates participants' satisfaction with ChatGPT in solving the assigned tasks. Overall, participants viewed AI tools positively; however, there were slight variations in satisfaction levels and the likelihood of using AI tools again. These variations suggest that participants actively engaged with the AI-generated responses, often modifying or reworking them to better suit their needs or expectations. One participant mentioned how they already use ChatGPT for resume improvements and job searching:

“I adopted this tool ever since it got out at first. I'm actually looking for a new job right now. I'm using this task exactly every week. I'm out there in my CV just to make it refined and fine tuning everything”.

Several other participants also highlighted that they found ChatGPT useful for refining their CVs. For vacation planning, participants' opinions were mixed; some found it difficult to create detailed itineraries, while others enjoyed its ability to make personalized recommendations. These variations in user experiences and

sentiment may stem from differences in digital skills and familiarity with AI tools, which we will explore further in the rest of the report.

## Generational differences in skills and attitudes

This study focuses on groups often assumed to have lower digital skill and access to digital technology, including AI tools. Among these are **seniors (60+)**, whose lower familiarity often stems from generational differences in exposure to and adaptation of new technology.

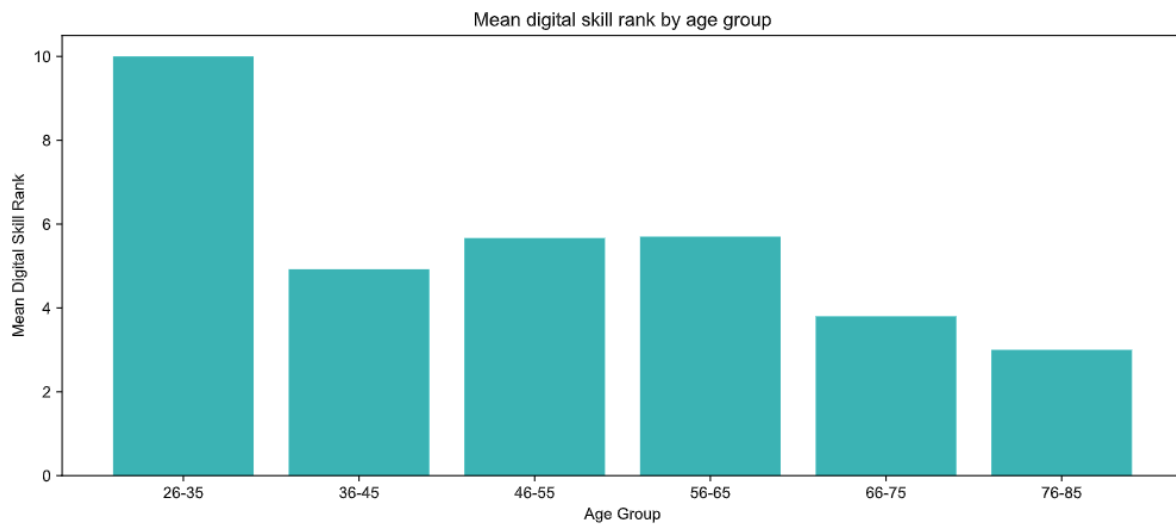


Figure 3 Digital skill Rank by Age group

Figure 3 highlights our assumption regarding a generational gap in digital skills, with younger age groups demonstrating higher mean digital skill compared to older participants. This trend reflects the broader societal pattern, where younger individuals often have greater familiarity and proficiency navigating digital tools.

In addition to digital skills, age also influenced participants sentiment toward AI, with older participants often expressing skepticism, frustration, or caution compared to younger users. This is evident in the responses of older adult informants, who highlighted concerns about job displacement, loss of autonomy, and the potential impacts of AI on future generations:

"Soon, there won't be any employees left in the communications departments. Good thing I am retiring soon".

"I'm not afraid of it, just very irritated. I like to have control. I worry that our grandchildren will become shallow in their thinking".

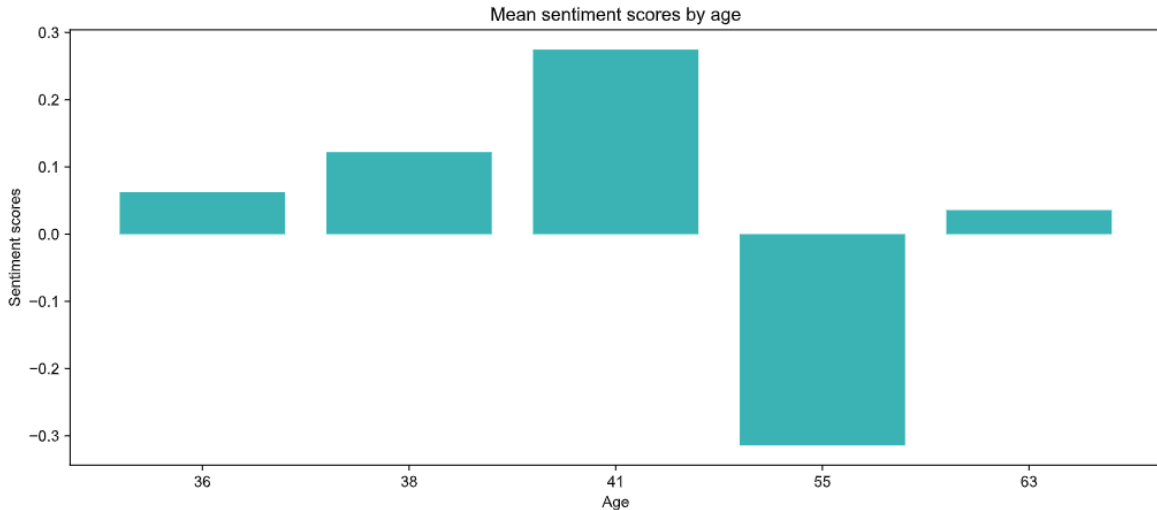


Figure 4 Mean sentiment Scores by Age Group

Figure 4 reveals that sentiment toward AI also varies significantly with age. Younger participants generally express more positive attitudes, while middle-aged individuals (55) are more skeptical. Seniors (63) show a slight rebound in positivity, suggesting that age alone does not determine sentiment and that other factors, such as experience or familiarity with technology, may also play a role.

### Navigating AI tools across cultural and linguistic barriers

Non-native Norwegians represent a unique demographic in understanding AI adoption and usage. Influenced by language barriers, and cultural differences, their interaction with AI tools offers valuable insights into the challenges faced by diverse user groups. AI tools have the potential to help non-native speakers navigate language and cultural differences. Thus, improving their ability to integrate and meaningfully participate in Norwegian society.

However, trust in AI remains cautious, as non-native speakers often seek confirmation from native speakers to ensure translations are done correctly. As illustrated by several of our participants:

“I did it in English and also in Norwegian. I don't know too much in Norwegian. There's a project that we've done, and it was a lot of translating using GPT. We saw the translations, and it feels good. I do rely on my colleagues that are native Norwegian speakers to say, "Oh yeah, that makes sense. That's good."

“I feel like Norwegian people, they use abbreviations a lot and I really don't get it. So, I just ask ChatGPT what this means.”

## Work experience and its effect on AI capabilities

Out of the 54 participants, 30 reported previous experience with AI tools and displayed a wide range of experiences, from extensive expertise in programming and machine learning to minimal or no prior exposure. Experienced AI tool users seem to have more advanced search strategies and are generally more satisfied with the results they get. They are also more inclined to explore and test out different functions and areas of use. This was highlighted by one of the senior informants with an engineering background:

“I asked it to make a shopping list, got 1.2 kilos of cod fillet. I think I'll have to send the list to the wife; we're going to invite her to dinner next week. Can't imagine getting this tip any better.”

This example highlights that prior exposure to technology through work can enhance one's ability to effectively engage with AI tools. It suggests that familiarity gained through professional experience can partially alleviate age as a determining factor for digital skill.

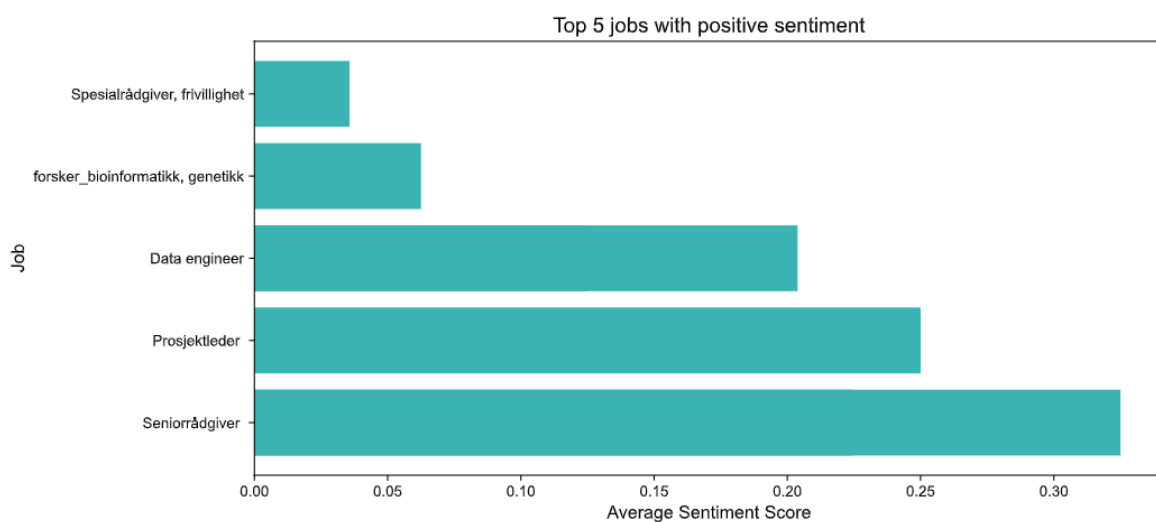


Figure 5 Sentiment towards AI based on professional background

As figure 5 shows, sentiment toward AI is also influenced by the individual's professional background. Those with technological or strategic responsibilities are more likely to view AI positively, while those in roles less dependent on digital tools may be more hesitant.

## Inexperienced and novel AI users

However, some of the participants who reported having limited experience with AI tools, often expressed uncertainty about how to utilize the technology effectively. Their interactions with AI were typically exploratory, involving basic or practical tasks, such as asking simple questions or seeking advice for everyday scenarios. This limited engagement reflects both a lack of familiarity with AI capabilities and

a cautious approach to its use. However, despite their minimal experience, participants often highlighted the unique value of AI in streamlining information and providing tailored outputs compared to traditional tools like search engines. These experiences suggest a gradual learning curve, where initial exposure to AI fosters curiosity and potential for further exploration.

In addition, the perceived usefulness of AI tools often depended on participants' expectations. For example, for the travel task, inexperienced travelers found the suggestions more useful and insightful compared with experienced travelers. As demonstrated by one of the participants:

“I used ChatGPT for the first time. Last week I just asked what I can do with my two small children in Rome in case I'm traveling there, and they gave me a list of suggestions. If I do the same with Google, I'll get a lot of websites. So, you get different output than just looking at Google. I liked it. So that's my little experience”.

Non-users of AI tools often expressed feelings of irrelevance and unfamiliarity toward these technologies, emphasizing that limited exposure can result in uncertainty and hesitation to engage with them. One participant encapsulated this sentiment, stating:

“The chat type of thing? No. My daughter is using that to write school projects. I am too old”.

For some participants, the novelty of using AI was a valuable quality in itself. This was especially true for some of those less familiar with technology, as the interaction with an AI system offered a sense of curiosity and excitement. The uniqueness of being able to "speak to" a computer in a conversational manner made the experience engaging and accessible. This novelty not only sparked interest but also reduced the intimidation often associated with new technology. One participant said:

“It was cool to use it for inspiration. And it's funny for me who is not used to data. To have someone. No, the computer, to speak to and to ask questions. It's a really cool thing.”

## Sentiment clusters

The responses to the questions in the study were analyzed based on sentiment clusters, which varied in size depending on the number of codes included. Larger clusters, as depicted in the graph below, are more representative of the general sentiment as they encompass more codes and thus provide a broader perspective.

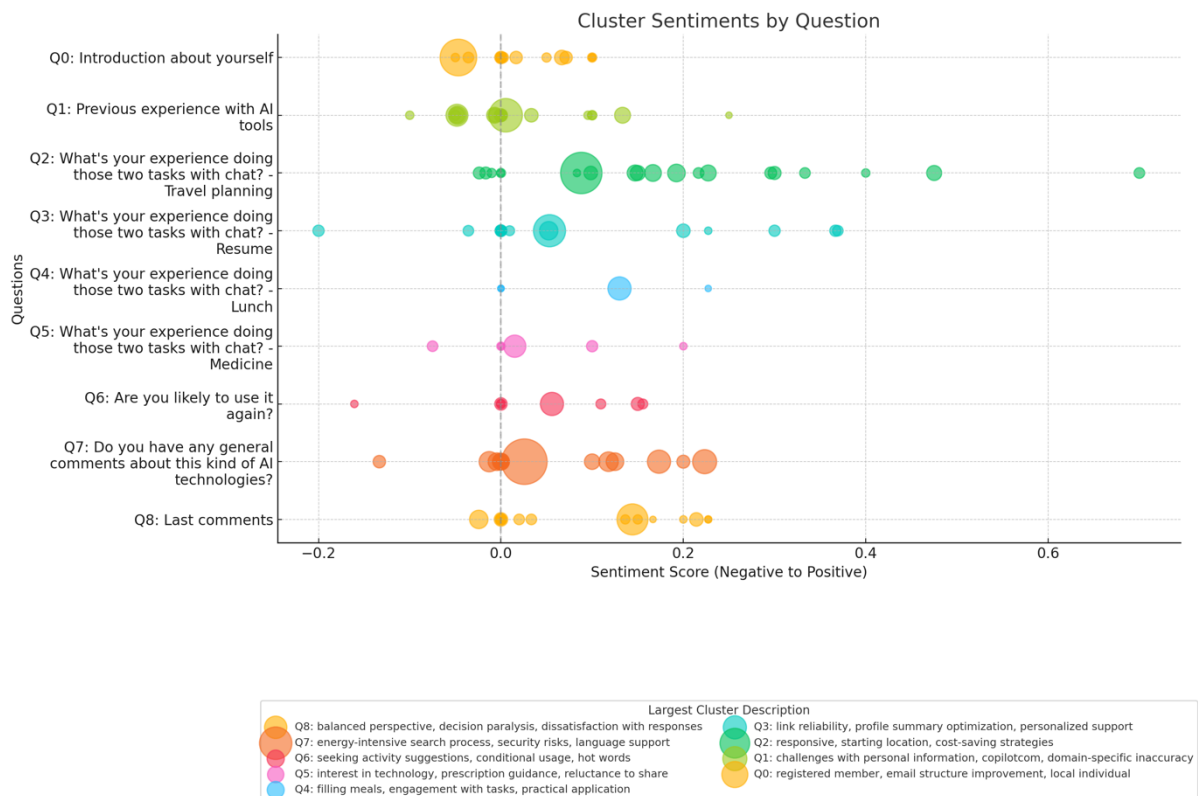


Figure 6 Cluster sentiment by question

Participants initially expressed neutral to slightly negative sentiments toward AI tools, reflecting a lack of confidence and comfort, especially in responses to questions 0 and 1. Sentiments varied across tasks: travel planning and lunch-related tasks received the most positive feedback, while resume-related tasks yielded mixed reactions. Participants appreciated valid job recommendations but criticized instances of hallucinated responses, noting that ChatGPT's web search functionality was not used. The medicine task received the least positive feedback, with participants concerned about sharing personal health data and doubting the accuracy of AI-provided advice.

Over time, sentiments shifted more positively, particularly in questions 6 to 8, as participants became familiar with ChatGPT's capabilities. However, confidence remained mixed. While many participants acknowledged that GPT's performance often exceeded expectations, concerns about cost, hallucinations, and data privacy persisted. These insights underscore the need to address these barriers to enhance trust and encourage broader adoption of AI tools.

## Concerns and mitigating measures

While participants generally agreed that AI tools can enhance efficiency in work processes, they also emphasized their concerns about adaptation and use of AI tools.

The most frequent concern among participants were related to accuracy and reliability of AI-generated outputs. As illustrated by one of the participants:

“I think it ’s more like a density and reliability of data, because it just gives you anything. I used it for a literature review, and when I went to cross check it, everything was wrong.”

Many participants also worried about the potential for over-reliance on AI, fearing it could have negative effects on critical thinking skills, and ethical concerns in professional and academic context:

“It is a concern, because the auto fill option is so popular now. When I write a sentence, I expect it to finish it for me, so I can edit it later. Another place where it's still in discussion is about report writing at universities. How do you differentiate from a person who is really good at putting his thoughts into a paper versus someone who has the ideas but is terrible at putting it in a piece of paper?”

These concerns highlight the importance of transparency and providing education on responsible and effective use of AI tools. Multiple participants also mentioned that training and understanding are essential to address these concerns and ensure equitable access to AI technology. Many highlighted that knowledge of how to use AI tools effectively could help reduce skepticism and improve their utility. These insights emphasize the importance of integrating AI literacy into education systems and offering accessible training opportunities. As demonstrated by one of the senior participants:

“It really needs to be introduced into education starting from school because it is already part of everyday life, and we need to learn how to work with it. For example, they could create free courses for everyone who wants to learn – through systems like NAV or the employment centers. Perhaps unions could also organize such measures.”

# Conclusion

This report provides insights into how different demographic groups interact with and perceive AI tools. Although our sample size was limited, comprising of 54 participants was limited and not statistically representative, we have identified meaningful trends. These include generational differences in AI adoption, AI-tools potential to mitigate language barriers, and varying levels of satisfaction between experienced and inexperienced AI users. Participants acknowledged the potential of AI to increase efficiency and provide personal tailored responses. Despite of this, concerns around accuracy, reliability and ethical aspects persist. Our findings emphasize the need for:

- 1. Development of inclusive training programs and educational initiatives** to improve AI literacy, to bridge the digital divide, and address the specific needs among vulnerable populations.
- 2. Engage educational institutions and community organizations** to promote upskilling and equitable access to AI technologies.

## The need for future research

Further research is needed to identify and implement effective strategies for enhancing AI skills across diverse demographics. Additionally, more targeted research is necessary to mitigate the unique barriers lower-income participants face, including affordability, accessibility, and trust in digital technology. By addressing these barriers, future research can inform policies and interventions that promote equitable access to AI and ensure its benefits are distributed across all socioeconomic groups.

This report highlights the importance of improving digital literacy among underrepresented groups in order to increase adoption and sentiment towards AI tools. Validating this assumption through further studies will contribute to promoting equitable access and effective use of AI tools across Norwegian society, ensuring that all demographic groups can benefit from these technologies.

Future research should address the following:

1. larger sample size to validate the trends identified in this research
2. establish precise, mutually exclusive selection criteria to ensure more homogeneous groups
3. focus on recruitment strategy of vulnerable population, especially low-income individuals and



4. development, use and access to AI training programs among vulnerable populations.

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