



Human or machine? The perception of artificial intelligence in journalism, its socio-economic conditions, and technological developments toward the digital future

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ARTICLE INFO

Keywords:

Digital literacy
Artificial intelligence
Automated journalism
Generative AI
ChatGPT
Digital era
Future of technology

ABSTRACT

This study surveyed 1041 people in the Czech Republic to determine how well they could differentiate between news articles created by humans and those created by artificial intelligence (AI). It also explored attitudes toward AI-generated audio recordings and the future of journalism with AI. The study found that gender, age, and socioeconomic status were significant factors in how well respondents recognized the source of the text. Females were better at identifying human-generated texts, while males at identifying AI-generated texts. Younger respondents were generally more adept at recognizing AI-generated texts, education and income levels were also found to be correlated with better accuracy. Attitudes toward AI in journalism varied with age, with the 18–29 age group displaying ambivalence, the 30–49 age group being uncertain, the 50–69 age group having diverse attitudes, and the 70+ age group being skeptical. Males were more optimistic about AI's potential in journalism than females, especially among older age groups. The study's findings highlight the need for targeted digital literacy interventions tailored to different demographic groups. It provides insights into the development of digital literacy and the readiness of the population to use automated information outputs. This is essential to address the challenges of future technological development.

1. Introduction

Artificial intelligence (AI) has been introduced into all aspects of our lives and is increasingly employed to solve more complicated and smarter challenges. The news media industry has been applying AI since the year 2014 (Kim and Kim, 2021). While it was initially referred to as “robotic journalism,” the more recent preference has been “automated journalism.” Automated journalism, based on the application of algorithms in news writing, represents new directions of media transformation processes in the 21st century. Not only does it change the ways and forms in which news is produced but, too, it transforms the ways in which the news is received and consumed. This process has occurred at different pace in various countries, with the most progressive changes being recorded in American and Chinese editorial offices (Zheng et al., 2018). Automated article production through AI has

become a key enabler of significant changes in newsrooms (Galily, 2018; Kim and Kim, 2017).

Existing studies have mostly focused on investigating the ability of AI to generate news, its quality and comparability with outputs from human journalists. Since its inception, the quality of automated journalism has been considered comparable to that of human journalists (Jung et al., 2017; van der Kaa and Kraemer, 2014; Wölker and Powell, 2021). However, there are still areas where AI use has been limited. So far, the perception of the issue area of news produced by automated journalists as compared to human journalists, and the link between those different perceptions and socioeconomic markers have been little explored. Some studies recommend the application of four dimensions to investigate these disparities: perceived quality, satisfaction, positive disconfirmation, and uncertainty avoidance (Zheng et al., 2018) are seen as crucial in order to create a model for user acceptance of

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<https://doi.org/10.1016/j.techfore.2023.123162>

Received 10 December 2023; Received in revised form 18 December 2023; Accepted 18 December 2023

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automated journalism.

Many studies deal with the selected parameters of produced articles that can impact users' decisions about accepting outcomes written by human journalists or through automated journalism. According to Liu and Wei (2019), Haim and Graefe (2017), Clerwall (2014) and others, robot journalists can produce comparable quality to human journalists in terms of objectivity and immediacy, i.e., two factors that Deuze (2005, 2019) highlights in journalism as ideology. People tend to trust high-quality information. Therefore, the quality of the information offered should be increased: greater interactivity and engagement positively impacts on trustworthiness (Slota et al., 2022; Grosser et al., 2019).

The issue of the spread of disinformation or misinformation through social media is closely related to the quality and trustworthiness of the information content, regardless of the type of generation (automated vs. human content). The disinformation spread has also become an increasing risk for entrepreneurs to effectively achieve their business results and to maintain their economic and social stability (Buntić et al., 2020). The type of social media platform can significantly influence subjects' intention to share fake news; therefore, it is necessary to examine different social media platforms to determine which platforms have a higher propensity to share fake news than the others (Aïmeur et al., 2023; Bradshaw and Howard, 2018). The analysis of the various socio-behavioral aspects of online interactions with the spread of disinformation will also be important to reveal the negative aspects of social media affecting the personal and professional life of an individual. This will facilitate the creation of optimal tools for protection against disinformation contents of generated messages and to appeal to the creation of government regulatory mechanisms (Saurwein and Spencer-Smith, 2020; Marsden et al., 2020).

These consistent facts point to the significance of investigating the factors of the differentiated perception of automated journalism and generative AI outputs with the intention of revealing the potential power of automated and human reports for user decision-making processes within the personal and work spheres. On the other hand, knowledge of the differentiated perception of automated versus human content messages will help identify the digital literacy level of the population and its readiness to embrace automated outputs within the technological development of society.

Accordingly, the goal of this study is to investigate the determinants of the differentiated perception of Automated Journalism and Generative AI by users and their socioeconomic potential in the technological development era. Existing and available studies in this area are quite heterogeneous; they lack a systematic synthesis, which limits the creation of a comparative potential. In the available studies, a contextual investigation of the effects of socio-demographic variables on the ability of users from various population groups to recognize automated news content is missing. Indeed, the existence of such studies would help to define elementary structural parameters of the digital literacy of the population and reveal the potential of news institutions to increase a given literacy level. Its insufficient level in the segment of users and creators of automated content can have a negative impact on the transformation processes in organizations as well as on the technological development of sectors and society as a whole. From a global perspective, such epistemic lacuna has potential to hamper national and international competitiveness of economies.

2. Determinants and socio-economic potential of automated journalism and generative AI

Despite the availability of several terms related to AI use in the field of mass media (automated journalism, robotic journalism, algorithmic journalism, and robots writing news), the automated journalism term applied in this study is the most frequently employed in the scientific community (Monti, 2019). It expresses AI use, understood as involvement of software or algorithms without human intervention, except for

programmers responsible for developing the algorithms. AI has increasingly occupied the fields where the human factor is dominant in the management of information relations between institutions, media, and society (Túñez-López et al., 2020). When examining automated journalism processes and their impact on socioeconomic development in countries, it is important to understand these processes from a social-constructivist perspective. Such a perspective rests on the premise that social activity is an essential element of technological development. Therefore, there are many barriers to the development of automation (Linden, 2017). Some studies have critically evaluated automated news content and reflected on the feasibility, meaning, value, and importance of many instances of automated production. Despite the declared accuracy and skill of automated and human content, identity, spirit, vision, and intuition remain important aspects distinguishing automated management from human (Mseer, 2022).

2.1. The impact of the socio-demographic aspects on the adoption of AI technologies

To mention but a few, the age aspects in relation to the acceptance of automated processes in the society were also investigated by Araujo et al. (2020), Smith (2018), van Deursen and van Dijk (2019) and Thurman et al. (2017). Their results showed that older individuals problematically accept the automation of social processes and are concerned about it. This may be due to the extent of the digital divide (van Deursen and van Dijk, 2011), a higher level of dependence on traditional decision-making methods, as well as to more limited access to resources. Resource availability or accessibility can change attitudes toward the perception of automated content and increase individuals' rate of adaptation to new technologies (Hong, 2022). A technologically favorable environment is also a strong positive stimulus for the adoption of AI technologies. Nevertheless, this environment is also related to the socioeconomic status of individuals. Therefore, social groups classified as vulnerable in a given society may display different degrees of familiarity or experience with automation, which leads in turn to notable variability in the adoption of AI technologies.

It has been demonstrated that not only users' age but also the volume and quality of previous experience are important determinants in their evaluation of whether messages have been generated in an automated way or by humans. According to Jang et al. (2022), individuals with low knowledge of automated journalism prefer news written by humans against algorithms. Conversely, individuals with high knowledge of automated journalism prefer news generated by algorithms to the same or greater extent. When exploring different age groups, lower levels of knowledge of automated messages improved the ratings of automated messages among younger users (Jang et al., 2022).

Recent studies have found that trust and political attitudes are the most important drivers of AI perception, especially in the media sector (Araujo et al., 2023). AI adoption is influenced primarily by the relationship between individuals, and the society, and media. Individuals with less trust in media may have different opinions about automated news content than those with greater trust. Nevertheless, it is necessary to examine not only the relationship of individuals' trust toward specific media organizations, but also toward the media system (Luhmann, 2002). Political orientation can also be a significant determinant of perceptions of automated content and AI-generated messages. Individuals with a right-wing political orientation perceive news generated by AI more positively, whereas individuals more distant from the political center perceive automated content more negatively (Araujo et al., 2023).

Earlier research focusing on automated journalism reported the perception of software-generated content as descriptive and boring, but at the same time, objective and more difficult to distinguish from content written by journalists (Clerwall, 2017). A highly positive view of AI can negatively affect satisfaction with it and intention to adopt it. Enterprises that implement automated journalism will play a significant

role in explaining and justifying their technologies and their impact on audiences and society. Few studies have examined marketing strategies in this context, but many have examined and justified ethical aspects. Owing to the versatility and plurality of AI, news employing AI will cover various news sections such as politics, economics, business, technology, health, social, culture, and sports. Therefore, the importance of AI on a societal scale is increasing across the board. Education is a strong predictor of the preferential use of automated content in relation to an individual's profession as well as their professional development (Czaja et al., 2006; Mitzner et al., 2016) and influences the demand for AI-generated messages.

These facts support the formulation of a following research question RQ1: *Which are the socio-demographic variables that influence the capability of survey respondents to correctly guess the origin of the text?*

2.2. Determinants influencing the perception of automated message contents

Many technological changes in automated journalism have been explained as important and helping the journalists to process increasing amounts of data or improve reporting quality. Hence, their priority was not focused on the replacement of human journalists in writing articles. The increased use of algorithms has brought about a new phase of transformational processes in news editorial offices as they have begun to design the core of news content (Blanchett et al., 2022; Feezell et al., 2021; Schapals and Porlezza, 2020). As algorithms increasingly define editorial decisions, there are growing legitimate concerns regarding the responsible use of AI-driven tools in news media and the accompanying need to address regulatory and ethical issues. The regulatory mechanisms within the EU and the Council of Europe could support not only the ethical use of AI in news but also cover the data area and AI literacy, issues of diversity, plurality, and social responsibility (Porlezza, 2023). Martens et al. (2018) confirmed overwhelming consumer trust in legacy print and broadcast news publishers, and lower trust in algorithmically generated and social media news distributions.

In recent years, this trend has intensified owing to growing concerns about disinformation. Cabiddu et al. (2022) claimed that the availability of the necessary knowledge that enables them to perceive and simultaneously regulate certain risks and uncertainties is essential for the correct evaluation of the outcomes generated by algorithms. Based on this, the user can accept or bypass algorithmic outputs more quickly (Gao and Waechter, 2017). Trust in technology can also support the trustworthiness of automated outputs and contribute to development of various strategies aimed at reducing users' dispositional reluctance to trust technology, as described in their works by Kim et al. (2009), Hoff and Bashir (2015), and Ding et al. (2019). Trust in automated content or content generated by AI can be differentiated from the point of view of professional groups (analysts, managers, and decision-making bodies) or from the perspective of socially weaker strata with limited demand for daily news from various socioeconomic areas. According to some authors, a positive perception of automated content is also an outcome of the gradual development of trust, whereas initial trust in automated content is important (Lankton et al., 2015; Gao and Waechter, 2017).

The results of the aforementioned studies support the formulation of our RQ2: *What are the characteristics of the respondents that influence their attitudes toward AI-generated audio recording?*

2.3. Perception of the future of automated journalism by the public

It is important to know the determinants that influence news users who accept automated journalism with considerable uncertainty. Such knowledge may be conducive in a search for suitable forms to build their trust in automated journalism. Therefore, it is important to examine the differences in the perceptions of different types of news (generated by a human editor versus automated journalism) and their reception by respondents from the perspective of their different levels of experience

with automated news.

Perceived expectations from automated messages can also significantly influence satisfaction with the content, which in turn contributes to a higher adoption rate of automated content by recipients. This can have a significant impact on the changes in the preferential structure of the received messages (Haim and Graefe, 2017; Altay et al., 2022). However, a higher variability in expectations can create considerable non-transparency in the formation of adaptive structures of automated messages for receivers. This is also evident from Haim and Graefe (2017), who found that message recipients expected a higher level of readability and quality, but not trustworthiness, from messages written by people. However, the quality expectations were only rarely met. In addition, the perception differences between automated and human news were more apparent when both types were compared simultaneously: automated ones were considered more credible. This implies that a change in expectations may not explain the differences in the perception of automated and human news, which has also been confirmed by other studies (Montal and Reich, 2017). Excessive expectations play an important role (Lee et al., 2020) and help to avoid uncertainty possibly related to technical shortcomings (Kim and Kim, 2017). Differences in the perceived trustworthiness of messages written in an automated way and personally were not found in cases where simple and short types of text were examined (Henestrosa et al., 2023). The length of a text can affect the difference between perceived and real trustworthiness (Waddell, 2018).

It remains questionable whether these aspects are also confirmed for different types of news, as some studies consider sports news or news in the economic field to be more reliable if they are generated by automated journalism (Wölker and Powell, 2021). In the study by Graefe et al. (2018), this was not confirmed, and the topic of the news had no influence on the subjects' perceptions when evaluating the trustworthiness, readability, and journalistic expertise of the news. Wu (2020) drew attention to the differences in the evaluation of the trustworthiness of automated and human reports in the journalistic fields of politics, finance, and sports. In automated reporting, sports reports were rated more trustworthy, whereas financial reports were rated more biased. By contrast, in reports written by humans, financial reports were rated as more trustworthy. Political news was marked as being more biased in human news when it was produced by a combination of automated forms and human editors (Wu, 2020). Wölker and Powell (2021) also confirmed the higher trustworthiness of automated content for sports news than for human news.

According to Strauß (2019), the process of creating and distributing financial news is self-referential and hence, it leaves little space for alternative creation. Although the influence of financial reporting on its creation of financial reports is limited, the impact of unexpected versus expected negative messages on the content is significant. When exploring differences in the perceptions of automated and human-created contents of sports and financial news by journalists and users, there were confirmed only small differences (Zheng et al., 2018; Clerwall, 2014). Tandoc Jr et al. (2020) did not confirm differences in perceived message trustworthiness among news generated by algorithms, humans, or a combination of both. The authors linked trustworthiness with fairness and found that when an article was written by a human, trustworthiness was stable regardless of fairness. An interaction effect between the type of declared author and fairness of the reports was also observed. If written using an algorithm, report trustworthiness is higher provided the article is trustworthy rather than biased. Combined authorship was rated higher in terms of trustworthiness when an article was biased, rather than trustworthy. Jia and Johnson (2021) found that people choose messages consistent with their attitudes. Jung et al. (2017) pointed out that simply manipulating author notifications will change public and journalistic evaluations of the trustworthiness of automated and human content.

Trustworthiness does not affect the probability of articles being selected or rejected for reading. From the perspective of local editorial

offices, regional aspects can differentiate the importance of automated journalism. According to Thäsler-Kordonouri and Barling (2023), local news agencies consider automated journalism less important and prefer the use of human agents.

Based on these outcomes, research question RQ3 was formulated: *Is there a difference in the opinions of people who have encountered artificial intelligence and those who have not, about the future of human journalists?*

3. Data and topics

The data were gathered by the Faculty of Social Sciences at Charles University in collaboration with the global market research specialist IPSOS as part of a research project focused on assessing the awareness of AI among the Czech population. Computer-assisted web interviews were conducted for data collection. A total of 1041 respondents were included in the survey. The statistically representative sample was stratified on the basis of age, gender, education, region, and size of the residential area. Data collection took place between 4th and 11th April 2022, with respondents typically taking approximately 10 min to complete the structured questionnaire.

Among the various topics, the questionnaire aimed to elicit the opinions of the Czech population on the following aspects: ChatGPT; attitudes toward the call to halt artificial intelligence development; perception of technological progress within Czech society; personal experiences with artificial intelligence in daily life; awareness of artificial intelligence; and comparisons between texts and audio recordings generated by artificial intelligence and those produced by humans.

4. Analysis and outcomes

Analysis answer three research questions which aim to:

1. Assessing the recognition capabilities of survey respondents when distinguishing between texts generated by AI and those written by humans. The research question is, (RQ1): Which are the socio-demographic variables that influence the capability of survey respondents to correctly guess the origin of the text?
2. Concerning the respondents who were being played an AI-generated audio recording of traffic reports, the research question is, (RQ2): What are the characteristics of the respondents that influence their attitudes toward AI-generated audio recording?
3. Examination of the public's view regarding the future of human journalists after the advent of generative AI, such as ChatGPT. The research question is (RQ3): Is there a difference in the opinions of people who have encountered artificial intelligence and those who have not about the future of human journalists?

To distinguish between texts generated by artificial intelligence and those created by humans, we grouped six model statements in the printed media, forming three pairs of statements. For each pair of statements, one was generated by AI within the Czech News Agency (ČTK), a pioneer of automated journalism in Czechia (Moravec et al., 2020), and the other was created by a human. For each pair of texts, the respondents had to indicate which text they thought was generated by AI and which was created by a human. The statements are as follows.

(1a) Gasoline in the Czech Republic has become significantly more expensive since last week, diesel has become slightly cheaper. Prague, May 26, 2022 – a liter of the best-selling Natural 95 gasoline is currently sold at gas stations in the Czech Republic for an average of CZK 46.21; a week ago it was 91 halers cheaper. Diesel has become cheaper by 16 halers per liter; drivers now pay an average of CZK 46.19 per liter. According to data from CCS, which monitors prices, gasoline is 14.09 CZK per liter more expensive than a year ago, while motorists paid 16.27 CZK less per liter for diesel.

The cheapest gasoline is filled by drivers in the Hradec Králové region, where a liter costs 45.84 CZK on average. Diesel is the cheapest in the South Bohemian Region; a liter is sold there for an average of CZK 45.59.

Conversely, the most expensive fuel is offered by pumps in Prague, where a liter of gasoline costs an average of CZK 46.75. Diesel is refueled there for 46.79 CZK per liter. (AI)

(1b) Gasoline in the Czech Republic is more expensive than diesel for the first time since the beginning of the Russian invasion. Prague, May 26, 2022 – Gasoline costs more than diesel for the first time since the beginning of March, that is, since the first days of the Russian invasion of Ukraine. It is currently sold for 46.21 CZK per liter, while diesel cost 46.19 CZK per liter. Over the past two weeks, gasoline has become more expensive by almost 2 CZK per liter.

It is noteworthy that diesel fuel has not recently increased in price as much as gasoline. On the other hand, diesel has become cheaper over the past two weeks, by 25 halers per liter. This development is unusual. The shortfall in the supply of fuel, which is related to the war in Ukraine and Western sanctions against Russia, is now more acutely felt in Europe precisely in gasoline supply. (Human)

(2a) Prague, September 25, 2022 – SPOLU won the municipal elections in Prague, gaining 19 mandates in the council, which has 65 members. ANO ended second with 14 mandates. The third PIRATES will have 13 representatives. This follows from the results of municipal elections at www.volby.cz. 43.91 % of voters took part in the elections. Fourth PRAHA SOBĚ has 11 mandates, five representatives will have STAN in fifth place. Sixth is the SPD with three mandates. (AI)

(2b) SPOLU won in Prague, Mr. Svoboda as a leader did not. Prague, September 25, 2022 – SPOLU coalition won the elections in Prague. Bohuslav Svoboda was the leader and candidate for the position of mayor in the coalition, but his personal result is not strong. Four of his colleagues defeated him in the number of votes.

Since the merger of ODS, TOP 09 and KDU-ČSL, the right-wing parties have promised themselves a strong negotiating position that will bring the strongest Civic Democratic Party the position of mayor. That was fulfilled, yet the coalition was certainly aiming higher and hoping for a much stronger mandate. (Human)

(3a) Prague, August 2, 2021 – For two days now, the Prague Stock Exchange has surpassed its eight-year maximum from January 2014, when it rose to 1223.26 during the day. The PX index improved by 1.14 % to 1223.26 points. Shares of Komerční banka and the Austrian banking group Erste Group Bank recorded the biggest increase today. The most significant decline affected the shares of the beverage producer Kofola and the insurance group VIG. Of the thirteen main titles of the Prague Stock Exchange, seven finished trading in the positive today, the other two emissions stagnated. The most significant growth was achieved by the securities of the financial house Komerční banka, which improved by 2.13 % to 816 CZK. (AI)

(3b) Prague, August 2, 2021 – The Prague Stock Exchange improved its strongest closing value in ten years with its fourth growth in a row. The PX index increased by 1.14 % to 1223.26 points today. Shares of banks, energy company ČEZ and software company Avast rose. This follows from the exchange's website. Today's growth in the PX index is the most significant in more than two weeks. The last time the index ended the day at stronger values was in early July 2011. "The Prague Stock Exchange started the new week successfully," noted Fio bank's broker Josef Dudek. (Human)

4.1. RQ1: *which are the socio-demographic variables that influences the capability of survey respondents to correctly guess the origin of the text?*

First, we look at RQ1; thus, we examine the accuracy of respondents' estimates concerning news texts generated by artificial intelligence or humans. Table 1 presents the percentages of the gender split. A good guess means that the respondent correctly determined all possibilities, notion rather a good guess means that he got one wrong, notion rather than a bad guess means that he was wrong twice, and notion bad guess means that he incorrectly determined the origin of the text in all cases. Regarding text generated by humans, females generally have a slight advantage in recognizing the origin of human-generated text. They had a higher percentage of guesses in all categories. In terms of texts generated by artificial intelligence males recognized texts generated by

Table 1
Accuracy of guesses - gender breakdown.

		Gender	
		Male	Female
Text generated by human	Good guess	27.2 %	28.6 %
	Rather a good guess	36.0 %	37.5 %
	Rather a bad guess	26.8 %	25.7 %
	Bad guess	10.0 %	8.2 %
Text generated by AI	Good guess	18.5 %	17.7 %
	Rather a good guess	37.6 %	34.8 %
	Rather a bad guess	24.5 %	30.5 %
	Bad guess	19.3 %	17.0 %

AI slightly better than females. In summary, females generally performed slightly better at recognizing human-generated text, whereas males were better at recognizing AI-generated texts.

Table 2 contains respective percentages of answers divided based on respondents' age. Table contains the percentage distribution of respondents' guesses when distinguishing between texts generated by humans and texts generated by AI across different age groups.

For texts generated by human, we note that a good guess received the highest percentage of responses from all age groups, with the highest being in the 40–49 age group at 42.2 %, indicating that respondents often made at least one mistake while identifying the origin. The bad guess category received the lowest percentage of responses from all age groups, suggesting that very few respondents believed the human-generated texts to be AI-generated and failed to identify the origin of the text in all three cases. In the case of text generated by AI, the percentage of respondents making a good guess that the text was generated by AI varied across age groups, with the highest percentage in the 18–29 age group (23.1 %) and the lowest in the 50–59 age group (18.8 %). Overall, the younger respondents tended to be slightly better at correctly identifying AI-generated texts. The rather a good guess category received the highest percentage of responses across all age groups, indicating that many respondents made one mistake in identifying the origin of the text. The 40–49 age group had the highest percentage (42.2 %) of rather a good guess response, while the 70+ age group had the lowest (30.3 %). The rather a bad guess category represents respondents who failed to correctly identify the text as generated by AI in two out of three cases. The 40–49 age group had the highest percentage of these responses (26.1 %), while the 60–69 age group had the lowest (24.4 %). The bad guess category represents respondents who incorrectly identified the text as human-generated when it was generated by AI in all three cases. Unsurprisingly, the 60–69 age group had the highest percentage (24.9 %) of bad guess responses, indicating that this age group was more prone to mistaking AI-generated text for human-generated text. Regardless of age, respondents often found it challenging to confidently distinguish between texts generated by AI and those created by humans.

To better understand which socio-economic characteristics drives the ability of humans in recognition of written text origin we run regression analysis. We use binary logistic regression with following design:

Table 2
Accuracy of guesses - age breakdown.

		Age					
		18–29	30–39	40–49	50–59	60–69	70+
Text generated by human	Good guess	30.8 %	31.4 %	19.1 %	32.4 %	28.0 %	28.2 %
	Rather a good guess	37.7 %	35.2 %	42.2 %	35.2 %	39.2 %	30.9 %
	Rather a bad guess	25.4 %	26.4 %	27.1 %	23.3 %	24.3 %	30.3 %
	Bad guess	6.2 %	6.9 %	11.6 %	9.1 %	8.5 %	10.6 %
Text generated by artificial intelligence	Good guess	23.1 %	17.0 %	15.1 %	18.8 %	16.9 %	19.1 %
	Rather a good guess	40.0 %	33.3 %	42.2 %	38.6 %	32.8 %	30.3 %
	Rather a bad guess	28.5 %	33.3 %	26.1 %	24.4 %	25.4 %	29.8 %
	Bad guess	8.5 %	16.4 %	16.6 %	18.2 %	24.9 %	20.7 %

In each line, the above-average values for the given type of answer are highlighted in bold.

$$\ln\left(\frac{Pr(\text{guess} = \text{good})}{1 - Pr(\text{guess} = \text{good})}\right) = \beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Education}_i + \beta_3 \text{Personal income}_i +$$

$$+ \beta_4 \text{Household income}_i + \beta_5 \text{Region}_i + \beta_6 \text{Family status}_i + \beta_7 \text{Economic activity}_i$$

where $\ln(\text{guess} = \text{good})$ describes the probability that the respondent identified the origin of the text in the case of human-generated and AI-generated text correctly in all cases, or made one mistake at maximum, while $\ln 1 - Pr(\text{guess} = \text{good})$ denotes the odds that the respondent identified the origin of the text in the case of human-generated and AI-generated text incorrectly in two or three cases.

The results of the regression analysis results are in Table 3. The dependent variable was correctly predicted by the model in 63.2 % of the cases and by the omnibus test of the model; thus, the likelihood-ratio chi-square test of the current model versus the null model indicated that the current model outperformed the null model ($p = 0.000$).

The main findings of the regression analysis are as follows: The intercept represents the odds of making a good guess about the origin of the text when all other predictor variables are zero. In this case, it is not statistically significant (p -value of 0.262), meaning that when all predictor variables are zero, the log-odds of making a good guess are not significantly different from zero. Regarding the age of the respondents, the age group of 18–29 years has a significant positive effect on the odds of making a good guess compared with respondents aged 70+ years. This probability was 85 % higher. In addition, the odds of making a good guess for respondents in the 40–49 age group are approximately 1.446 times higher than the reference group; thus, 70+ year respondents and the odds of making a good guess by respondents aged 50–59 years are 35 % higher than in the case of respondents aged 70+ years. Thus, we can assume that age has an impact on the capacity of respondents to identify the origin of the text; this capacity decreases with age.

Findings for education indicate that respondents with primary and secondary school education have significantly lower odds of making a good guess, meaning they are less likely to make a good guess compared to the respondents with university degree. This odds ratio was 35 % smaller. In addition, respondents with a high school degree have a slightly lower chance of making a good guess than respondents with a university degree.

Respondents with a net monthly income below 1000 EUR have significantly lower odds of making a good guess (by 20 %), suggesting that lower income is associated with lower odds of a good guess. Regarding the net monthly household income category, being a respondent from a household with an income lower than 800 EUR has a significant negative effect on the odds of making a good guess. Specifically, the estimated log-odds of making a good guess for respondents with a household income below 800 EUR are 32 % lower than those of the reference group (households with income higher than 1600 EUR). Household income <800–1600 EUR> has a borderline statistically

Table 3
Regression analysis.

Parameter	B	Std. error	Hypothesis test			Exp(B)	95 % Wald Confidence Interval for Exp(B)	
			Wald Chi-Square	df	Sig.		Lower	Upper
(Intercept)	-0.047	0.0917	0.262	1	0.609	0.954	0.797	1.142
Age								
18–29 years	0.616	0.1484	17.245	1	0.000	1.852	1.384	2.477
Age = 30–39 years	0.007	0.1357	0.003	1	0.959	1.007	0.772	1.314
Age = 40–49 years	0.369	0.1290	8.176	1	0.004	1.446	1.123	1.862
Age = 50–59 years	0.306	0.1325	5.340	1	0.021	1.358	1.048	1.761
Age = 60–69 years	0.087	0.1295	0.451	1	0.502	1.091	0.846	1.406
Age = 70+ years	0 ^a	–	–	–	–	1	–	–
Education								
Primary and secondary school	-0.436	0.1035	17.739	1	0.000	0.647	0.528	0.792
High school	-0.195	0.1146	2.902	1	0.088	0.823	0.657	1.030
University	0 ^a	–	–	–	–	1	–	–
Net monthly personal income								
<1000 EUR	-0.216	0.0794	7.374	1	0.007	0.806	0.690	0.942
>1000 EUR	0 ^a	–	–	–	–	1	–	–
Net monthly household income								
<800 EUR	-0.481	0.1140	17.812	1	0.000	0.618	0.494	0.773
Income <800–1600 EUR	-0.169	0.0865	3.818	1	0.051	0.844	0.713	1.001
Income >1600 EUR	0 ^a	–	–	–	–	1	–	–
Region								
Region = Prague	0.147	0.1331	1.213	1	0.271	1.158	0.892	1.503
Region = Other regions	-0.003	0.0845	0.001	1	0.970	0.997	0.845	1.176
Region = Moravia	0 ^a	–	–	–	–	1	–	–
Family status								
Married, living with a partner, registered partnership	-0.097	0.1026	0.885	1	0.347	0.908	0.743	1.110
Widowed	-0.371	0.1835	4.081	1	0.043	0.690	0.482	0.989
Divorced	-0.409	0.1325	9.531	1	0.002	0.664	0.512	0.861
Single	0 ^a	–	–	–	–	1	–	–
Economic activity								
Employee with no subordinates	0.333	0.1230	7.329	1	0.007	1.395	1.096	1.776
Employee - management position	0.345	0.1685	4.197	1	0.040	1.412	1.015	1.965
Self-employed and entrepreneur	0.391	0.2130	3.372	1	0.066	1.479	0.974	2.245
Economically not active	0 ^a	–	–	–	–	1	–	–

Dependent Variable: Good guess.

Model: (Intercept), Age, Education, Net monthly personal income, Net monthly household income, Region, Family status, Economic activity.

^a This parameter is set to zero because it is redundant (reference category).

significant negative effect on the odds of making a good guess, specifically the odds of making a good guess, which is 14 % lower than in the case of respondents from households with income higher than 1600 EUR.

The region has no statistically significant effect on the odds of making a good guess about the origin of text news. Family status has a statistically significant impact on the odds of good guessing. Respondents who are widowed and divorced have significantly lower odds of making good guesses than single individuals. These odds are lower for widowed people by 31 % and for divorced people by 34 %.

For the economic activity variable, the findings show that employees with no subordinates, employees in managerial positions, and self-employed persons and entrepreneurs have significantly higher odds of making a good guess than economically inactive individuals. This chance is 39 % to 48 % higher.

4.2. RQ2: what are the characteristics of the respondents that influence their attitudes toward AI-generated audio recording?

To answer RQ2 and detect possible relationships between the capacity to identify the origin of the text and opinions about the authenticity of audio recordings, we ran Chi-squared Automatic Interaction Detection, which is employed when dealing with categorical variables, as in our case. This method is useful for identifying relationships and interactions between different categories. In questions about recording, respondents who were being played an AI-generated audio recording of traffic reports (543 out of 1041, the rest listened to an audio-recording read by a human reporter), were asked how authentic the recording sounded and, at the very end when they were told the recording to be the

product of AI, how it compared to a human reporter. AI-generated sample were produced by speech synthesis software that the Czech Radio (Český rozhlas) uses. Both recordings lasted for approximately 20 s. Chi-squared Automatic Interaction Detection works by recursively splitting data into subgroups based on the most significant categorical variables. This technique calculates chi-squared statistics to determine possible associations or interdependence between variables. Using this technique, complex relationships in categorical data can be discovered. Visualizations of respondents' attitudes are displayed in Fig. 1.

It should be stated at the beginning of this part of the analysis, that only 543 respondents out of 1041 responded to questions about the comparability of the robot and human reporters. The root node of the tree (node zero) represents the dataset of 543 respondents. It shows the distribution of responses to the question about the robot reporter compared with a human reporter. The respondents' answers were divided into three categories: a robot reporter cannot be compared with a human reporter (33.7 %), a robot reporter is already approaching the human reporter (53.0 %), and a robot reporter is already ahead of the human reporter (13.3 %). Node 0 was further split into Node 1, which comprised respondents divided by gender. A higher percentage of females (53.4 %) than males (46.6 %) expressed the belief that robot reporters are approaching human reporters.

However, gender did not have a statistically significant effect on this belief (p-value = 0.303). In the case of males, education matter on the threatened phenomena is considerable. If we examine the education level within the subset of respondents who believe the robot reporter is already approaching the human reporter, a statistically significant difference emerges. Respondents with high school, primary school, and secondary school education levels are more likely (36.8 %) to believe

The previous traffic report was read by a robot reporter (artificial intelligence). Which of the following statements best fits your opinion?

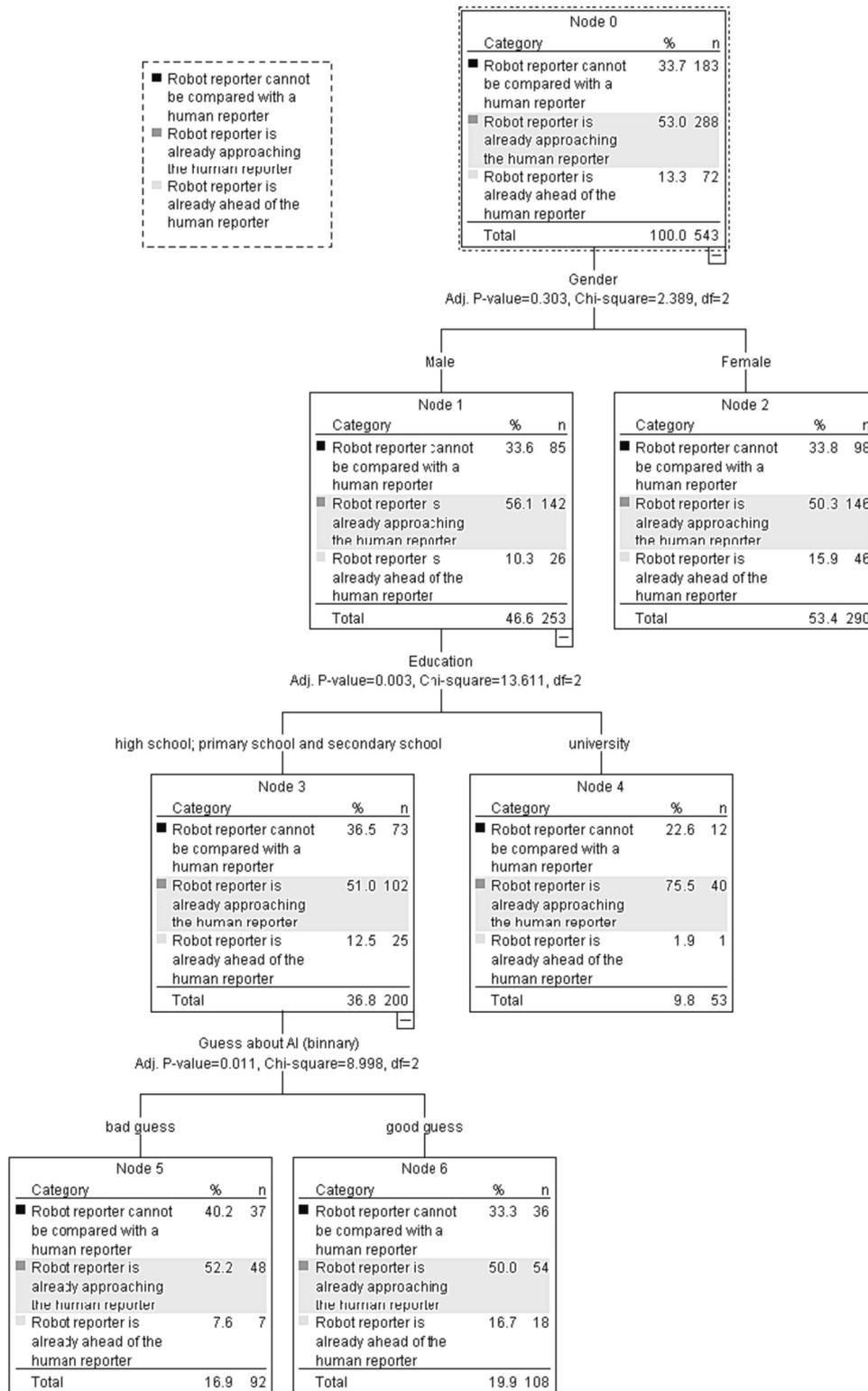


Fig. 1. Chi-squared automatic interaction detection.

that robot reporters are approaching human reporters than those with a university education level (9.8 %). The educational divide is statistically significant (p-value = 0.003). Further division within the subset of robot reporters is already approaching the human reporter opinion, which reveals that respondents who made a bad guess about the origin of the text generated by AI in the previous question are more likely (16.9 %) to hold this belief than those who made a good guess about the text generated by artificial intelligence (19.9 %). Guesses about the texts generated by AI in RQ1 has a statistically significant influence (p-value = 0.011). According to our study, guesses about texts generated by humans have no impact on opinions about the proximity Vs. distance between AI- and human-generated audio recordings.

In this part of the analysis, we conclude that gender alone does not significantly influence the belief that robot reporters are approaching human reporters. However, the education level of the respondents and their good/bad guesses about the text generated by artificial intelligence have some influence on this belief. Respondents with lower education levels (primary school, secondary school, and high school) are more likely to believe that robot reporters are approaching human reporters than those with university education. This suggests that education may affect perceptions of artificial intelligence in the future of journalism. Those who make a bad guess about the text generated by artificial intelligence are more likely to hold the belief that robot reporters are approaching human reporters, indicating that a less accurate guess about the origin of the text in the case of texts generated by AI may lead to more optimism regarding the capabilities of robot reporters in the future.

4.3. RQ3: is there a difference in the opinions of people who have encountered artificial intelligence and those who have not about the future of human journalists?

The final part of the analysis is devoted to the third research question regarding the differences in the opinions of people who have encountered artificial intelligence and those who have not about the future of human journalists. We incorporated two questions into the interaction.

1. In recent months, the media and the public have caught the attention of an artificial intelligence-based chat system called ChatGPT. Have you tried this system? How does it work?

First question had only dichotomous answer: Yes, or No.

2. Which of the following statements do you agree with the most?

The second question had three possible answers:

- 1st option: Systems based on AI such as ChatGPT and their development will replace human journalists within five years.
- 2nd option: Systems based on AI such as ChatGPT and their development will not completely replace journalists within five years.
- 3rd option: Systems based on AI such as ChatGPT will not have an impact on the number of jobs in journalism in the next five years.

The findings for the first question are as follows (see Table 4). ChatGPT was tested by a substantial percentage of respondents in the 18–24 and 25–34 age intervals. Among males, 24.1 % and 31.6 % in these age groups have used the system, respectively. For females, the highest usage is in the 18–24 age group, with 33.3 % trying ChatGPT, whereas in the 25–34 age group, only 15.8 % have used ChatGPT. As the age increased, the use of ChatGPT generally decreased. The 45–54 age group has the lowest percentage of usage for both genders, with 15.2 % of males and 15.8 % of females having tried the system. Among those aged 55–65 and 66–99, usage is quite low, with <10 % of respondents in all groups having used ChatGPT. There are also gender differences in usage across all age groups. In the 18–24 age group, females have a

Table 4 Usage of ChatGPT.

In recent months, the media and the public have caught the attention of an artificial intelligence-based chat system called ChatGPT. Have you tried this system; how does it work?		Age interval					
		18–24	25–34	35–44	45–54	55–65	66–99
Yes	Male	24.1 %	31.6 %	16.5 %	15.2 %	5.1 %	7.6 %
	Female	33.3 %	15.8 %	21.1 %	15.8 %	10.5 %	3.5 %
Yes	Male	3.7 %	9.2 %	17.7 %	20.4 %	21.4 %	27.6 %
	Female	5.0 %	12.3 %	12.7 %	20.1 %	17.5 %	32.4 %

higher usage rate than males (33.3 % vs. 24.1 %). However, in the 25–34 age group, males have a significantly higher usage rate (31.6 % vs. 15.8 %). In the 35–44 age group, usage is relatively balanced between genders, with 21.1 % of females and 16.5 % of males having tried the system. Females generally have a higher usage rate in the older age groups, though the overall percentages are low.

Notable is a lack of awareness and usage of AI, where portion of respondents in all age intervals have not tried ChatGPT, with the “No” responses ranging from 15.8 % to 27.6 % among males and 12.3 % to 32.4 % among females. In summary, the main findings suggest that ChatGPT is more popular among younger individuals, with varying gender differences in its adoption across different age groups. Younger females (18–24) are more likely to have tried the system; however, gender differences in usage vary in other age groups. As age increased, the usage of ChatGPT decreased, and a significant proportion of respondents have not experienced the system, particularly in the 55–65 and 66–99 age groups. These insights can help us understand the demographics of ChatGPT users and tailor marketing and outreach strategies accordingly.

In Table 5, we find answers to the second question about the future of human journalists of the respondents who declared in the first question that they had tried ChatGPT.

These numbers suggest that the views on the impact of AI in journalism of those who have already tried it are not uniform and vary based on gender and age. Young adults (aged 18–29) seem more optimistic about AI's role in journalism. A significant proportion believe that AI, like ChatGPT, will replace human journalists in the next five years. This reflects a willingness to embrace technological advancements. We observed middle-aged realism, in which those in their 30s and 40s appeared to be somewhat more cautious. They are divided in their opinions, with a portion believing in the potential for AI to take over journalism, but also recognizing its limitations. They also seemed to be more concerned about AI's impact on job security in journalism. As the age groups advance, skepticism increases. Individuals in their 50s, 60s, and 70s are generally less convinced of AI's immediate impact on journalism. Many in these age groups do not believe that AI will replace human journalists in the next five years. Their views may have been influenced by the longer history of traditional journalism and a more conservative outlook. This seeming skepticism can also be caused by the fact that, for older age groups, the answer that they had already tried AI was less frequent. It is also important to note that a significant number of respondents, regardless of age or gender, admitted not knowing what the future holds. This suggests that there remains a great deal of uncertainty and debate regarding the role of AI in journalism.

The Table 6 presents a breakdown of opinions about the future of journalism of respondents who have not yet tried AI. Respondents in the 18–29 age exhibit a degree of ambivalence regarding AI's capacity to supplant human journalists within the next five years. Their sentiments

Table 5
Opinions about future of human journalists when the respondent had tried ChatGPT.

Which of the following statements do you agree with the most?		Age					
		18–29	30–39	40–49	50–59	60–69	70+
		years	years	years	years	years	years
Systems based on AI such as ChatGPT and their development will replace human journalists within five years.	Male	35.7 %	28.6 %	21.4 %	14.3 %	0.0 %	0.0 %
	Female	50.0 %	20.0 %	10.0 %	0.0 %	10.0 %	10.0 %
Systems based on AI such as ChatGPT and their development will not completely replace journalists within five years.	Male	33.3 %	35.1 %	15.8 %	7.0 %	5.3 %	3.5 %
	Female	40.0 %	25.0 %	15.0 %	12.5 %	7.5 %	0.0 %
Systems based on AI such as ChatGPT will not have impact on the number of jobs in journalism in the next five years.	Male	50.0 %	25.0 %	25.0 %	0.0 %	0.0 %	0.0 %
	Female	16.7 %	33.3 %	33.3 %	16.7 %	0.0 %	0.0 %
I do not know.	Male	25.0 %	0.0 %	50.0 %	0.0 %	0.0 %	25.0 %
	Female	0.0 %	0.0 %	0.0 %	100.0 %	0.0 %	0.0 %

Table 6
Opinions about the future of human journalists when the respondent have not tried ChatGPT.

Which of the following statements do you agree with the most?		Age					
		18–29	30–39	40–49	50–59	60–69	70+
		years	years	years	years	years	years
Systems based on AI such as ChatGPT and their development will replace human journalists within five years.	Male	13.0 %	17.4 %	30.4 %	21.7 %	17.4 %	0.0 %
	Female	20.0 %	23.3 %	16.7 %	20.0 %	13.3 %	6.7 %
Systems based on AI such as ChatGPT and their development will not completely replace journalists within five years.	Male	7.7 %	12.2 %	25.6 %	16.7 %	16.7 %	21.2 %
	Female	13.8 %	16.2 %	19.2 %	18.6 %	13.8 %	18.6 %
Systems based on AI such as ChatGPT will not have impact on the number of jobs in journalism in the next five years.	Male	1.9 %	9.6 %	25.0 %	5.8 %	38.5 %	19.2 %
	Female	7.3 %	10.9 %	20.0 %	16.4 %	16.4 %	29.1 %
I do not know.	Male	4.7 %	15.8 %	21.6 %	18.1 %	19.9 %	19.9 %
	Female	9.6 %	10.0 %	12.0 %	20.7 %	24.7 %	23.1 %

oscillate between optimism and skepticism, reflecting their generational position and straddling traditional journalism and evolving technological paradigms. Age groups spanning 30–49 years display a level of indecision with no clear consensus. Their responses suggested a contemplative stance, indicating that these individuals were in a transitional phase between traditional and AI-mediated journalism. The responses within the 50–59 and 60–69 age portray a spectrum of attitudes, encompassing both optimistic and hesitant attitudes. The diversity within these segments underscores the divergent opinions found among similarly aged cohorts. Those aged 70 years and above revealed a considerable degree of skepticism about the feasibility of AI supplanting human journalists in the near future. Their responses reflect the implicit value of the longevity and resilience of traditional journalism practices. The “I do not know” category reveals that a significant percentage of respondents, across different age and gender groups, acknowledged the complexity and uncertainty inherent in predicting AI’s influence on journalism. Older people are significantly more often unclear about the future of journalism. Gender-based divisions reveal subtle variations. Males, especially in the 40–49 age group, exhibit a slightly more optimistic perspective of AI’s potential in journalism. By contrast, females, particularly those in the 70+ age group, appeared more cautious.

5. Discussion

The development of algorithms for automated news generation in automated journalism has strong socio-political, legal, occupational, and psychological implications for news organizations, journalists, and audiences (Montal and Reich, 2017). The authorship of algorithms is considered to be the most controversial and insufficiently researched aspect. The development of algorithms will lead to more advanced forms of automated reporting. However, journalists will be able to adapt to new technologies without fear of losing their jobs. According to Linden (2017), journalism is an ideology and journalists always make sense of their work. Journalism still has a strong influence on the political and economic fields and occupies an important social position. Technologists anticipate resistance from the journalistic field, but the transformation of news organizations can bring about significant

technological, economic, and political capital (Bourdieu, 2005). Technology enterprises consider news organizations as dominant clients, but various other sectors such as manufacturing, healthcare, marketing, sports, and transport will matter too. Technology enterprises see news organizations as excellent platforms for increasing the digital literacy of the population they can reach (Wu et al., 2019).

Digital transformation processes must also be developed in news and other institutions (Alam et al., 2018; Kelly et al., 2022). Cetindamar Kozanoglu and Abedin (2021) offer a new digital literacy concept to improve the understanding of employees’ role in the digital transformation processes and in the use of adopted information systems. Digital literacy will play an increasingly important role in enterprises. Creating a digital literacy system at the national level requires a comprehensive mapping of population structures and their systematic relationships with automated processes and their outputs. Our study and its results create a valuable platform for conceptualizing digital literacy and, hence, provide an illustration of sociodemographic structures and their relations to the selected digital transformation processes in news organizations.

The research findings shed light on the relationship between socio-demographic factors and individuals’ abilities to discern the origins of news texts generated by AI or humans. Moreover, this study examined how these perceptions influenced opinions on the authenticity of AI-generated audio recordings. This study also aimed to explore the implications of these findings; identify potential avenues for future research; and reflect on broader societal implications. As other research studies have confirmed, skills and experience with automated content will have a significant impact on user evaluation and adoption of digital processes (Jang et al., 2022). AI has universal contexts, which it points to the versatility and ubiquity of technological trends in. In recent years, there has been a shift in the perception of AI as a technological trend toward its investigation as a concept and scientific field that needs to be analyzed more deeply regarding its specific economic, social, cultural, and political impacts (Sun et al., 2022).

Concerning gender differences in text origin identification, we documented that gender plays a role in the accuracy of identifying the origin of news texts. Females demonstrated a slight advantage in

recognizing human-generated text, whereas males performed slightly better at identifying AI-generated text. This raises intriguing questions regarding how gender influences cognitive processes related to text evaluation. These findings contradict the outcomes of [Haim and Maurus \(2023\)](#), whose results confirmed that there were no gender differences in the perception of news content but that there were differences between human authors (male and female) and computer-generated news.

Regarding age disparities in text origin identification, age emerged as a significant factor affecting the ability to distinguish between AI-generated Vs. human-generated texts. Younger respondents displayed higher accuracy in identifying AI-generated texts, possibly because of increased exposure or awareness. In contrast, older respondents were more likely to confuse AI-generated Vs. human-generated texts, indicating a potential gap in familiarity. Future investigations could explore the impact of technological advancements on different age groups and how media literacy evolves across generations. These outcomes are also supported by the studies of [Thurman et al. \(2017\)](#), [van Deursen and van Dijk \(2019\)](#), [Araujo et al. \(2020\)](#), and others, which confirm that older individuals have a problematic acceptance of process automation and are concerned about it.

The socioeconomic factors and text origin identification section of the study revealed the influence of various socioeconomic factors, including education, personal income, household income, family status, and economic activity, on text origin identification. Higher education levels, personal income, and household income were associated with better accuracy. These findings suggest that socioeconomic status correlates with the ability to distinguish between AI- and human-generated content. Further research could explore the causal relationships between socioeconomic factors and digital and media literacy, offering insights into potential interventions to enhance information literacy across diverse socioeconomic groups.

Our analysis showed that individuals' ability to correctly identify AI origin of the text led to their skepticism in the context of their opinions about AI-generated audio recordings. Specifically, they were resistant to the belief that robot reporters were approaching or had already approached human reporters. Interestingly, gender differences were not statistically significant, challenging the stereotypes about how males and females perceive AI capabilities. However, education played a significant role, with less-educated individuals expressing more belief in AI's proximity of AI to human reporters.

The breakdown of attitudes toward AI in journalism across age groups provides an understanding of how different generations perceive AI's potential in journalism. The 18–29 age group exhibited ambivalence, reflecting a delicate balance between traditional journalism and emerging technological paradigms. The 30–49 age group reflects a transitional phase, suggesting uncertainty regarding the role of AI in journalism. The 50–69 age group displayed diverse attitudes, indicative of varied opinions within this cohort. The 70+ age group stands out with considerable skepticism, emphasizing the value of the longevity and resilience of traditional journalism practices. Age structure also describes users' experiences with digital content, which is inversely proportional. Experience is an increasingly important parameter for differentiating between valued message content and the adoption of automated content. Older users usually have little knowledge of automated content and lack of experience stemming from the digital divide as well as their previous professional orientation and relationship to technology and digitization processes ([van Deursen and van Dijk, 2011](#)). The digital trench and the inclination of individuals to the traditional ways of receiving news are also related to the socioeconomic status of individuals. It can be influenced by geographical aspects, health status, political orientation of the individual, political stability of the government, access to resources ([Hong, 2022](#)), and so on. Therefore, it is necessary to examine these aspects in subsequent research and identify them as potential barriers to digital literacy and the adoption of digitization processes in the social ecosystem.

These findings underscore the need for targeted interventions in

digital literacy programs tailored to different demographic groups. Understanding how gender, age, and socioeconomic factors influence perceptions of AI-generated content can inform educational strategies aimed at enhancing critical thinking skills and promoting informed media consumption. News organizations can be important initiators of the digital literacy of the population. They can facilitate the adoption of digital processes and, conversely, eliminate regional disparities and discrepancies caused by digital transformation processes.

In conclusion, this research provides valuable insights into the complex interplay between sociodemographic factors, text-origin identification, and attitudes toward AI in journalism. This paves the way for future investigations to deepen our understanding of the evolving relationships among individuals, information, and technology in the dynamic landscape of media and journalism.

The introduction of automated processes into journalism and news organizations also significantly affects the number of jobs in this sector. [Sherwood and O'Donnell \(2018\)](#) confirmed that journalists' professional identity weakens after losing their jobs, which hints at the strong ties between journalists' identity and the context of journalistic work. This may also have implications for the changing media workforce and its impact on society ([Schapals and Porlezza, 2020](#)).

Therefore, it is important to build a healthy media industry that can face unforeseen challenges. According to [Stanford \(2021\)](#), active political intervention to support the maintenance of domestic media is not an optimal solution. The media industry is currently undergoing many systemic and structural changes caused by new technologies, business models, increasing globalization, and other tectonic forces. Increased job insecurity in the media sector will bring an increase in nonstandard and uncertain conditions, with a potential to affect the labor market and the field of labor-legal relations. Income uncertainty and unpredictability influenced by economic conditions and news cycles are negative aspects of financial restructuring in the media industry and will change its employment structure. The growing demand for information, news, and content is expected to satisfy the increasingly demanding economic, cultural, and social needs of society.

6. Conclusion

Journalistic practice has always been influenced, structured, and simultaneously limited by technological processes. Such processes have strongly shaped the quality and depth of the news produced. Media transformation processes have changed and disrupted traditional ways of producing and consuming news in both positive and negative ways. The versatility and plurality of news reporting applying AI facilitates covering different news sections such as politics, economy, business, technology, health, social, cultural, and sports. Owing to its versatility and plurality, news produced by applying AI covers various fields such as politics, economics, business, technology, health, society, culture, and sports. Therefore, the importance of AI on a societal scale is increasing. However, progress in the introduction of automation to editorial offices has not yet been achieved. The main cause of this situation is the lack of resources and insufficient technological skills of journalists. Future socialization and technologically oriented training of journalists can increase the prominence of journalism as a professional field and strengthen its autonomy from the external environment.

This requires extensive training of staff editors and available resources. Knowledge to work with data, control of coding processes, and algorithms will bring technological innovations to the work of editors and increase the competitiveness of editorial work. While the majority of journalists assume that robots in their work will only have the complementary role to their work, and not replacing them, automated content creation can bring about greater competition and serious risks to the stability and security of journalist work. Technology enterprises will have greater transformative power, which may begin to challenge traditional conceptions of journalism. It is important to maintain the roles of journalists and their basic skills as well as the ideational – or

even ideological - continuity of editorial work. In the current period of technological development marked by the active inclusion of automated processes into the work of journalists, it will be necessary to create new conceptual frameworks to define successful communication models between man and machine.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

CRediT authorship contribution statement

Vaclav Moravec: Conceptualization, Writing – original draft, Writing – review & editing, Supervision. **Nik Hynek:** Data curation, Writing – original draft, Writing – review & editing, Writing – original draft, Visualization, Supervision. **Marinko Skare:** Writing – review & editing, Visualization, Validation, Supervision. **Beata Gavurova:** Formal analysis, Methodology, Data curation, Writing – review & editing, Visualization. **Matus Kubak:** Software, Writing – review & editing, Validation, Supervision.

Declaration of competing interest

Vaclav Moravec declares he has no conflict of interest.
Nik Hynek declares he has no conflict of interest.
Marinko Skare declares he has no conflict of interest.
Beata Gavurova declares she has no conflict of interest.
Matus Kubak declares he has no conflict of interest.

Data availability

Data will be made available on request.

Acknowledgements

This article was produced with the support of the Technology Agency of the Czech Republic under the ÉTA Programme, project TL05000057 The Signal and the Noise in the Era of Journalism 5.0.

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