Communication Papers
Media Literacy & Gender Studies

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Received: 26 April 2024; **Accepted:** 15 September 2024

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Abstract: For about a decade and a half, increasing research attention has been paid to the role of women in the technological and content shaping of digital media industries. This study wants to give an idea of how the digital presence of Hungarian women journalists can be characterized, their opportunities in the world of the network, and what is their relationship to artificial intelligence? What AI tools do they use in their personal and professional lives. We also present whether there are gender differences between male and female journalists in the application of AI in Hungary. In the study, we present the data that comes from the analysis of 40 in-depth interviews, based on our empirical research conducted in the fall of 2023. The study relies on the European Union's Women in Digital research data for the given period.

Keywords: artificial intelligence, female journalists, digital differences, Women in Digital

1. Introduction

The EU's "digital inclusion" program calls attention to the fault line that exists between the sexes in terms of global digitization - despite several decades of government and industry efforts - without any substantial change. The Hungarian Digital Welfare Program 2.0 document was published in 2017, and women are mentioned only twice in the 134-page document. Both times, in the same context, how and with whom the lack of digitally qualified workforce could be remedied: "the involvement of new target groups (those who were not accepted for higher education or who dropped out, women, career changers, etc.)" can be read in the text (DJP2.0: 9-10, 62). It's as if the female ITK specialists are a kind of reserve army for the labour market. There is, no doubt that in 2021, the difference between the ratio of men and women in the information sector in Hungary is greater than in the European Union average; In Hungary, 14% are women and 86% are men, while the EU average is 19% women and 81% men. In addition, the gap between the European data is closing, while the Hungarian differences are not decreasing, but rather increasing.

The aim of the study is to show how female journalists in Hungary relate to artificial intelligence technology and how they use it. Therefore, we will first present the gender differences in the use of digital devices, and we will also draw the relevant literature background. The framework we present relates to the relationship between technology and gender, with theories such as models of technological determinism or social shaping of technology. After the theoretical overview, we present the results of our empirical research. The method of our qualitative research was in-depth interviews. In the fall of 2023, we interviewed 40 Hungarian journalists (20 men and 20 women), and we present the results of these interviews.

2. Technology and gender

Already from the beginning of the twentieth century, many schools of media theory have dealt with the question of how changes in communication technology affect society, communities or even culture. Among them, the Toronto school, the theory of technological determinism, is the most prominent, which was developed by Marshall McLuhan and is well known in media research (McLuhan 1964). McLuhan's work has been in the crossfire of professional criticism since the 1960s, we can think of the comments of the English contemporary Raymond Williams

and later of the German literary historian Friedrich Kittler and Manuel Castells (Williams1983:130 quoted by Lister et al. 2003:78-79, Kittler 2005:19- 21, Castells 2005:38). Among the criticisms, in this study he would like to rely on the theory of technology shaped by the community or, in another translation, critical technology research (social-shaping of technology - SST, in Hungarian terms, see Tófalvy 2015, 2017). In the relationship between society and culture, critical technology research also considers the dominant communication technology of a given era to be decisive, but with a different explanation than technological determinism. While the latter explained the change from the point of view of technology, SST, speaking from the point of view of the community adapting the technology, states that the community will determine the direction and extent of technological innovation (MacKenzie and Wajcman 1999). Also, he emphasizes the interaction between the two: "Critical technology research, opposing determinism and tool- and cult-centred traditions, emphasizes the cultural determination of technology and the examination of the functioning of culture and technology as a system. " (Tófalvy 2015) Or, as Wajcman puts it, the social and cultural conditions in which technological innovation is born influence and shape it at the same time (Wajcman 2004). The trend does not only deal with the physical objectifications and institutions of technology, but also with the symbolic cultural relations connected to technology, the use of language, and the role of all these in identification.

The present study argues that the application of the approach of critical technology research is unavoidable in the assessment of women's digital media usage habits. Among the authors mentioned above, especially Judy Wajcman's technofeminist work. Technofeminism - which sees the objectification of social gender in technology - was born in the 1980s in the joint force of feminism and critical technology research. Already in the 1970s, feminist researchers noticed that the technological monopoly is in the hands of men, and this represents a serious source of their power. And since the creation and use of technology is a process shaped by men, it reflects male needs and values, and women's knowledge and skills are undervalued in this area as well. Both female interest and female involvement are marginalized, but the creation of alternative and socially useful technology could be linked to women, Wajcman believes (Wajcman 1991 165-166). Already in the 1980s, Sandra Harding established that technology also has a gendered character, and in connection with this, the question was not only what the monopoly of men over technology, technological knowledge and skills meant, but whether the technology itself is deeply embedded in social gender (masculine). The symbolic linking of masculinity and technology, the representation and cultural appearance of technology also coincides with the dominant imagery of masculinity and power. According to the followers of the technofeminist trend, technology is conceptualized as both a source and a consequence of the connection to social gender (Wajcman 2010:143). Cynthia Cockburn identifies the close relationship between gender and technology in seven areas, which are as follows: (1) Male actors in key positions in technology. (2) Jobs related to technology differ by gender. (3) Technological products - both in their objectivity and symbolism - differ according to social gender. (4) Images of technology-related culture are strongly masculine. (5) Technology-related knowledge and practice differ according to social gender. (6) The style of work related to technique and technology reflects social gender. (7) The relationship with technology is an important element of gender identity. (Cockburn 1992:32; Faulkner 2001:90-91.) Overall, we can say that, according to technofeminism, social gender differences are also manifested in technology, and even materialized. (Wajcman 2010:149). It is also not without fault that researchers link the start of the fourth wave of feminism to the spread of social media, which is often referred to as hashtag feminism. The first wave of

feminism lasted from the second half of the 19th century to the middle of the 20th century and primarily fought for women's right to vote. The second wave can be dated to the 1960s, when important areas such as equality in work, family law or education were discussed. And the possibilities of university education have opened up for women as well. The third wave started in the 1990s, so that women could finally break through the glass ceiling and reach leading positions. And finally, the era after 2010 is usually referred to as the fourth wave in the history of feminism, because from then on, the network and digital communication became the preferred field of female political activism (see the case of the #MeToo movement).

In fact, investigations starting from British subculture research also point in a similar direction. Feminist scholars associated with critical cultural studies in Birmingham, primarily Angela McRobbies and her colleagues, developed a number of approaches to linking "personal" spaces and social structures when they began researching so-called bedroom or girls' room cultures in the 1970s. The McRobbie and her colleagues also criticized Hall and Jefferson's work exploring resistance (Hall and Jefferson 1978). On the one hand, the Halls criticized in their studies that the focus was exclusively on public spaces, as places of culture and power, which are inherently masculine. The women's spaces of the home, the spaces of the girl's room, were left out of these investigations. The other critical element concerns resistance, since according to the McRobbie and her colleagues, media use does not necessarily have to mean resistance, in the case of girls it can simply be a source of pleasure (McRobbie and Garber, 1978). Australian media researcher Andy Ruddock believes that "this is why the workings of mobile media culture cannot be understood without feminist media theory, especially because the trend has developed around the problems of teenage girls' media use." (Ruddock 2015 118-119) Feminist critiques of subculture studies have informed a range of observations, research questions and research practices suitable for studying how mobile media engage girls in the global media economy by revealing the 'personal' the role of mobile phone use in spaces in the construction of different identities (Ruddock 2015:119-120, McRobbie 2007, 2008). From the point of view of this study, these researches are relevant because they include in the mapping of women's digital media use also those areas that are outside the public spaces, the spaces of power and primary economic utility.

Of course, gender differences can also be detected in terms of AI-related attitudes and ways of use, as has been the case in many recent studies. Research consistently indicates that men generally exhibit more positive attitudes toward AI than women, though gender differences in specific dimensions of AI attitudes may vary. Grassini's AI Attitude Scale (AIAS) revealed that men scored higher, suggesting more favourable attitudes toward AI technology among males (Grassini 2023). However, gender differences in AI attitude dimensions are not uniformly significant. A little earlier Sindermann and her colleagues also developed a scale, the Attitude Towards Artificial Intelligence (ATAI) scale showed that men scored higher in AI acceptance, but no significant gender differences were found in AI-related fears (Sindermann 2021). Gibert and Valls suggest that these gender differences may stem from men's greater representation in information-related fields, leading to higher involvement and interest in AI. Additionally, men may generally possess a more optimistic outlook, while women often express greater concerns about AI's social implications (Gibert-Valls 2022).

3. Digital divide

The concept of the digital divide has become multi-layered in recent decades, early technologically optimistic ideas included the automatic possibility of social mobilization in digital access, i.e. they associated social dimensions to the term in addition to the technological meaning. They believed that by taking advantage of the possibilities of the network, a faster catch-up can be achieved with regard to those in a disadvantaged position or marginalized groups. However, research has revealed that technological access alone is not enough to catch up, and in some cases the opposite effect has been achieved with it (Aczél 2015:152-154). The literature describes the change in research focus after two thousand years as follows: "The concept of the digital divide already reflects on the "how" instead of the "why". In addition to access to ICT tools, the terminology now also includes the skills and abilities required to use them" (Molnár 2017:32)
The digital divide can currently be identified in three areas, (1) levels of access, (2) use and (3) quality of use. The access divide describes the difference between those who have and those who do not have access to digital technology, and in our case this will mean the differences in male and female network access.
The difference in use draws attention to the difference that arises from the widespread use of digital technologies and the difference in use. These range from the lighter areas of self-representation, self-expression, and entertainment to using the network for learning or work. In this regard, the study shows how the digital media use of women and men can be characterized. How are they similar and how are they different?
And the differences arising from the quality of use will reflect the advantages or disadvantages derived from the patterns of digital interactivity typical for women and men. Molnár also draws attention to the fact that the access divide is more likely to be early in the adaptation of the technology, while those resulting from the quality of use will be characteristic of the saturation stage.

Following the framework outlined above, this study presents the gender-based digital divide in the EU and Hungary on three levels. The source of the data to be presented is mainly the Digital Economy and Society Index (DESI) measured by the European Union and the Women in Digital numbers that measure data on women (https://ec.europa.eu/digital-single-market /en/desi). The former can be followed from 2013, while the latter from 2017, on EU platforms. If we divide the range of Internet users into male and female users, we see that in Hungary in 2013, 71 percent of women used the Internet, while 78 percent of men used it. By 2019, the figure for women had risen to 75 percent, while that of men remained at 77-78 percent. . While in 2021, 87% among both men and women. (On average in the EU in 2021, 87 percent of women and 88 percent of men use the Internet.) Those who never use the Internet accounted for 10 percent of both women and men in Hungary in 2021, in the EU these proportions are for men 7, while for women it was 8 percent. In other words, in terms of the differences in access, we can see that the data between male and female Internet users has slowly levelled off, and by 2021 they will show a balanced picture.

The study argues that simply relying on data on access to technology is not enough to demonstrate women's digital presence. It must be considered for what purpose, in what functions, with what motivations the network is used and what attitudes are associated with all of this. In this regard, the study recommends taking into account two theoretical approaches. One is the use and experience research (Uses and Gratifications) approach, the other is critical technology research (Social Shaping of Technology). Usage and experience research is excellent for providing a valid picture of the patterns of media use - driven by short-term or long-term needs. But it does not look behind the pattern, and does not reveal to the media user the socio-cultural embeddedness that creates it. Critical technology research, on the other hand, is suitable for showing how the use of technology, including media technology, is influenced and shaped by social, cultural or even historical factors. The paper relies on these two scientific trends for a more in-depth presentation of women's digital presence and involvement, and the use of AI by Hungarian female journalists. In 2021, 49 percent of the Hungarian population has basic digital skills, the EU average is 54%. Showing the Hungarian data by gender, we see that 52 percent of men and 46 percent of women have basic digital skills.
The use of internet banking transactions increased from 36% to 63% among Hungarian internet users between 2013 and 2021. The gender differences are summarized in the table below, a comparison of EU.

Table 1: Rate of use of bank transactions among women and men (source Women in Digital 2017, 2019, 2021 own data editing)

Years	Hungary		EU average	
	Women	Men	Women	Men
2017	47%	51%	60%	63%
2019	52%	57%	63%	64%
2021	62%	64%	64%	68%

The use of e-government services increased from 23% to 81% among Internet users between 2013 and 2021, and the development of the digital public administration infrastructure also played a role in the growth.

Table 2: Use of e-government services among men and women (source Women in Digital 2017, 2019, 2021 own data editing)

Years	Hungary		EU average	
	Women	Men	Women	Men
2017	42%	48%	57%	60%
2019	52%	54%	64%	65%
2021	82%	81%	65%	65%

The data in the table clearly show the strong, 40 percent increase in the case of Hungarian women using the Internet.
In Hungary, 14% of women and 13% of men completed an online course, in the EU this ratio was 22% - 20% in 2021. Online counselling was attended by 15% of Hungarian netizens12 women and 15% of men, in the EU the proportion of women and men was 9% and 10%, respectively.
The presence on social media surfaces is conceptualized more as a female activity, but the data - even if they show differences - do not largely not differ. Moreover, Twitter is used more by men. Among Internet users, the proportion of social media users rose from 78% to 86% between 2013 and 2021, the male-female ratio: 47%-53% (DESI 2022 - https://digital-strategy.ec.europa.eu/hu/policies/desi)
From the data described above, there is a difference in the use of digital media by men and women. Based on all of this, we can also conclude what Ozmen and his colleagues: “Factors that have an impact on digital inequality, which are expected to be amplified in an AI context, include race and ethnicity, gender, socioeconomic status, age, education, occupational status, health, social connectedness, and availability of infrastructure.” (Ozmen Garibay et al. 2023:409).

4. Use of AI by female journalists in Hungary

4.1. Research methodology, subjects, selection

Our empirical research took place in the fall of 2023 with the involvement of students from the Institute of Communication and Media Studies of Pázmány Péter Catholic University. The students took a role in querying the 29-point, hybrid, quantitative and qualitative set of questions. The primary objective of the selection was to reach people active in the field of media, in the role of content producers (journalists, editors, bloggers), and to ask them about their knowledge and attitude about AI. A total of 40 interviews were completed with the participation of the students, which were analysed by manual coding along the lines of qualitative research questions.
Why journalists? The conceptual anchoring of social phenomena, including AI, is created in the discourse about them. Journalists are also the shapers and mediators of this. Their knowledge and attitudes determine the framework and conceptual field in which we place a phenomenon. According to Eurostat, slightly less than 13,000 journalists work in Hungary. Based on an estimate, the number of members of the professional interest protection organizations can be ~3,000 people, of which the majority (~70%) is the membership of MÚOSZ (Hungarian Association of Journalists), the rest is shared by the "small" ones: Association of Hungarian Catholic Journalists (MAKÚSz), Association of Protestant Journalists (PÚSz), Association of Hungarian Journalists (MÚK).

The selection was made using the snowball method through the journalist and student relationship system. The research was aimed at the impact of AI on the journalism profession, as well as the attitudinal examination of the profession's awareness of AI. The first step of the research was to forecast the impact of the technological transformation on the profession.

Our assumptions:

H1. Reflections on the emergence of AI are primarily thematized as an ethical problem among journalists.
H2. In judging AI, men are more technology-centric than women.
H3. In judging AI, men have a more optimistic reading than women.
H4. The use of AI is more typical for male journalists than for women.

4.2. Demographic data

The structure of the questions was composed in such a way that in Block I we asked the subjects about their biographical data and their careers. We primarily looked for correlations of age, type of media organization (cf. media area) and career path with AI. We hypothesized that the coefficients of journalistic role perception and AI-related attitude show a correlation. That is why the 7th question, what is the principle that defines your work as a journalist, was included as a priority question.
Regarding our results, it can be said that we were able to conduct in-depth interviews with 20 men and 20 women. In terms of age group classification, we worked with the following data (the numbers in brackets show the male-female distribution):
18-25 years - 3 people (3-0)
25-35 years - 12 people (7-5)
35-45 years - 9 people (4-5)
45-55 years - 10 people (4-6)
55+ years - 6 people (2-4)
According to areas of work, the following results were achieved: 21 people work in the media (newspaper/news portal), 4 people in radio, 10 people in television, and another 5 people in other areas (e.g. agencies, blogs).
Among the interviewees, 28 worked in the capital, while 12 worked in the countryside. 19 people in public service workplaces, 9 people in commercial workplaces, 12 people in unclassified workplaces. According to the distribution of the interviewees, which thematic field they work on, it was as follows: 20 people work with public issues, 7 people work with tabloid content, while 13 people work in unclassifiable areas. Online media content is produced by 16 (8-8) people, 23 journalists working in print media, 11 people doing editorial work and 4 people with other classifications, and 2 people working in the film and cinematography professions. According to the nature of the workplace, 31 of our subjects were full-time and 9 were casual, contract workers.

Sociodemographic data. Half of the respondents were men and women. Most of them deal with journalism, 21 people, radio 4, television 10 people, other (we have listed agencies and social media interface content producers, municipal media managers): 5 people. Among those interviewed, 3 people under the age of 25, 12 in the 25-35 age group, 9 people in the 35-45 age group, and 10 people in the 45-55 age group, 6 people can be classified in the 55+ group. The capital city was overrepresented during the research with 28 people, 12 people from rural editorial offices reached it. A significant 19 people are involved in the production of media content for public service topics, while 21 people are involved in the production of commercial, religious and other media content. Of these, only 6 people work in the production of Christian content.

16 people work on the online interface, here the ratio of genders was equally divided 8-8 people. Independently of age group, 1-3 organs were decisive for the career profile of 26 people, and 10 people worked for 4-5 editorial offices during their lifetime. The tendency to try out (multiple jobs) characterized the 25-35 age group more strongly.

4.3. Professional principles - and AI compatibility

The answer of one of our interviewees vividly shows the importance and contrast of professional principles in relation to AI: "What's not important is to write the truth. His point of view is to put something on your table that you think will be good" (KZ)
When asked about professional principles that define their work, the following order was formed for women:
1. authenticity (7 people)
2. worth (5 people)
3. objectivity (4 people)
4. quality (3 people)
5. interesting (2 people)
The main criterion and standard of journalism is authentic, accurate and high-quality information. It was much more divisive to apply AI in their own field or as a private person. We assumed a sharp age division between users and non-users of AI, but this was not confirmed. Furthermore, it was interesting to us that they cannot separate - and reflect on this - whether they use an AI application in their everyday life. Therefore, we got the most uncertain answer to whether they use artificial intelligence as private people. In 4 of the 20 interviews, the following sentence was uttered: "in my private life, I don't know what counts as AI and what doesn't".
Among women, 9 people indicated that it does not play any role in their lives, 5 people used it as a private person (mostly translation programs), 8 people indicated that they use it professionally, 2 of them regularly. Most of the users mentioned Alrite (speech transcription) (6 people), ChatGPT by 4 people, and the translation program by 3 people. OpenAI, GoogleTrends, FaceApp, online search engines and shopping were also mentioned.
The experiences are rather negative, but users admit that they save time with the application. At the same time, they lack creativity and highlight the importance of correcting errors - i.e. the human factor is needed for its operation. The following answers were given to the question:
"Once I tried to write a summary from a press release, but I didn't really like it" (HCS)
"I once wanted to use it in my work, when I couldn't think of anything for the content of one of the shows, and then I asked AI what kind of script he would write. You made quite a few points. I once wanted to ask a show for a title... If you're wondering if I was satisfied, no. So I got very clichéd stuff." (UPS)
"I don't use AI as a replacement for human creativity in any way." (ED)
We also looked at the above questions for men. In the case of male journalists, we encounter a large dispersion of professional principles, almost all the key concepts that are included in the guidelines of the journalistic profession appear. We have ranked the terms that received the most mentions.

We found the following order for the perceived values of their media content production work.
1. objectivity (4 people)
2. authenticity (4 people)

3. importance (2 people)
4. accuracy (2 people)
5. interesting (2 people)

Compared to women, the trial rate and interest in technology is higher. We can observe the coexistence of professional and private use. They are less dismissive but critical of the application. And the generational difference is quite significant.
Of the 20 respondents, 7 do not play a role in AI in their lives, 7 use it as a private person, and 8 use it as a professional, 3 people mention trying it out. Among the applications mentioned are ChatGPT, DeepL, Alrite, Midjourney, image generator, Photoshop, editing and bank transaction. The attitude of users towards AI is more positive than that of women, this can also be seen linguistically, the words excitement, trial, experience, active helper, excellent, satisfied, acceleration are associated with the application of AI. The negative, neutral attitude can be specifically observed only among the representatives of the older generation, but half of them have tried it, and they admit that it helps them explore topics (inspiration) and manage their time.

4.4. Knowledge and attitudes

The II. question block examined personal knowledge and attitudes regarding the relationship between journalism and AI technology. On the one hand, we asked about knowledge and application of AI technology. For the consumption and creation of content created by AI, for private and professional use, for the editorial position, for the ethical aspects of the application. In addition to qualitative questions, standard quantifiable, scaled and multiple-choice questions were also used in the questionnaire.
The very first group of questions within the block examined the perceptible changes of the digital transformation within the journalism profession, emphasizing the emergence of AI in this field and the prognostication of its transformative power. We asked journalists about their knowledge of AI, starting with the distinction between generative and functional AI, its application area and its regulation. Our assumption was that, due to the developing nature of the field, the reflection is uncertain, names few fields, and rather only testifies to the knowledge of applications that have existed for a long time. Among our assumptions was that the legal rules for the general use of AI in journalism were not known to the participants. With this block, we also wanted to measure the extent and areas of uncertainty. As a reflection, we can say that during the interview the title of the question block was used as a catchword and the interviewees tried to discuss the digital transformation and AI in relation to each other. On the other hand, our question regarding the use of AI was not sufficiently differentiated. This is because the interviewers did not differentiate between functional and generative AI applications regarding their own use. It will also be worth asking about the criteria for recognizing content created by AI and examining cognitive skills in this field.
Among the changes caused by digitization within their own professions, the interviewed men highlighted primarily the acceleration (news, data collection), secondly the variability in the field of newspapers, the "expansion of channels", the increased number of content producers and the loss of quality. While previously entering an editorial office was subject to serious professional conditions, now it is an easier job opportunity, because the field is wide (anyone can become a journalist). Starting a page becomes easy, media work can be done from anywhere. This question (9) has already been applied to AI by many people due to the structure of the question series.

In the group of questions concerning AI, the 10th asked about the conceptual difference between generative and functional AI. Conceptual clarity was revealed in the answers of a total of 5 journalists, 15 answered no, and 1 of them was completely negative about AI. In retrospect, we do not see the issue of own content produced with AI as sufficiently well-defined, as it is not differentiated between the various methods/applications of content production. Here, 15 people answered yes, 5 people answered no regarding the creation. At the same time, since there was no conceptual separation of generative and functional AI, the answers are mostly related to the use of functional AI (translation, transcription of audio recordings) and the search for inspirational topics. Image editing, image generation, and text generation were present in the case of 3 people. It is recommended to ask about it separately during the subsequent examination! A total of 15 people answered yes to the question of whether they had seen content created by AI, two of the 5 no answers were a categorical no, while 3 reflected uncertainty that it could happen "many times, even when we don't know about it".

So, it involves the perceptual uncertainty of whether we can discriminate. This is much easier for textual content, especially in Hungarian, than for images and visual content. In journalism, its use is primarily seen in idea generation, translation, and news editing. Thematically in the fields of economy, sports and weather and more on television and radio than in the written press. Some people predicted the transformation of the entire sector, others said that "the entry-level work of a journalist will not be done by a human being", but the opinions agreed that the "work of a flesh-and-blood journalist" will not be replaced, merely the acquisition of data and background information, technological steps (translation, editing) become OUR terrain. If a new phenomenon appears in a sector, the environment reacts to it. In the case of social forms, this takes the form of normative regulation on the one hand. We therefore asked the journalists what they knew about the legal regulation of AI. Out of the 20 respondents, 18 people had not heard of it or were not familiar with it, 2 people showed greater awareness in this field, although they see that it is still very rudimentary and that its treatment is only at the level of problem statement and first guidelines, it is contradictory and there is no uniform regulation. That's why one of them said that he didn't really know him. There are already declared AI articles (Financial Times, Bloomberg) and advertisements. One of the interviewees mentioned the IKO International PR Association, where the first European directive is expected by November, and the policy paper is currently being prepared.

The legal issues that arose: 1. for English editorial offices, it is a policy that it must be indicated
2. how the person who gave his voice to AI will be remunerated (one-time assignment).
4. if you sell the generated content as your own article - a part of the media abroad is against this kind of journalism it is a question of "multiplagiarism".

The same group of questions led to the following result for the female interviewees participating in the study. Among the changes brought about by digitization, most people highlighted speed and increased accessibility. The field is changing significantly, the expansion of online platforms, easier data collection, immediacy appears as a goal. The motivation for content production changes, its focus shifts according to the interviewees, and success is measured by achievements. However, the cold, profit-based thinking is contrasted with the normative journalistic ideal, which is thorough and looks into things, creative and authentic. AI helps and speeds up data collection, research work, and, where appropriate, ideation, but it cannot compete with an understanding and creative person this is the opinion of several people. "Although the profession is digitized, it will never outgrow the human factor. People can add that extra something that makes the content more interesting.

AI can help us, but it cannot replace human work" (TKA). The ladies see AI basically as a tool, they think of it as a kind of work support application. It was surprising that there was no answer to the question during the 3 interviews. "For now, I don't want to give it any more space in my life" (ED). Compared to male interviewees, women felt a greater degree of uncertainty regarding the topic.
The women's responses were as follows. They see AI as a tool 3.7, thes see a competitor 2, they consider the loss of control dangerous 2.94, the unforeseeable consequences 2.66, the lack of legal regulations 2.4, the lack of ethical considerations 2.56. 2.8 consider the usage useful, 2.56 consider the AI itself effective.

We wanted to measure knowledge about AI by separating the concepts of functional and generative AI, where 11 people indicated that they did not know the difference, 7 people abstained and only 2 people gave meaningful and correct answers. 13 people used AI-based techniques, 7 people did not. Translators and voice recorders were the most used. Only a few people used it for research and finding topics, and text development was mentioned by only one person. The majority of them, 16 people, have already seen content created with AI, only 4 people answered no. Grammatical errors and schematic are mentioned as revealing signs. Several people commented that they don't know 100%, but you can feel from the content that it was created by YOU. Except for one person, they did not know about regulation (17 people), no answer for 2 people. However, they agree that the area should be regulated. A person speaking about the regulation mentioned an article he had read, in which they wrote about what a journalist should pay attention to when using it. The challenges of digitization and AI affecting the journalistic profession were included in the rest of the question list. The interviewees were asked to capture the positive and negative aspects of the digital transformation. Again, we looked at the answers given by male and female subjects separately.

The men highlighted speed and efficiency as positives in relation to AI, even though if news is produced by artificial intelligence, journalists will have time to be in the field and produce quality, more creative articles. They mentioned the decline in readership as a negative, and the fact that people will have no idea how AI journalism works, and are even more vulnerable to deception and fake news. There were those who mentioned the acquisition of information and vulnerability during the war as a negative. A more schematic content production undermines lifelikeness. AI as a challenge affecting the journalistic profession was perhaps the question of the questionnaire that moved the subjects the most. A lot of ethical questions arose on their part: how transparent and recognizable the content generated by AI will be, what happens to the quality of journalism, if a text production is preferred by AI that is read by more people (sensationalism), human diversity is lost behind the neutral tone of AI , which cannot handle diversity and opinion-type content. Questions such as what kind of answer I get during the data collection regarding a specific question, Euro-American, white or Saudi Arabian point of view were discussed. What happens if the content produced by AI causes a scandal, in this case who is responsible (who produced it, used it, programmed it or owns it), there will always be a person (journalist) who exercises the responsibility. What we think is ethical, where does unethical WE use begin. If something is banned in Europe, it does not mean that the content will not arrive from a server in Morocco. The danger of disinformation (fake news) experienced in everyday life is mentioned as the biggest difficulty factor, that following trends can get ahead of you, and that we cannot distinguish between real and generated reality (Guardian story).

The results of our scaled questions (17) were as follows: The majority agree with the statement that AI is a helpful tool, 3.75, while 2.55 see it as a competitor. In terms of danger, they consider the lack of ethical (2.1) and legal regulation (2.45) to be the most acute problem, the uncertainty due to the unforeseeable consequences (2.65) is still a risk, and the loss of control (2.95) is felt to be less of a threat. In journalism, the use of AI (3.4) is considered useful and effective (3.35).
According to many journalists, consumers of media content cannot filter out content generated by AI, 8 of the women shared this opinion, 2 refrained from answering. One main mentioned that consumers find it fun. According to two people, the reaction depends on the individual: they will be more aware and sceptical of AI, but the average consumer will not notice. Also, one person talks about the fact that the content created with AI does not represent a deficit when it comes to the communication of facts, but beyond that, it would not give satisfaction to the conscious consumer. According to others, only professionals can filter out AI-generated content. That is why the question flows into the educational problem and receives a moral emphasis. Adequate information is required, and journalists and development companies communicate this.
To the question of whether it is necessary to indicate that the content was created with AI, 12 people answered yes in all cases, two people emphasized that the author should also be named in the articles, 4 people differentiated and made it case-dependent, distinguishing by the use of AI (e.g. search engine or translator) and content generated by AI, the latter is considered justified. A person does not consider it justified, unless the responsibility can be transferred to him (interpreting it as a legal issue). In the case of the reference, therefore, the subject dependence is the determining aspect. According to the view of one interviewee: "in time it will also be just a tool". There are no data in three cases.

In terms of ethics:

"A reporter can be held responsible for everything; what he describes or says, he therefore assumes his own personal responsibility for the information he says. In the case of artificial intelligence, who takes this responsibility? So, on what basis can it be held accountable that if disinformation is published, you, as a reporter, if you report what you received from that artificial intelligence, from then on we are back to taking personal responsibility for the information...Anything can have unforeseeable consequences" (SPJ)
Among men, 13 people answered that they don't notice it, 1 person said they guessed it, 1 person said that among differentiated recipients, at the same time, they also think that 80% of them don't notice the content generated by AI and that this is dangerous, 1 person answered that they don't know and 3 people have no data. Some typical sentences from the interviews: "they are at a terrible level in terms of source criticism", "they are not interested, just make the article interesting".

According to one interviewee, not notifying their media consumers about AI content is a regulatory and ethical shortcoming.
This brings us to the topic of question 19, should consumers be notified? 12 people answered yes, 3 people answered no, 4 people said that it should only be indicated if the content was generated by AI. Everyone feels that the signal is ethical, and two people emphasize that it is an ethical issue. Opinions differed on whether to cite AI as a source or content producer, in lowercase as a comment or as an author.

In terms of ethics:

"It should be indicated, but this alone does not tell people anything, because if we indicate to the readers, listeners, and viewers that it is a content created by ME, then it raises further questions. In what part, why, and what should be added, there should also be a public agreement on why this is important for the reader to know, what potential quality difference there is between content created by humans and content created by AI. Now, I think this will happen - … Content created by AI is human content. Therefore, if you write that it is content created by ME, the simple reader will ask what I should do with it now? What does this mean to me now? Good and? Is there a system of criteria that makes it less reliable now, or is it much more reliable now? What should I do with this? We have questions, but we don't have answers yet." (HZS)

On the question (20.), what kind of change is predicted within the profession, a uniform opinion was received from women and men. The responses to the question showed keen interest and intensity on the part of those interviewed.

The men gave pessimistic answers to this question. In two cases, there is no data on this question, so we summarize the insights of 18 people. Of these, 5 people stated that AI will lead to a reduction in staff, i.e. AI will take jobs away from the profession. Some typical sentences from the interviews: "many people will lose faith in writing if a lot of people write in AI", "certain genres and media providers will disappear", "we will cease to exist, we will not have jobs", "it requires new competences" , "only those who can produce something unique can survive", "they can now better appreciate what a person writes", the generation gap is increasing: "young people use it routinely, they can produce more interesting content", "we need a job demand that understands AI will"

For women, the picture is not so negative, although there is a forecast of a decrease in the number of 4 people. They also claim that "only really good people can keep their jobs". They emphasize the speed, the help in the work, the possibility of producing more colourful content and that publishing a news item will mean more responsibility. On the other hand, what is mentioned as a negative is that "the quality of content deteriorates", "the number of people who have access to reliable media products will decrease", people "will believe less in media reports", "our personal bubbles will shrink, their walls will become thicker and thicker". ” (PE), “it becomes clear which areas are the ones where human resources can be replaced”. According to one of the interviewees, the consequence of this will be that direct communication and live human relations will become more important again.

4.5. The working environment, AI in the newsrooms

The III. block includes 6 questions. It examines the relationship between the work environment (see editorial) and AI, we were primarily interested in regulation and job transformation, as well as whether it appears and, if so, along which issues in daily editorial practice and meetings. With this, we wanted to measure the reflection on the power of AI in shaping the industry. 24-27. we tried to measure how they react to the change at the editorial level with questions
To the question of whether it is a topic of conversation at the meeting, 10 never, 5 sometimes, and 2 answers were received.

Regarding topics:

- fun, we make fun of AI
- we are talking about how usable it is
- how specific tools work, experience sharing
- that we can shape it to our advantage by incorporating it into our daily work
- what will change in the future
- as a moral question: how to check the authenticity of the given AI content

15 people answered no, and 2 people have no data on the question of whether the editors have a position regarding the use of AI. The three people who gave a positive answer in this regard emphasized that they agreed on what and how they use it, or they decided that "one-by-one AI content should not be released until it passes the filter" or "we only use it for background collection , we work from there". 15 people said that there is no strategy, 2 people have no data on this question. They see knowledge sharing as a strategy, and one person mentioned that they have a colleague "who digs into it" and tries it out and "shares his experiences, then everyone slowly gets used to it".
For men, the same question block showed the following picture. To the question of whether the editorial meetings are a topic of discussion, 7 never, 8 rarely and 5 often answers were received. In terms of topic, entertainment appears here as well, and the questioning of how much it transforms their work and the media market, what it will change, what positive and negative sides it has, what is the opinion of AI on a certain topic (interest). They are worried about the fake news phenomenon and error percentages.

Regarding taking a position, 16 people indicated that there was no specific position, 1 person had no data, 1 person answered yes, 2 people indicated the existence of an editorial consensus in their comments. If yes, the resolution said: it can only be used in collecting work. Behind each of the existing resolutions is whether there is an ethical risk to the content or disclosure, what the issue of copyright looks like, whether it should be indicated or not. The editors try to deal with questions related to AI in accordance with general principles. In terms of strategy, 17 people chose none, 1 person mentioned that they cannot speak due to confidentiality, 1 person mentioned that they bought a software (details unknown), 1 person has no data.
Our questions about the transforming role of AI are on 21, 22, 23, 28, 29.
Question 21 tried to reveal what the interviewees think, which areas AI will transform in the process of data acquisition, news editing, and news production. The question is on a scale, where 1: not at all – 5: completely. In the case of men, there is no data for 4 or 5 people, depending on the question, and for 3 women.

Table 3: What and to what extent AI will transform journalism

AREA	Men	Women
Will it transform the content planning process?	3,35	3,4
It transforms the process of news gathering.	3,53	3,88
It transforms the process of data collection (archival materials, data mining).	4,05	4,29
Transforms page review, reception, translation from other media.	3,9	3,27
It transforms the process of promoting content.	3,47	4
It transforms the process of sharing content.	3,47	3,25
It transforms the process of real-time data collection.	3,18	3,7
It transforms the process of data visualization.	4,3	3,1
It will transform the process of filtering out fake news.	3,06	3
It will strengthen the manipulation possibilities.	4,25	4,35
Transforms the process of interviewing (sound recording - text display, filtering out ambient noise).	3,46	3,88
In the process of editing, shortening and paraphrasing the original materials	3,25	3,41

For men, the strongest transformation is expected in the field of data visualization, manipulation, and data collection. Women ranked manipulation, data collection and content promotion as the top three. The least they see is that a transformation would take place in the process of filtering out fake news. The significant differences between the responses of women and men require further interpretation.

With question 22, we were wondering in which genres they could imagine the use of AI. When answering the question, 4 men and 5 women did not answer.
1.The options provided for news portals, the generation of news-based, temporary and opinion content. While the news content (15-13 people) is acceptable for the respondents, the opinion genre should be completely "forbidden". None of the respondents would allow the opinion content to be shaped by AI. In the case of transitional genres, 2 responses were received for both men and women.

2.In radio broadcasting, the magazine and music editing were the two areas they had to evaluate. Music editing was supported by 13 men and 13 women each, for the magazine show, 8 of the men and 10 of the women could imagine the use of AI. At the magazine, they support it only until the discovery, and it is raised as an ethical issue. For two people, this appears explicitly: "it can work, but I don't think it's right"
3.In television, the question appeared when automating CGI, the camera system and directing tasks. The majority of respondents could imagine AI in these areas and already know it to be real (CGI – 14-12, camera system 14-13, director's tasks 8-10).
4.In online content production, 11 men answered yes, 4 answered no, women 10 answered yes, and 5 did not. "I can imagine it, but I don't want to", "it would be hell, but I see a chance of it getting in there", "I consider automated content production a big danger" appeared in the answers of both sexes.
5.Comment moderation was the last question in this section. Here, for men, 14 yes, 1 no, for women: 12 yes, 3 no. Many people see it as a replacement for work they don't like. At the same time, the opinions of the interviewees show that: "if it filters out the dangerous algorithm, and it is even more dangerous if it learns", or "it even filters out what it shouldn't"
6.Question 23 named content areas and asked for the interviewees' judgments on this, the results of which were the following, summing up the answers of the male and female interviewees

Table 4: In which areas do you think AI is more applicable

Topic	Number of positive responses
Economic contents	28
Public news	22
Economic news	21
Popular culture	17
Sports	15
Globally interesting	11
Locally interesting	8
Cultural	3

"It can be imagined in any field if it is limited to the bare facts (what, who, where, when, how)." - M.F. They do not consider its application justified in any way in a field that requires individual opinion, judgement, and human creativity.

In question No. 28, we listed areas, the question required filling in a scale, where 1: not at all, 2. mostly no, 3. moderately 4. rather yes 5. fully meant a yes answer.

Table 5: Do you think AI will affect media content...

Do you think AI will affect media content...	Men	Women	Average
Content distribution mechanisms.	3,8	3,06	3,43
The speed of creating media content.	4,37	4,5	4,43
The cycle time of media content (how long it can be kept on the front page and when it becomes obsolete)	3,56	4,18	3,87
Evaluation of the impact of media content on the audience.	3,75	3,8	3,77
Profiling of users.	4,5	3,93	4,21
User interactions	3,6	4,06	3,83
The advertising, marketing area.	4,3	4,53	4,41
Monitoring public opinion on one issue at a time	3,68	4	3,84
Monitoring of public opinion in terms of attention management	4,3	3,93	4,11
The media industry will become more efficient with the application of AI	4,06	3,31	3,68
The real-time nature of media content is becoming stronger	3,4	4	3,7

4.6. Summary - Analysis

We tested our hypotheses with the empirical research and obtained the following results in this regard.

H1. Reflections on the emergence of AI are primarily thematized as an ethical problem among journalists. Partially fulfilled.

H2. In judging AI, men are more technology-centric than women. Our hypothesis was confirmed.

H3. In judging AI, men have a more optimistic reading than women. Partially fulfilled.

H4. The use of AI is more typical for male journalists than for women. We did not collect enough data to decide one question.

Summarizing the lessons learned from the situation assessment interviews, in response to our hypotheses, we can say that journalists are looking for a place for the application within the profession, and considerable uncertainty surrounded all of this in the fall of 2023 (H1). The situation is in the testing phase, the use of generative AI is not yet part of ordinary journalistic practice. H2, that men have a more experimental and technologically involved attitude towards AI, was confirmed, as was H3, which assumed that AI is perceived more negatively among women. At the same time, the difference itself is clearly shown in the diagram, it is not significant. At the same time, we encountered open, accepting answers and complete rejections from both sexes, so hypothesis H4 requires further differentiation in subsequent research.
In other words, we can make the following statements regarding the interviewed journalists: Journalists feel the need for legal and ethical regulation of the use of AI. Ethical issues are primarily thematized in the argument. There is a lot of uncertainty regarding the use of AI, and we can experience this along several dimensions. Journalists consider automated content production more conceivable/acceptable for news genres than for opinion genres.
The statements according to which: AI's practice has reached the journalistic profession (going beyond individual trials) in Hungary can be partially maintained. In the practice of journalism, AI is already being used in various fields, and a significant transformation is predicted in these fields. Content producers have a positive attitude towards AI, seeing it as a technology that helps their work rather than discarding it. Our claim that: Journalists thematize their AI-related insights at editorial meetings has not been proven. And in the end, not enough data was collected to decide that: Producers of visual content are ahead in the application than those working with text-based content.

5. Conclusions

In our research, we wanted to explore what applications, work areas, and attitudes towards artificial intelligence applications can be explored among Hungarian female journalists. First, we reviewed the relevant digital usage data and international research, followed by the Hungarian qualitative research in October 2023, during which we asked 40 journalists in the form of in-depth interviews about their experiences with artificial intelligence and its applicability in their work. Most of our hypotheses were met or partially met, one was not, and insufficient data was collected for one more.
The limitations of the research stem from the number of respondents, the data collected during the 40 in-depth interviews cannot be generalized to the Hungarian journalistic society.
In the next part of our research, in the spring of 2024, using the experiences of qualitative interviews and empirical research, we sought out Hungarian journalists in a quantitative form and asked them to fill out an online questionnaire, the data of which will be processed and presented in the second half of 2024.
And finally, there is a quote from one of the interviews, which clearly shows that Hungarian journalists see both the potential and the dangers inherent in artificial intelligence. "We still have practically unlimited resources at our disposal.... this is basically a good thing, which should be used well, and next to it, the orange and red flags should be displayed nicely at certain points" (SZA)

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