Gender and Artificial Intelligence – Differences Regarding the Perception, Competence Self-Assessment and Trust

Swetlana Franken, Nina Mauritz

Gender und KI

Relevance

Technical progress through digitalisation is constantly increasing. Currently, the most relevant and technically sophisticated technology is artificial intelligence (AI). Due to the strong influence of AI, it is necessary that it meets with broad social acceptance. However, it seems that the gender imbalance that affects the tech sector extends to AI, as well. Women are less frequently involved in research and development on AI. [1, 2] Accordingly we defined the following general **research question**:

What are the differences between men and women in their perception, evaluation, development, and use of AI in the workplace?

Methods & Data

A quantitative online survey consisting of 45 items was conducted among company representatives and students in Germany. The online link to the study was distributed on social media and advertised on the university website from July to September 2020. With a few exceptions, participants rated the items on a six-point Likert scale starting with „strongly disagree" (1) and ending with „strongly agree" (6). To determine differences in the variables of interest, a t-test or ANOVA was calculated, if the prerequisites were fulfilled.

Limitations

Due to the small sample size and the regional limitation, the results are of low generalisability to other settings. Regarding the general use of the term AI in this study, it should be noted that the term can have different meanings, is used differently [3]. Also depending on the underlying field of application, understanding and experience, a different response behaviour can also be assumed.
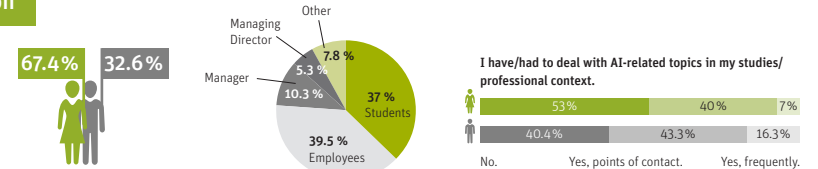
Added Value

Developing one's own AI-competence takes away fears and promotes trust and acceptance towards AI – an important prerequisite for openness towards AI. Promoting interest in and the willingness to deal with AI can at the same time sensitise people to the possible risks of AI applications in terms of prejudice and discrimination and mobilize more women to engage in AI development.

Results & Discussion

Adjusted Sample:
N = 319
∅ age = 31.5 y
61.4% university degree

67.4 %   32.6 %

Managing Director
Other 7.8 %
Manager 5.3 %
10.3 %
37 % Students
39.5 % Employees

I have/had to deal with AI-related topics in my studies/ professional context.

| | 53% | 40% | 7% |
| | 40.4% | 43.3% | 16.3% |

No.   Yes, points of contact.   Yes, frequently.

Men, in contrast to women, see more opportunities in AI. While the male participants perceive the use of AI in the different functional areas as an opportunity (M = 3.85, SD = 0.72), women also tend to see it as an opportunity (M = 3.59, SD = 0.77), but not as pronounced as the male participants (six-point scale from 1 = risk to 6 = opportunity), (t(317) = -2.88, N = 319, p = .004) with a large effect size (|d| =.76).

Men rate their own AI-competence higher than women (t(317) = -6.65, N = 319, p < .001). Remarkable is the strength of the effect (|d| =.80), which indicates a large difference between men and women in terms of their perceived AI-competence. One aspect that should be considered is the possibility of overestimating one's own competence and if people who claim to know or be able to explain the terms artificial intelligence, algorithm, etc. do actually have a distinct understanding of the terms.

Men trust more in AI than women (U = 8401.00, Z = -3.604, p < .001). Due to a weak to medium effect (|r| = .20), the difference between the groups can be considered rather small.

One reason for the significant results could have to do with the higher experience with AI of the male participants. The study shows a **significant correlation** between **experience with AI and gender** (χ^2 (2, N = 319) = 7.902, p = .019) with a small effect size (w = .157) and **experience with AI and AI-competence self-assesment** (χ^2 (32, N = 319) = 118.759, p < .001) with a large effect size (w = .61).

Men and women agree in their **desire for better traceability in AI-decision-making processes** (t(317) = .375, N = 319, p = .708), and both show a **high motivation for further training** (t(317) = -.522, N = 319, p = .602), what should be taken into account.

Reference List

1. Shoham, Y., Perrault, R., Brynjolfsson, E., Clark, J., Manyika, J., Niebles, J. C., & Lyons, T. (2018). The AI Index 2018 Annual Report. Stanford. Retrieved April 07, 2021, from https://hai.stanford.edu/ai-index-2018.
2. World Economic Forum (2020). The Global Gender Gap Report 2020. Geneva, Switzerland. Retrieved April 14, 2021, from http://www3.weforum.org/docs/WEF_GGGR_2020.pdf.
3. Wang, P. (2019). On Defining Artificial Intelligence. Journal of Artificial General Intelligence, 10(2), 1–37.
4. Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2. ed.). Hillsdale, NJ: Erlbaum.

Contact

Swetlana Franken & Nina Mauritz
Bielefeld University of Applied Sciences
Faculty of Business, Interaktion 1
33619 Bielefeld, Germany
nina.mauritz@fh-bielefeld.de

FH Bielefeld University of Applied Sciences

https://www.fh-bielefeld.de/wug/forschung/denkfabrik-digitalisierte-arbeitswelt