

# DEEP INSIGHTS INTO AI PERCEPTION IN CROATIA

Robert Kopal<sup>1, \*</sup>, Darija Korkut<sup>1</sup> and Krešimir Žnidar<sup>2</sup>

<sup>1</sup>Effectus University of Applied Sciences  
Zagreb, Croatia

<sup>2</sup>Algebra Bernays University  
Zagreb, Croatia

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## ABSTRACT

Artificial intelligence (AI) is not a new concept, but its wide recognition within the general population has started only recently, with publication of Open AI LLM platform ChatGPT, and has ever since intrigued public in terms of its influence on human life in general, and primarily its repercussions on labour market and the future of jobs. Fully aware of its capabilities and huge impact on everyday life, and despite of AI infodemic, we notice an imbalanced approach in public space favouring only the positive aspects of the use of AI. AI will definitely mark our future, and its responsible development and use can contribute significantly to the advancement of many areas of life. However, irresponsible development and use can cause unfathomable damage to humanity. The risks it can impose in terms of biased and untransparent algorithms, privacy violation concerns, cybersecurity issues, disinformation and deep fakes creation and dissemination, to name just a few. The aim of the article is to provide a balanced view of both advantages and disadvantages of the use of AI, particularly in the light of the super-election 2024 and the accompanying risks in the form of information disorders and consequences they might have on world democracy and stability. Furthermore, the aim of this national research is to provide a deeper insight into the perception of AI within the Croatian population. Scientific and professional methodology was used to define and monitor key indicators of AI perception and search for corresponding correlations.

## KEY WORDS

artificial intelligence, AI perception, AI legislative, society, technology

## CLASSIFICATION

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\*Corresponding author, *η*: [rkopal@effectus.com.hr](mailto:rkopal@effectus.com.hr); +385 (1) 611 77 77;  
Trg J. F. Kennedyja 2, HR – 10 000 Zagreb, Croatia

## INTRODUCTION

The recent rise of popularity of artificial intelligence (AI) is the result of huge advances in development of LLM models. Although AI is the term from the 50s, coined by Stanford Professor John McCarthy, along with the development of the supporting technology its definition has experienced many transformations since McCarthy's "the science and engineering of making intelligent machines". It has evolved into most recent definition by the EU updated in May 2024 for the purposes of the Regulation as follows:

"AI system' means a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments" [1]<sup>1</sup>.

Following the attention Open AI's ChatGPT received at the launch of its 3.0 version in the beginning of 2022, its enhanced visibility led to prolific research in both, professional and scientific directions, and stimulated myriad of debates among academics, policymakers, and developers. Vibrant discussions in the field also preceded the passing of the EU AI Act [1].

The current research concerning AI in general and its understanding and acceptance by professional and general public is still scarce globally, and especially in Croatia. While scholars and experts struggle with theoretical, practical, and regulatory issues regarding AI, laypeople find these concepts even more difficult to comprehend, and, consequently, use in everyday activities.

It is this lack of professional and scientific insights into perception of AI that motivated this research – the first national research on AI perception in Croatia.

The aim of this research is to provide a deeper insight into the perception of AI within the Croatian population. Scientific and professional methodology was used to define and monitor key indicators of AI perception and search for corresponding correlations. Topics covered by the research are exposure to information about AI, AI viewpoints, AI influence on society and individuals, and trust in AI.

Recent similar research can be found in Nussberger, AM. et al [2], KPMG and University of Queensland sponsored global study on Trust in Artificial Intelligence [3], Centre for Data Ethics and Innovation (CDEI) [4-6], and 2024 Edelman Trust Barometer [7], which states that 30% of respondents embrace AI globally, 35% reject it, while trust in technology companies is at 76%.

As AI industry is susceptible to rapid technological obsolescence, similar challenges arise with the corresponding topics, including AI adoption and perception. Therefore, we will present here some of the most recent global research in the area of AI implementation, acceptance and trust, whose insights can be compared to ours, downsized to Croatia.

Some key findings from recent Stanford University AI Index Report 2024 [8] include the following insights:

- AI beats humans on some tasks, but not on all.
- Industry continues to dominate frontier AI research (51 vs 15).
- Frontier models get way more expensive.
- The United States leads China, the EU, and the U.K. as the leading source of top AI models (61 US vs 21 EU vs 15 China).
- Robust and standardized evaluations for LLM responsibility are seriously lacking.
- Generative AI investment skyrockets (despite a decline in overall AI private investment).
- The data is in – AI makes workers more productive and leads to higher quality work.
- Scientific progress accelerates even further, thanks to AI.

- The number of AI regulations in the United States sharply increases.
- People across the globe are more cognizant of AI's potential impact – and more nervous.

Microsoft and LinkedIn conducted their own research on work trends. The key findings from their 2024 Work Trend Index Annual Report [9] include the following numbers:

- 75% of knowledge workers use AI at work today, and 46% of users started using it less than six months ago. Users say AI helps them save time (90%), focus on their most important work (85%), be more creative (84%), and enjoy their work more (83%).
- 78% of AI users are bringing their own AI tools to work (BYOAI) – it is even more common at small and medium-sized companies (80%).
- 66% of leaders say they would not hire someone without AI skills.
- 71% say they would rather hire a less experienced candidate with AI skills than a more experienced candidate without them.
- Professionals are not waiting for official guidance or training – they are skilling up. 76% say they need AI skills to remain competitive in the job market. 69% of people say AI can help get them promoted faster, and even more (79%) say AI skills will broaden their job opportunities.

On the other hand, there is a considerable body of research about AI impact on workforce, with inconsistent data. Analysis conducted by the International Labour Organization on the potential impact of generative AI technology indicates that clerical support workers face the highest risk, with 24% of their tasks categorized as having a high level of exposure to automation and an additional 58% associated with medium-level exposure [10].

The IMF research on AI and the future of work [11] comes with “striking findings” that nearly 40% of global employment is at risk from AI technology. Furthermore, in advanced economies, around 60% of jobs could be affected by AI. Approximately half of the roles exposed to AI may see productivity gains through integration, while the other half could have essential tasks currently performed by humans taken over by AI, potentially reducing labor demand, leading to lower wages and less hiring. In the most severe scenarios, some of these jobs might vanish entirely. In contrast, emerging markets and low-income countries are expected to experience AI exposure rates of 40% and 26%, respectively. These results indicate that emerging and developing economies may face fewer immediate disruptions from AI. However, many of these nations lack the necessary infrastructure and skilled workforce to fully leverage the advantages of AI, increasing the risk that, over time, the technology could exacerbate inequality between countries [12].

The formerly mentioned Edelman Trust Barometer 2024 [13] contains some interesting, but also contradictory insights. Summarizing key insights, it reveals the following:

- **Trust Discrepancy in Technology and AI.** There is a significant 26-point gap between trust in the technology sector (76%) and trust in AI (50%). While technology was once the most trusted industry in 90% of countries eight years ago, it is now the leading industry in trust in only half of those nations.
- **Declining Trust in Developed Markets.** Trust in the tech industry has noticeably decreased in developed countries like the U.S. and UK over the past five years, dropping from around 70% to approximately 60%. In contrast, trust remains strong in developing markets.
- **Political Divide on Innovation.** A majority of right-leaning Americans (53%) reject innovations such as green energy, gene-based medicines, AI, and GMO foods, compared to only 12% of left-leaning Americans. This trend is also observed in other developed countries like Australia, Canada, and Germany.
- **Bipartisan Rejection of AI.** Among Republicans, 58% reject AI while only 15% accept it; for Democrats, 45% reject AI with 25% acceptance. Notably, more Republicans oppose AI than those who oppose gene-based medicine (58% vs. 51%).

- **Low Trust Across Political Lines.** Trust in AI technology is low among both political parties: 38% of Democrats trust it, while only 24% of Republicans do. There is a substantial 30-point gap between trust in tech companies and trust in AI for both groups.
- **Declining Trust in AI Companies.** Globally, trust in AI companies has fallen from 61% to 53% over the past five years. In the U.S., this decline is even steeper, with a drop from 50% to 35%.
- **Resistance to AI in Developed vs. Developing Markets.** Resistance to AI is nearly 20 points higher in developed markets compared to developing ones. In countries like France, Canada, and the U.S., respondents are significantly more likely to reject AI than to embrace it. Conversely, acceptance is higher in developing nations such as Saudi Arabia and India.
- **Concerns Beyond Job Security.** Among those skeptical about AI's growth, only 22% cite job security as a concern. The primary worries include privacy (39%), the potential devaluation of humanity (36%), and possible harm to individuals (35%). Americans particularly emphasize societal harm (61%) and privacy issues (52%).
- **Pathway to Acceptance.** Respondents who are hesitant about AI expressed that greater understanding of the technology, assurance of thorough testing by businesses, and consideration for those negatively affected would improve their acceptance of AI.

This and many other unmentioned global, regional, and national studies conducted worldwide over the past decade have been the main motivation for the first national research based on a representative sample in the Republic of Croatia. Previous research shows global trends in the application of artificial intelligence, attitudes, and trust in AI, which we wanted to explore within the Croatian population, especially in the light of the EU AI Act – first comprehensive AI act globally.

## METHODOLOGY

The research (Public Opinion Survey) on the perception of AI in Croatia was conducted in September 2023, on a representative sample of 1318 respondents: Computer-assisted Web Interviewing (CAWI) with 1018 respondents and Computer-assisted Telephone Interviewing (CATI) with 300 respondents.

The public opinion poll was conducted as part of the scientific-professional project “Perception of artificial intelligence in the Republic of Croatia”. The goal of the Project was to define and monitor the key indicators of the perception of artificial intelligence in the Republic of Croatia and to define appropriate correlations and, if possible, causality using scientific and professional methods. The project has a scientific and professional/applicative contribution.

A scientific contribution was achieved by applying scientific methods and respecting the latest scientific achievements in the field of artificial intelligence and related fields. The professional/applicative contribution will be made in certain areas of application of artificial intelligence – the field of education and business areas of the Partners, as well as other industries.

Given that artificial intelligence is a set of rapidly developing technologies, after the initial research in September 2023, it is planned that the research within the Project will be conducted once a year on appropriate samples from the same population.

The research was conducted using two methodologies:

- 1) CAWI – a method of data collection that was chosen as optimal considering the time for implementation, the amount of data that can be collected, the cost and the primary objective of the research. An Internet panel cannot function independently as a representative survey. CAWI data were additionally weighted according to CATI data for this research.

2) CATI – the results for public opinion polls are significantly more accurate because they reach some groups that cannot be included in online surveys. Calls were made to fixed and mobile numbers, multiple calling and redial arrangements and distribution over several working and non-working days, stratified at the level of counties and settlement size.

The research results were harmonized with census data from 2021 (sex, age) and education, and CAWI data were additionally weighted according to CATI data.

The standard error of the sample in the survey varies depending on the sample size and the variance of the answers in the question, and the largest theoretical error in the survey is  $\pm 3.07\%$ .

The characteristics of the sample are shown in Tables 1 and 2.

The article presents the results of the analyses carried out using descriptive and inferential statistics.

**Table 1.** Geographical features.

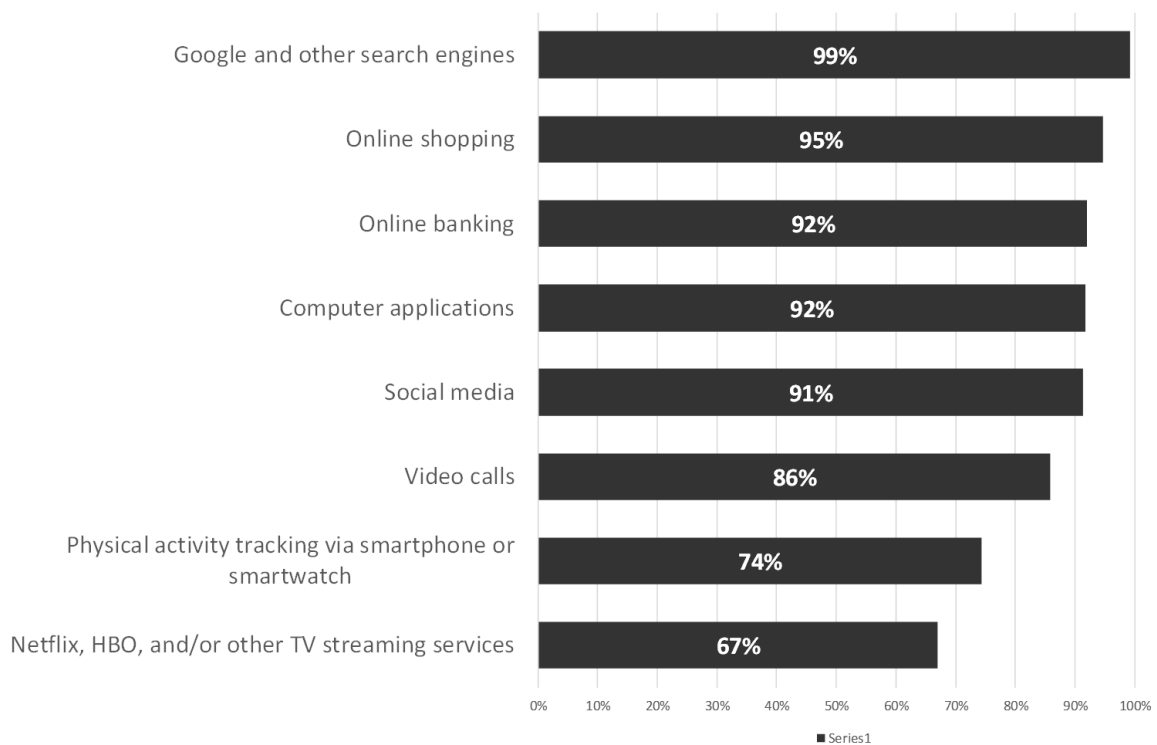
<b>Geographical characteristics</b>		
Region	Slavonija	<b>16.4%</b>
	Central Croatia	<b>9.3%</b>
	Northern Croatia	<b>13.9%</b>
	Zagreb	<b>26.4%</b>
	Istria, Primorje with hinterland	<b>14.8%</b>
	Dalmacija	<b>19.2%</b>
Size of the settlement	999 or less inhabitants	<b>21.3%</b>
	1.000 – 4.999	<b>21.1%</b>
	5.000 – 24.999	<b>15.2%</b>
	25.000 – 100.000	<b>16.5%</b>
	100.000 - 1.000.000	<b>26.0%</b>
County	Zagrebačka	<b>6.8%</b>
	Krapinsko-zagorska	<b>2.8%</b>
	Sisačko-moslavačka	<b>3.2%</b>
	Karlovačka	<b>2.9%</b>
	Varaždinska	<b>5.2%</b>
	Koprivničko-križevačka	<b>2.6%</b>
	Bjelovarsko-bilogorska	<b>3.1%</b>
	Primorsko-goranska	<b>7.5%</b>
	Ličko-senjska	<b>1.4%</b>
	Virovitičko-podravska	<b>2.4%</b>
	Požeško-slavonska	<b>1.5%</b>
	Brodsko-posavska	<b>3.6%</b>
	Zadarska	<b>4.0%</b>
	Osječko-baranjska	<b>6.3%</b>
	Šibensko-kninska	<b>2.3%</b>
	Vukovarsko-srijemska	<b>2.6%</b>
	Splitsko-dalmatinska	<b>9.9%</b>
	Istarska	<b>6.0%</b>
	Dubrovačko-neretvanska	<b>3.0%</b>
	Međimurska	<b>3.2%</b>
Grad Zagreb	<b>19.7%</b>	

**Table 2.** Personal features.

Personal characteristics		
Sex	male	48.5%
	female	51.5%
Age	18 to 29	15.0%
	30 to 44	28.0%
	45 to 64	34.0%
	65 and over	22.9%
Education	Medium and lower	64.6%
	More	13.1%
	Highly	22.3%
Working status	Employees	55.1%
	Pension	28.2%
	Else	16.7%
Employment position	Owners of companies / trades / OPG	13.5%
	Senior and middle management staff	15.8%
	Lower management staff	10.2%
	Experts	12.3%
	Clerk	28.3%
	VKV/KV/NKV worker	19.9%

## RESULTS AND DISCUSSION

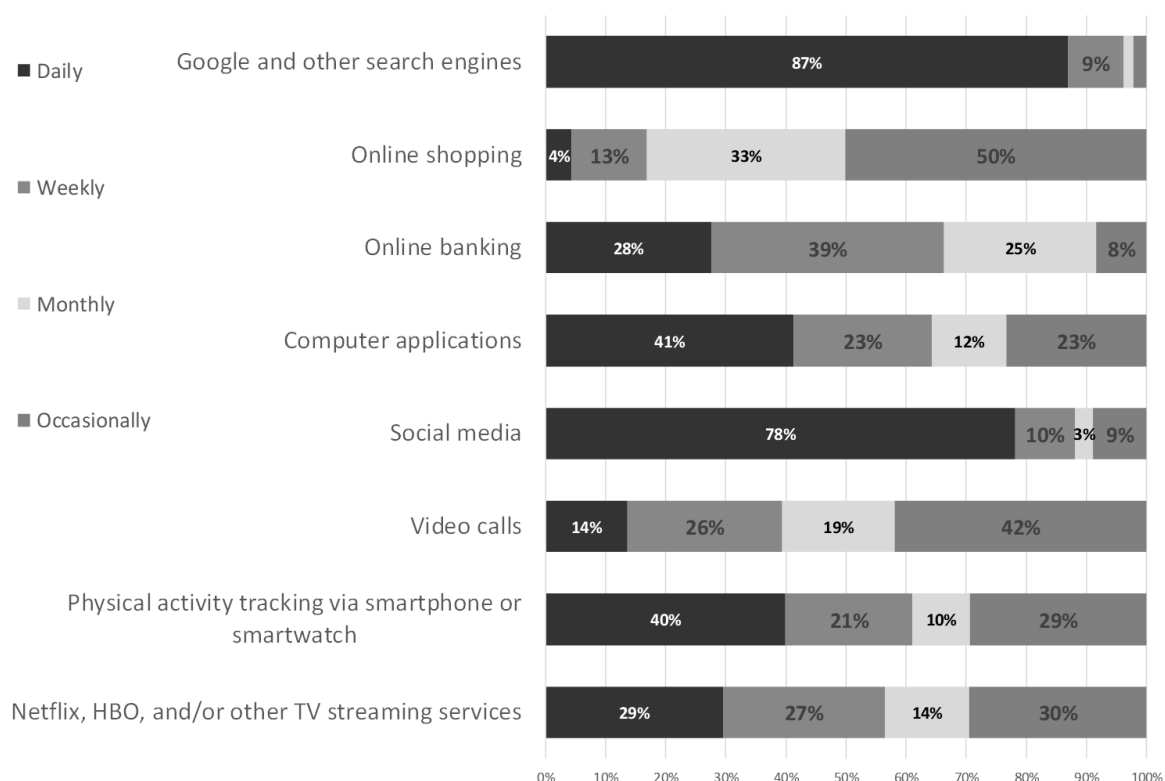
To calculate the digital literacy composite index, the answers shown in Figures 1 and Figure 2 were analyzed.



**Figure 1.** How often do you use the following?

It is visible that many digital tools (activities) are used. The number of users varies from almost all (Google) to two-thirds of the population.

When the frequency of use is analyzed, significant differences between individual activities are clearly visible (only those who use).



**Figure 2.** How often do you use the following? Frequency of use.

Out of eight offered activities, less than 10% of respondents use all eight activities very intensively (“every day”, “several days a week”). If we “soften” the criterion to additionally include less intensive use (adding values “several days a month” and “occasionally” to “every day” and “several days a week”) and look at all the respondents who use AI (regardless of intensity), then almost half of the respondents use all eight activities listed, Figure 3.

Figure 4 shows the distribution of the digital literacy composite index. Computation of digital literacy composite index shows almost normal distribution.

The analysis of respondents according to the digital literacy index provides following results:

- slightly more women have an average level of digital literacy,
- the share of low digital literacy increases with age, especially after 45,
- the level of digital literacy significantly and positively correlates with education.

Figure 5 shows the distribution of the digital literacy index level. We see that almost 50% of respondents are “average” and almost equal portion of “high” and “low” respondents (slightly more “low”).

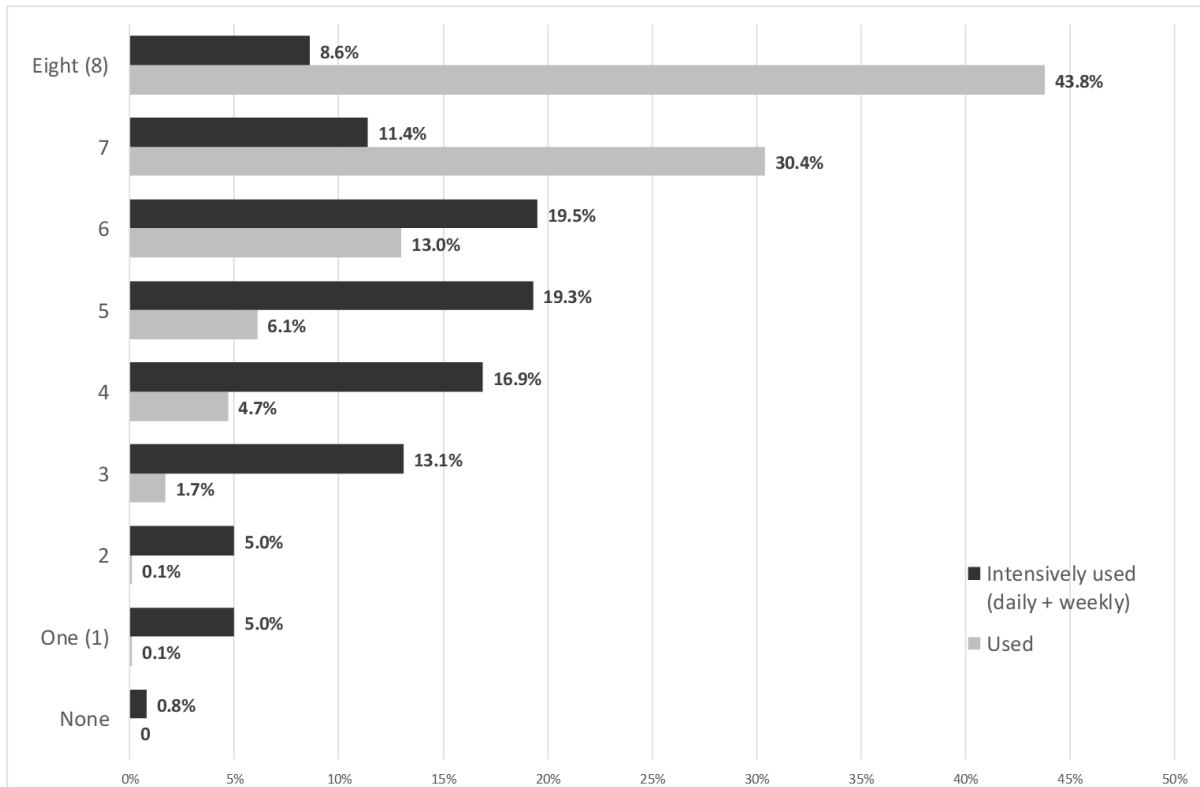


Figure 3. Activities usage.

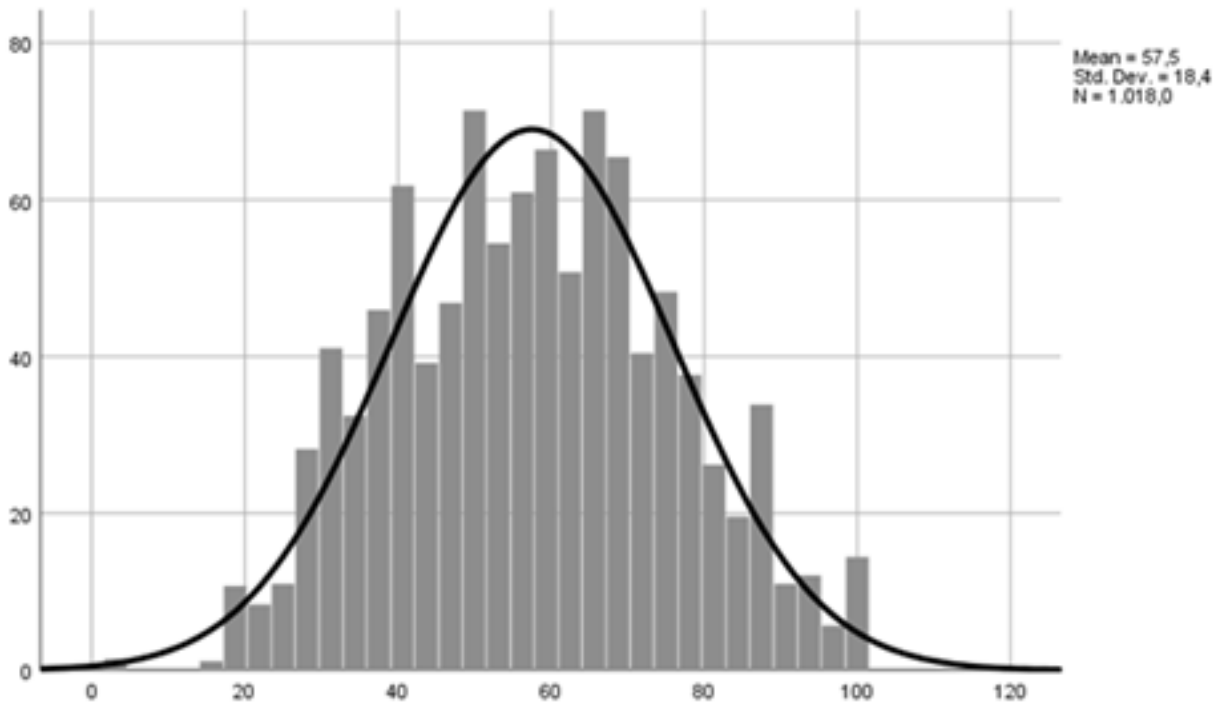
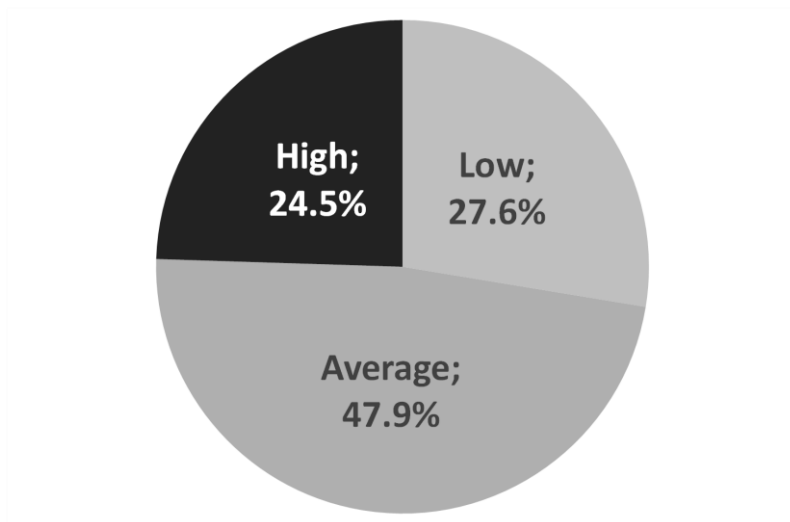
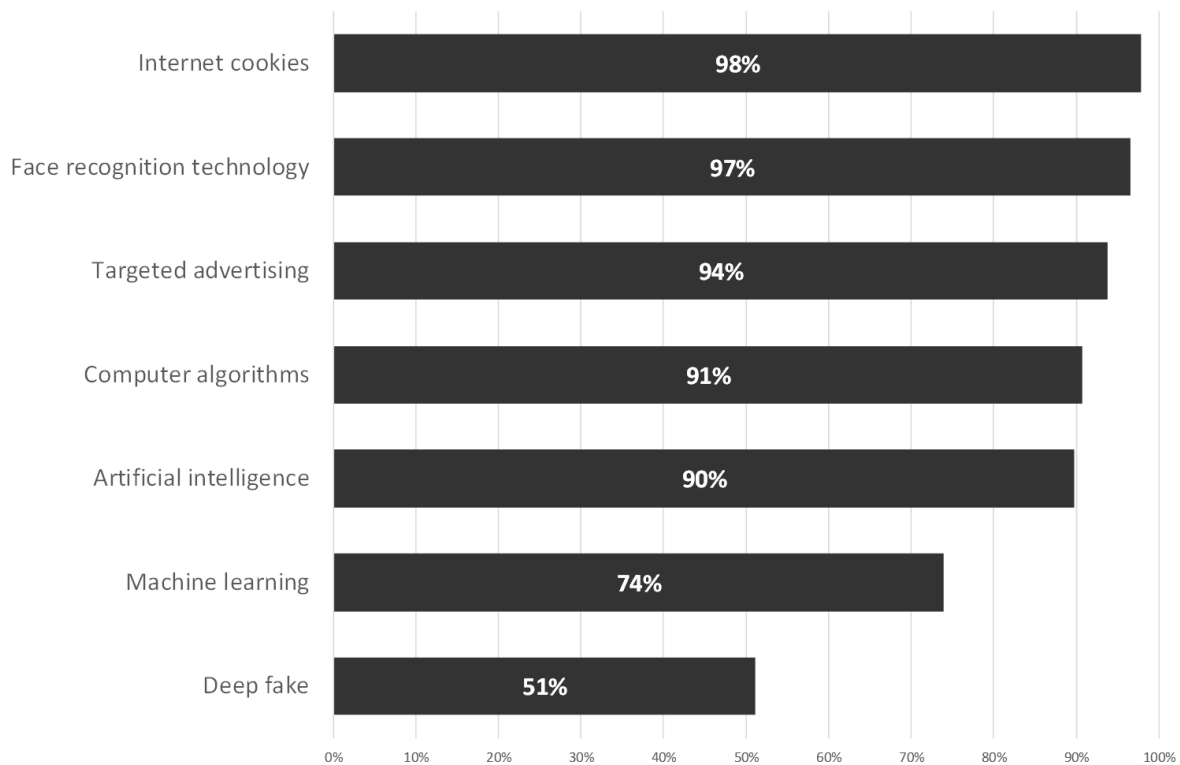


Figure 4. Digital literacy index.



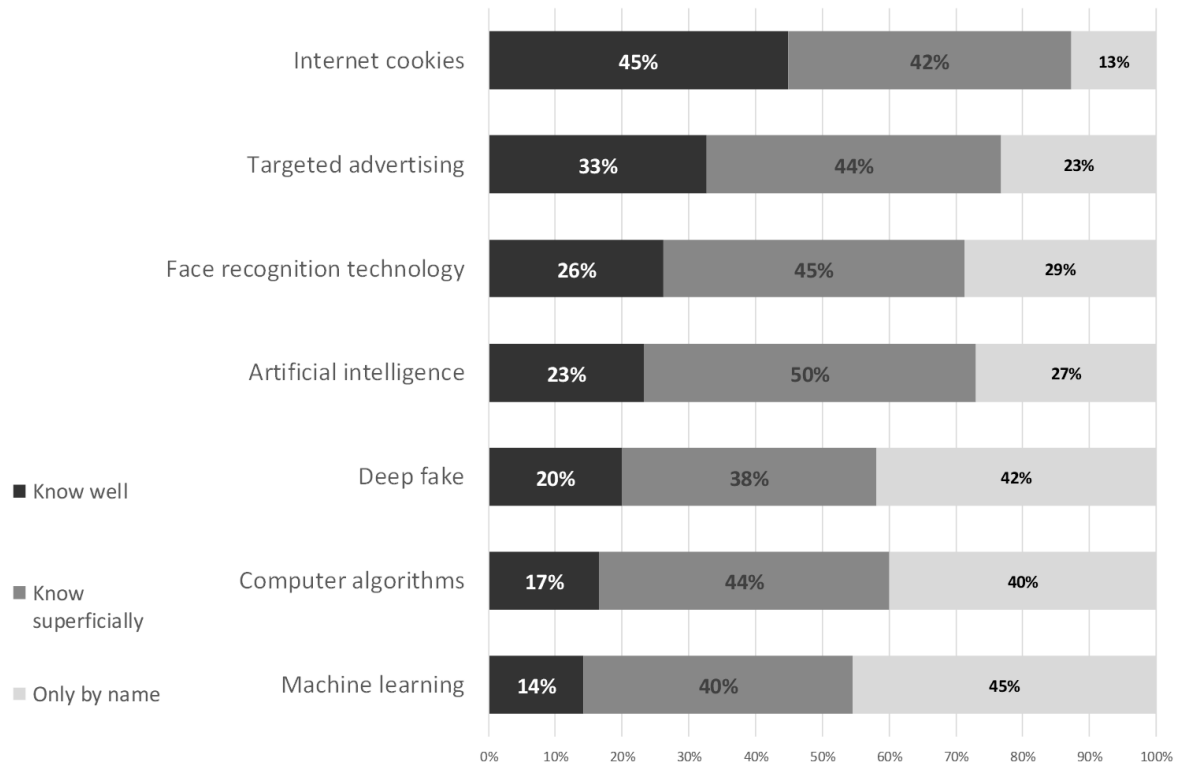
**Figure 5.** Distribution of the digital literacy index level.

To calculate the composite index of AI literacy, the answers shown in Figures 6 and 7 were analyzed. The question posed was “How well do you know the following terms?”



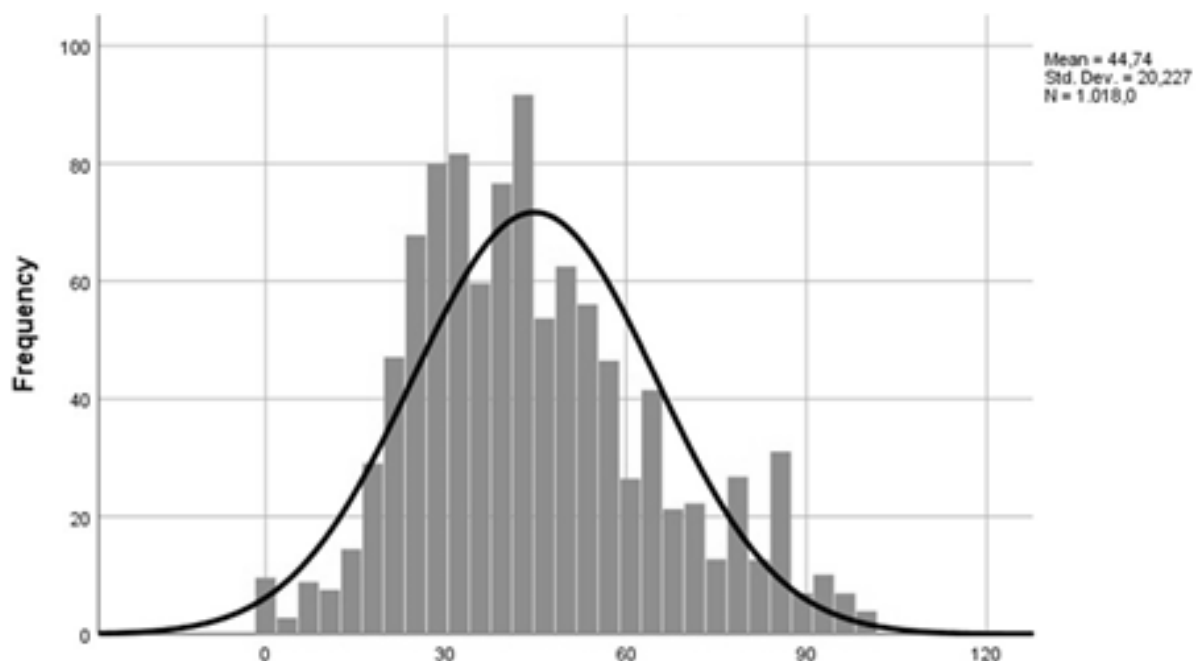
**Figure 6.** How well do you know the following terms?

Although at first glance everyone is familiar with almost everything, Figure 7 gives a different conclusion (when analyzing the level of familiarity).



**Figure 7.** How well do you know the following terms? Level of familiarity.

Figure 8 shows the distribution of the AI literacy composite index. We see that AI literacy composite index distribution is slanted toward “low”.



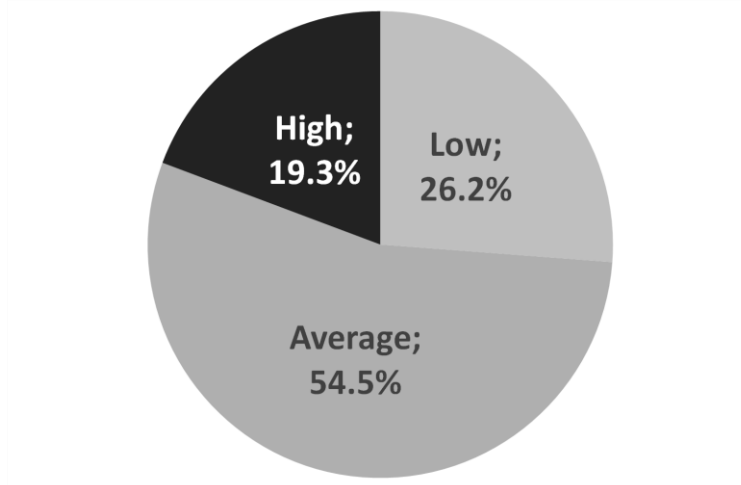
**Figure 8.** Distribution of the AI literacy composite index.

The analysis of respondents according to the AI literacy index provides following results:

- men have a higher level of AI literacy,
- the share of low AI literacy increases with age, especially after 45,

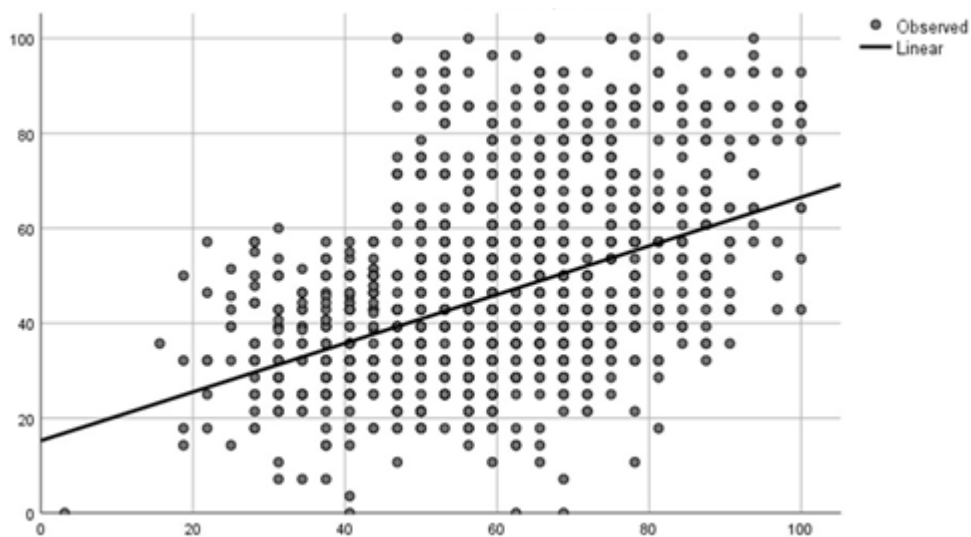
- among young people (up to 29), the share of high AI literacy is 36%, and each subsequent grade drops to only 8% among those 65+,
- the level of AI literacy significantly, positively correlates with education.

Figure 9 shows the distribution of the AI literacy index level. We see that slightly over 50% of respondents are “average” and that there are more “low” than “high” AI literacy index level respondents.



**Figure 9.** Distribution of the AI literacy index level.

The analysis shows that digital literacy and AI literacy are to some extent related, with significant correlation of 0,47, Figure 10.



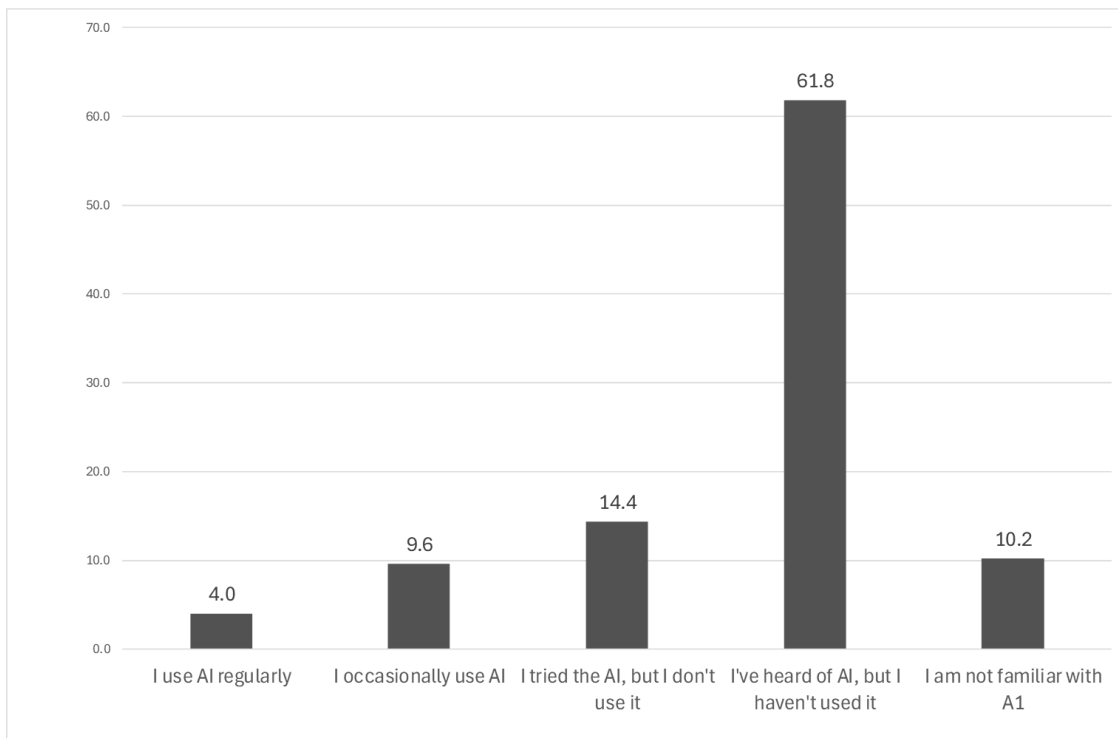
**Figure 10.** AI literacy index compared with digital literacy index.

Rogers’ innovation diffusion theory was tested, and the results are displayed in Table 3.

**Table 3.** Level of familiarity with AI use.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I am not familiar with AI	104	10.2	10.2	10.2
	I've heard of AI, but I haven't used it	629	61.8	61.8	72.0
	I tried the AI, but I don't use it	146	14.4	14.4	86.4
	I occasionally use AI	98	9.6	9.6	96.0
	I use AI regularly	41	4.0	4.0	100.0
	Total	1018	100.0	100.0	

Figure 11 shows level of respondents' familiarity with AI use, indicating to vast majority of them or 86.4% do not use AI tools, or at least not consciously.

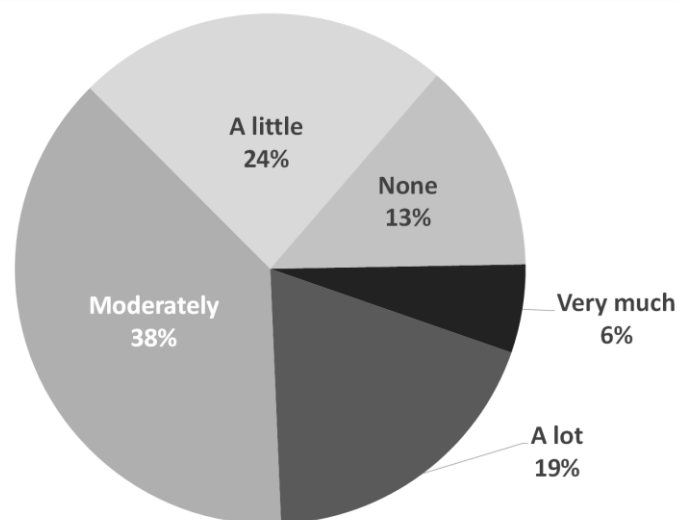


**Figure 11.** Level of familiarity with AI use.

Based on the results, one can conclude that the process of innovation diffusion has not yet been evolving.

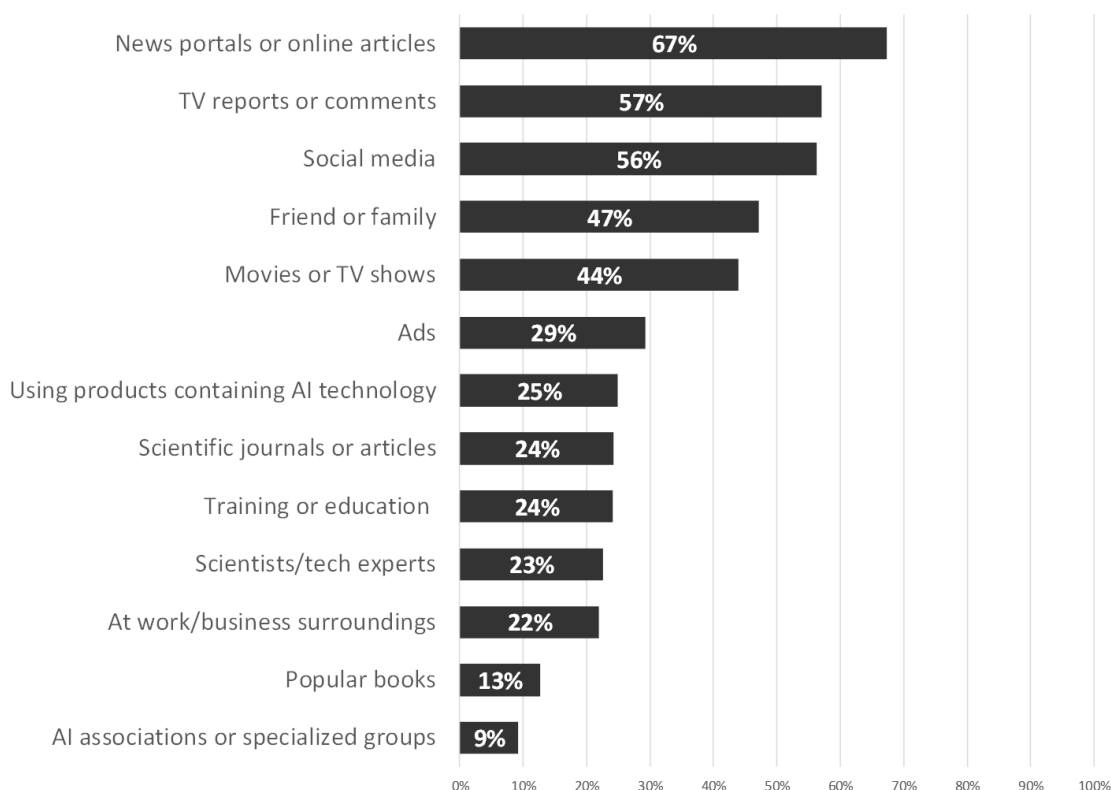
As for exposure to information concerning AI, the results are shown in Figure 12.

Answers to the question: “To what extent have YOU PERSONALLY been exposed to information about AI in the past 6 months?” indicate that only 13% of respondents consider themselves not informed about recent developments in AI domain, while vast majority were exposed to information about AI (regardless of intensity).



**Figure 12.** To what extent have YOU PERSONALLY been exposed to information about AI in the past 6 months?

When asked to list the main sources of information, digital media top that list as shown in Figure 13. Question used was: “Have you used the following sources of information about artificial intelligence?”



**Figure 13.** Have you used the following sources of information about artificial intelligence?

An analysis of the “explanation of the AI literacy index” was carried out based on information sources, Table 4. Depending on the model, 17 to 31% of the variance was explained with sources of information, starting with portals or online articles, Tables 5 and 6.

**Table 4.** AI literacy index by information sources.

Descriptive Statistics			
	Mean	Std. Deviation	N
AI Literacy Index	44,74	20,227	1018
Popular books	0,11	0,312	1018
Scientific journals or articles	0,21	0,407	1018
News portals or online articles	0,58	0,493	1018
TV reports or comments	0,49	0,500	1018
Movies or TV shows	0,38	0,486	1018
Social media	0,49	0,500	1018
Friend or family	0,41	0,492	1018
AI associations or specialized groups	0,08	0,271	1018
Training or education	0,21	0,407	1018
Ads	0,25	0,435	1018
Using products containing AI technology	0,22	0,411	1018
Scientists/tech experts	0,20	0,396	1018
At work/business surroundings	0,19	0,392	1018

**Table 5.** Pearson correlation of information sources and AI literacy index.

Pearson Correlation	AI Literacy Index	Popular books	Scientific journals or articles	News portals or online articles	TV reports or comments	Movies or TV shows	Social media	Friend or family	AI associations or specialized groups	Training or education	Ads	Using products containing AI technology	Scientists/tech experts	At work/business surroundings
AI Literacy Index	1.000	0.231	0.360	0.409	0.262	0.318	0.325	0.253	0.235	0.323	0.314	0.403	0.315	0.350
Popular books	0.231	1.000	0.398	0.189	0.172	0.291	0.253	0.223	0.457	0.410	0.238	0.249	0.253	0.359
Scientific journals or articles	0.360	0.398	1.000	0.364	0.255	0.301	0.279	0.273	0.219	0.380	0.188	0.279	0.360	0.300
News portals or online articles	0.409	0.189	0.364	1.000	0.492	0.400	0.498	0.411	0.153	0.258	0.272	0.298	0.272	0.301
TV reports or comments	0.262	0.172	0.255	0.492	1.000	0.417	0.375	0.335	0.117	0.171	0.340	0.239	0.246	0.244
Movies or TV shows	0.318	0.291	0.301	0.400	0.417	1.000	0.378	0.340	0.153	0.349	0.343	0.341	0.297	0.337
Social media	0.325	0.253	0.279	0.498	0.375	0.378	1.000	0.374	0.172	0.296	0.351	0.297	0.261	0.283
Friend or family	0.253	0.223	0.273	0.411	0.335	0.340	0.374	1.000	0.185	0.277	0.302	0.244	0.265	0.295
AI associations or specialized groups	0.235	0.457	0.219	0.153	0.117	0.153	0.172	0.185	1.000	0.408	0.215	0.346	0.299	0.381
Training or education	0.323	0.410	0.380	0.258	0.171	0.349	0.296	0.277	0.408	1.000	0.294	0.427	0.422	0.439
Ads	0.314	0.238	0.188	0.272	0.340	0.343	0.351	0.302	0.215	0.294	1.000	0.316	0.277	0.323
Using products containing AI technology	0.403	0.249	0.279	0.298	0.239	0.341	0.297	0.244	0.346	0.427	0.316	1.000	0.411	0.390
Scientists/tech experts	0.315	0.253	0.360	0.272	0.246	0.297	0.261	0.265	0.299	0.422	0.277	0.411	1.000	0.387
At work/business surroundings	0.350	0.359	0.300	0.301	0.244	0.337	0.283	0.295	0.381	0.439	0.323	0.390	0.387	1.000

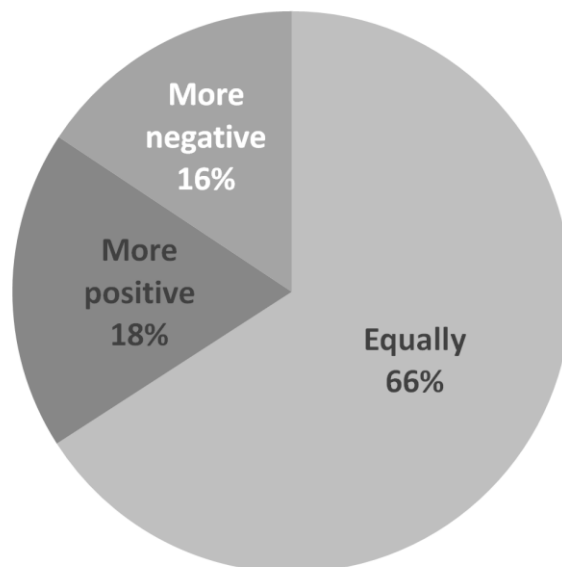
**Table 6.** Model summary.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0,409 <sup>a</sup>	0,168	0,167	18,462	0,168	204,644	1	1015	0,000
2	0,504 <sup>b</sup>	0,254	0,253	17,487	0,086	117,523	1	1014	0,000
3	0,533 <sup>c</sup>	0,284	0,282	17,138	0,030	42,701	1	1013	0,000
4	0,549 <sup>d</sup>	0,301	0,299	16,941	0,017	24,829	1	1012	0,000
5	0,558 <sup>e</sup>	0,311	0,308	16,829	0,010	14,439	1	1011	0,000

- a. Predictors: (Constant), News portals or online articles
- b. Predictors: (Constant), News portals or online articles, Using products containing AI technology
- c. Predictors: (Constant), News portals or online articles, Using products containing AI technology, Scientific journals or articles
- d. Predictors: (Constant), News portals or online articles, Using products containing AI technology, Scientific journals or articles, Ads
- e. Predictors: (Constant), News portals or online articles, Using products containing AI technology, Scientific journals or articles, Ads, At work/business surroundings

There are obviously some other reasons/explanations.

Analysis of answers to the question: “Are there more positive or negative posts about artificial intelligence?” shows the equally distributed results as displayed in Figure 14.

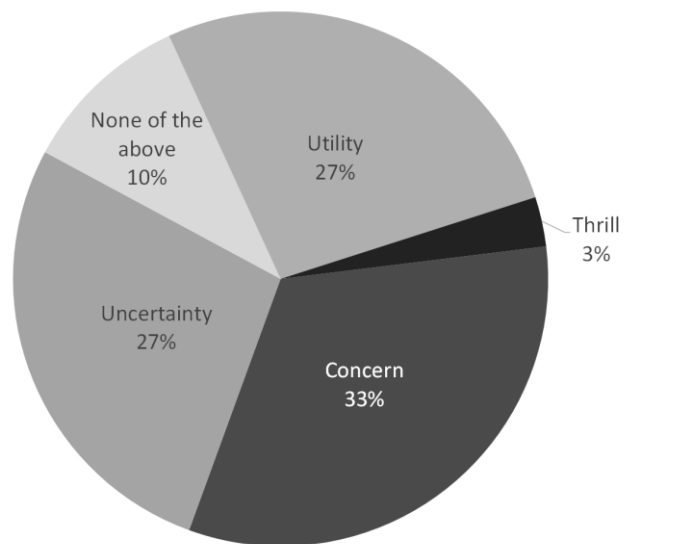


**Figure 14.** Are there more positive or negative posts about artificial intelligence?

Furthermore, the analysis of the features of the respondents regarding the publications showed that:

- men notice more positive information,
- younger and middle-aged (18-44) notice more positive information,
- those with a higher and medium level of digital literacy notice more positive posts,
- those with a medium level of AI literacy notice more positive posts, and those with a high level see the most positive ones.

Analysis of answers to the question: Which of these associations comes to mind when you hear the phrase “artificial intelligence”? shows Uncertainty and Concern exceeding Thrill and Utility, as displayed in Figure 15.



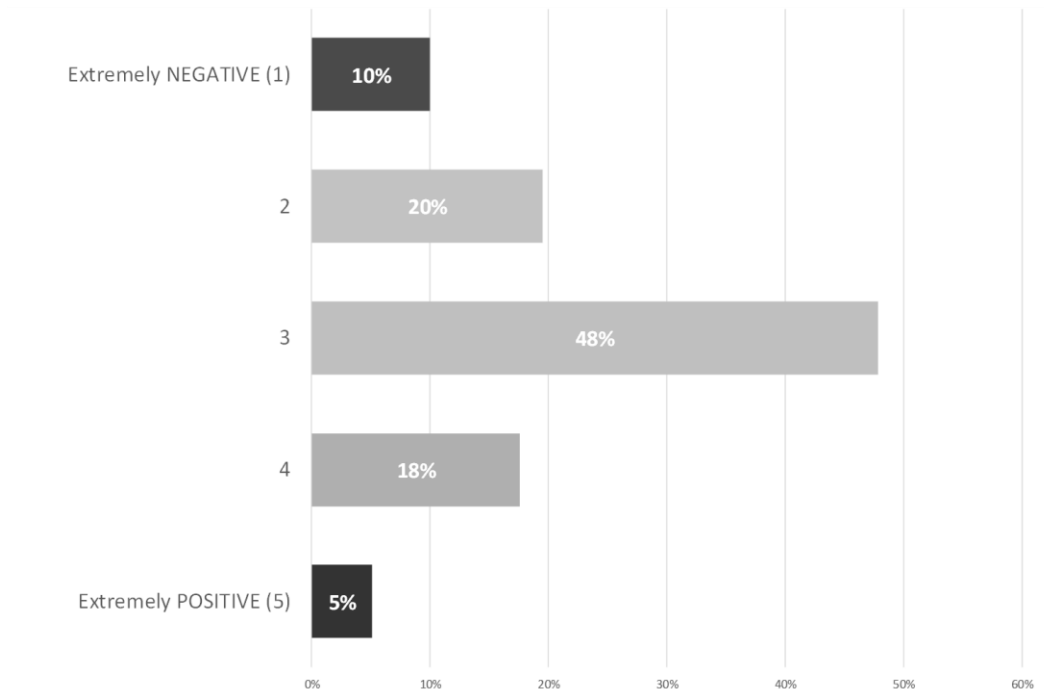
**Figure 15.** Which of these associations comes to mind when you hear the phrase “artificial intelligence”?

It can be concluded that associations with AI are more negative than positive (sentiment): 60% vs. 30%.

Furthermore, the analysis of the characteristics of respondents regarding AI sentiment showed that:

- men choose Utility more often, as do those aged 30 to 44, and highly educated,
- in Dalmatia, they choose Worry more often,
- those with a low level of AI and digital literacy more often choose None of the above.

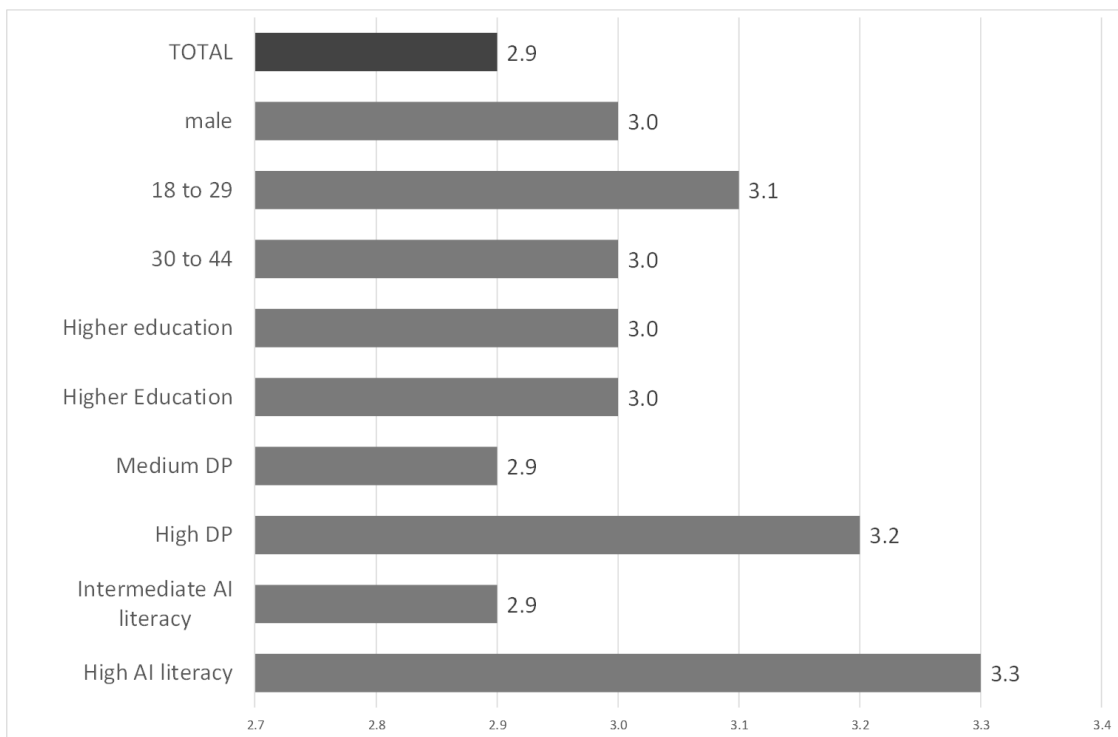
Analysis of answers to the question: “On a scale from 5 = extremely positive to 1 = extremely negative, rate your general attitude towards artificial intelligence” showed the following, Figure 16.



**Figure 16.** General attitude towards artificial intelligence.

It can be concluded that the general attitude towards AI is somewhat more negative than positive (although most are still undecided).

The analysis of the attitude towards AI with regard to the characteristics of the respondents is shown in Figure 17. On a scale from 1 to 5, the average rating is 2.9.



**Figure 17.** Attitude towards AI with regard to the characteristics of the respondents.

An analysis of the “explanation of the attitude towards AI” was carried out based on the source of information, Tables 7-9. The results suggest “training or education” to be the most significant factor in generating attitude towards AI.

**Table 7.** Attitude towards AI based on the source of information.

<b>Descriptive Statistics</b>			
	Mean	Std. Deviation	N
General attitude towards AI	2,88	0,981	1018
Popular books	0,11	0,312	1018
Scientific journals or articles	0,21	0,407	1018
News portals or online articles	0,58	0,493	1018
TV reports or comments	0,49	0,500	1018
Movies or TV shows	0,38	0,486	1018
Social media	0,49	0,500	1018
Friend or family	0,41	0,492	1018
AI associations or specialized groups	0,08	0,271	1018
Training or education	0,21	0,407	1018
Ads	0,25	0,435	1018
Using products containing AI technology	0,22	0,411	1018
Scientists/tech experts	0,20	0,396	1018
At work/business surroundings	0,19	0,392	1018

**Table 8.** Attitude towards AI based on the source of information.

	General attitude towards AI	Popular books	Scientific journals or articles	News portals or online articles	TV reports or comments	Movies or TV shows	Social media	Friend or family	AI associations or specialized groups	Training or education	Ads	Using products containing AI technology	Scientists/tech experts	At work/business surroundings
General attitude towards AI	1,000	0,211	0,183	0,265	0,122	0,239	0,192	0,209	0,237	0,313	0,216	0,280	0,222	0,294

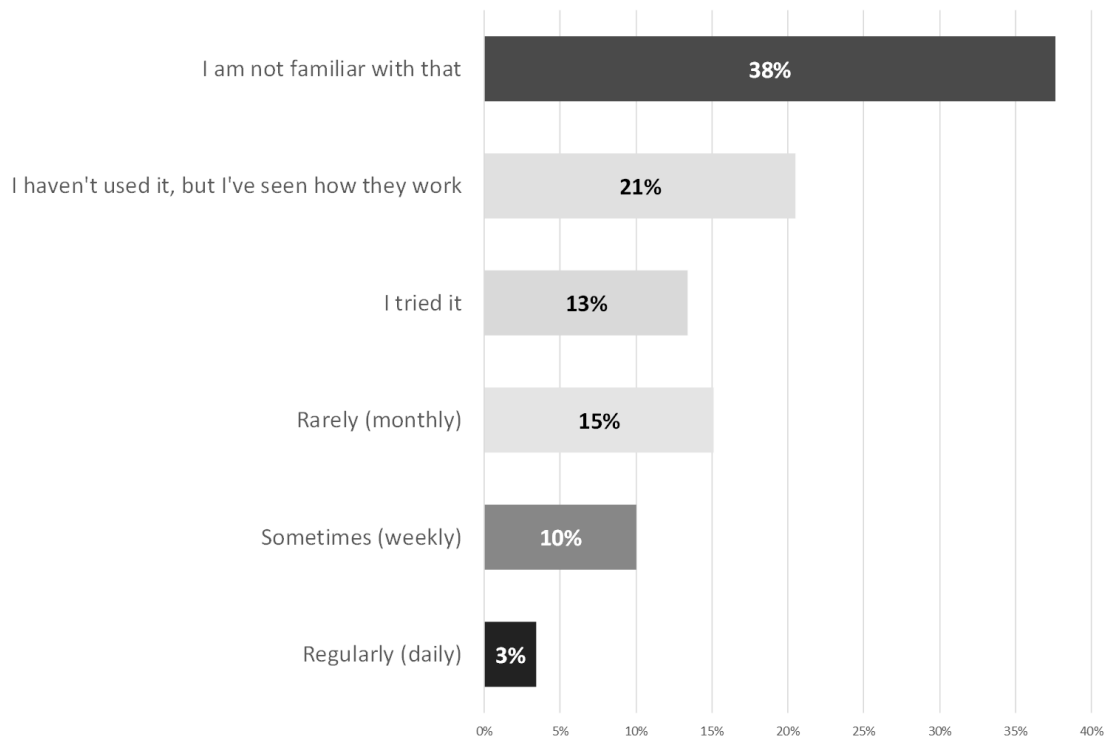
**Table 9.** Model summary.

<b>Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0,313 <sup>a</sup>	0,098	0,097	0,932	0,098	110,491	1	1015	0,000
2	0,367 <sup>b</sup>	0,134	0,133	0,914	0,036	42,639	1	1014	0,000
3	0,391 <sup>c</sup>	0,153	0,151	0,904	0,019	22,328	1	1013	0,000
4	0,403 <sup>d</sup>	0,162	0,159	0,900	0,009	11,343	1	1012	0,001
5	0,408 <sup>e</sup>	0,167	0,162	0,898	0,004	5,014	1	1011	0,025

- a. Predictors: (Constant), Training or education
- b. Predictors: (Constant), Training or education , News portals or online articles
- c. Predictors: (Constant), Training or education , News portals or online articles, At work/business surroundings
- d. Predictors: (Constant), Training or education , News portals or online articles, At work/business surroundings, Using products containing AI technology
- e. Predictors: (Constant), Training or education , News portals or online articles, At work/business surroundings, Using products containing AI technology, AI associations or specialized groups

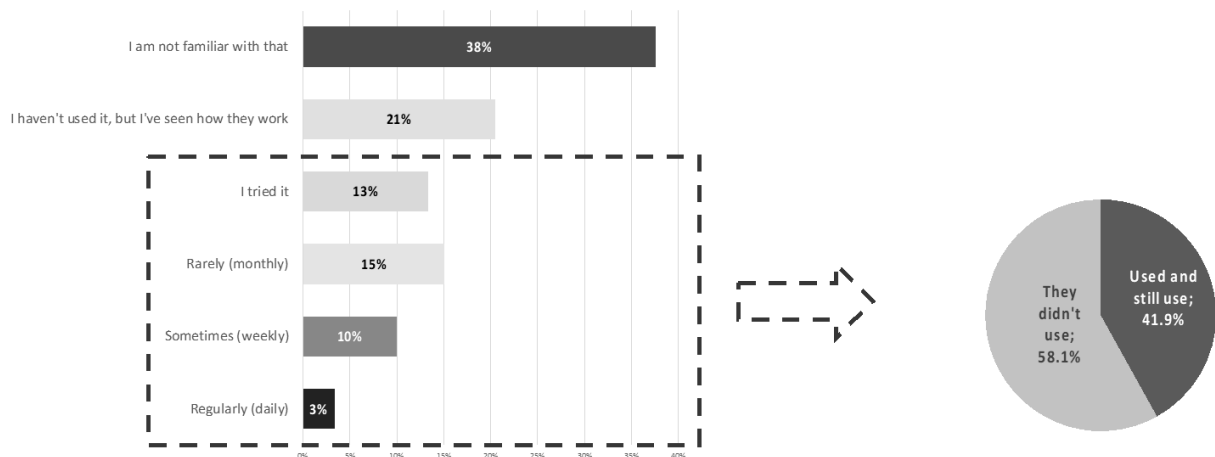
It can be concluded that the source “education or training” has the most influence on the (positive) attitude towards AI.

Analysis of answers to the question: “On the following scale, mark your level of AI usage” showed the results in Figure 18.



**Figure 18.** Level of AI usage.

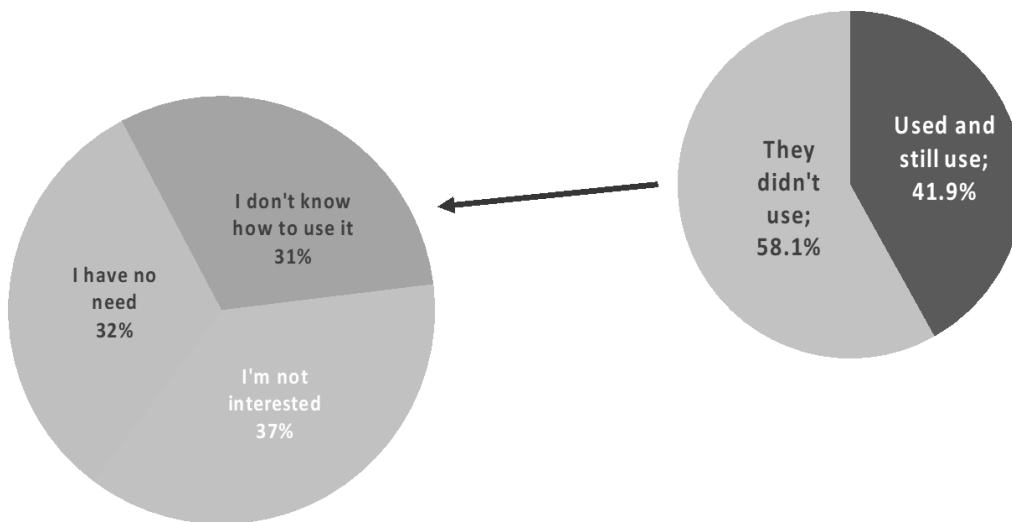
Regarding the level of AI usage, we could initially conclude that only 14% of respondents use AI. But let us look at the answer to the following question: “How often do you use AI tools, Chat GPT, Midjourney, etc.?” (frequency of use).



**Figure 19.** How often do you use AI tools, Chat GPT, Midjourney, etc.?

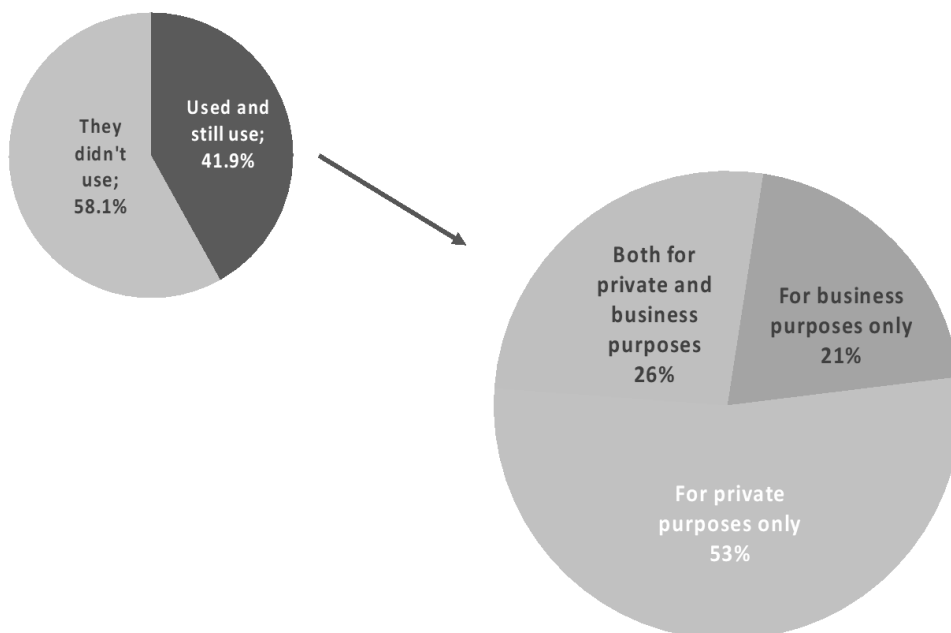
The apparent inconsistency in the answers (14% vs. 42% of use) could be explained (hypothetically) by insufficient knowledge of the term AI or what AI is all about.

Analysis of answers to the question: “What is the main reason you don’t use AI tools?”, Figure 20, showed interesting results which should inspire policy makers to make steps towards discovering challenges and making strategies for their resolution.



**Figure 20.** What is the main reason you don't use AI tools?

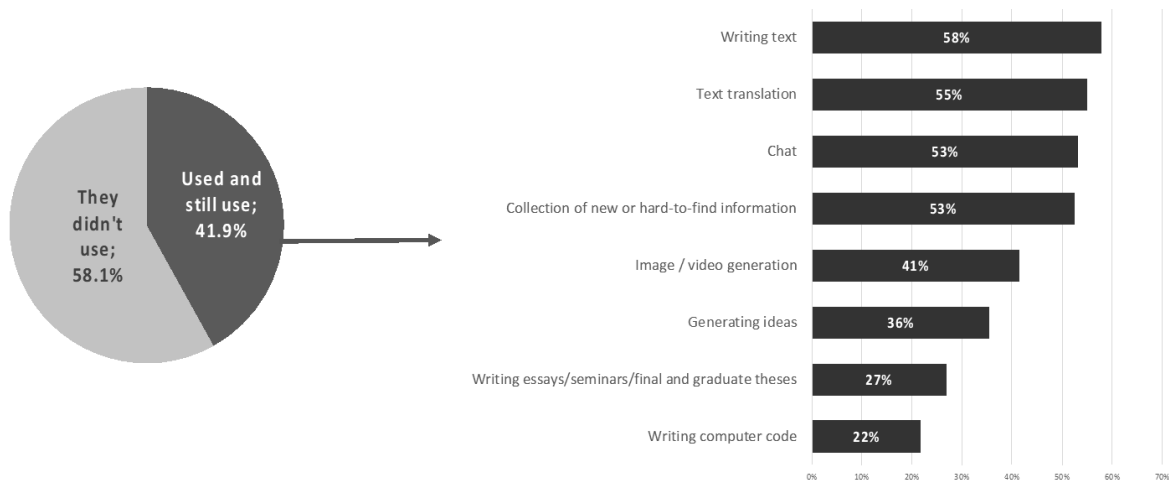
Analysis of answers to the question: “Do you use AI tools for private or business purposes?” shown in Figure 21 provided valuable insights into purposes of using AI. It can be seen that (for now) use for private purposes prevails, contrary to the very often propagated attitude of predominantly using AI for business purposes.



**Figure 21.** Do you use AI tools for private or business purposes?

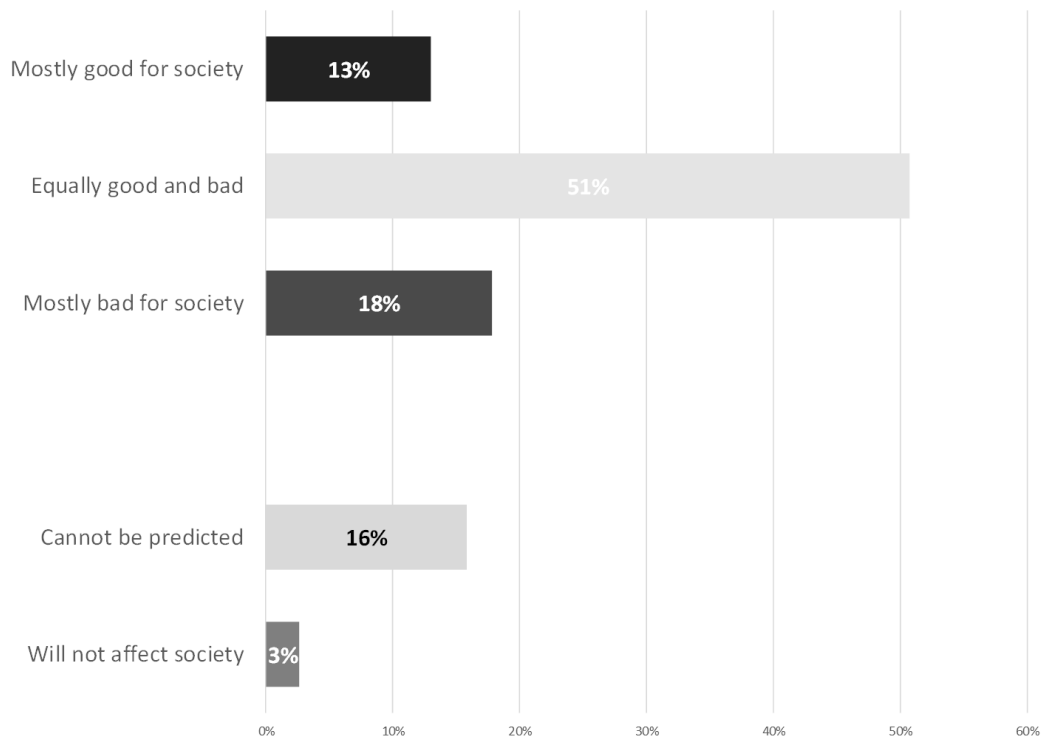
And the analysis of the answer to this question also leaves room for action and policy makers to tackle the challenges in stimulating business sector to exploit benefits of AI in everyday operations.

Analysis of answers to the question: “Have you used AI tools for the following?” showed that most respondents are using AI tools for “writing text”, “text translation” and “chat”. We also see that “writing computer code” is at the bottom of the list based on its usage.



**Figure 22.** Have you used AI tools for the following?

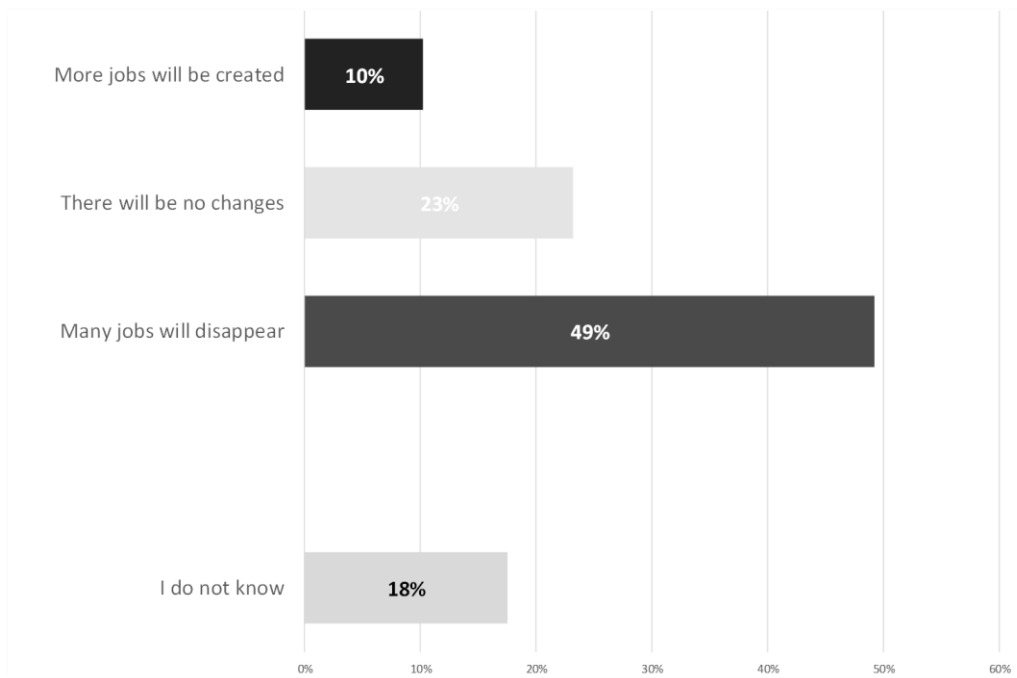
Analysis of answers to the question: “In the long term, artificial intelligence will be?” showed the following: half of the respondents are still indecisive (“equally good and bad”, Figure 23). This means that they are still forming an opinion. Still, the group of pessimists is bigger than the group of optimists.



**Figure 23.** In the long term, artificial intelligence will be?

It can be seen that the expected long-term effect of AI on society is slightly more negative than positive. It is interesting that here (as well as in some other questions) a large percentage of respondents are “undecided”, one could conclude that they are beginning to “take a stand”.

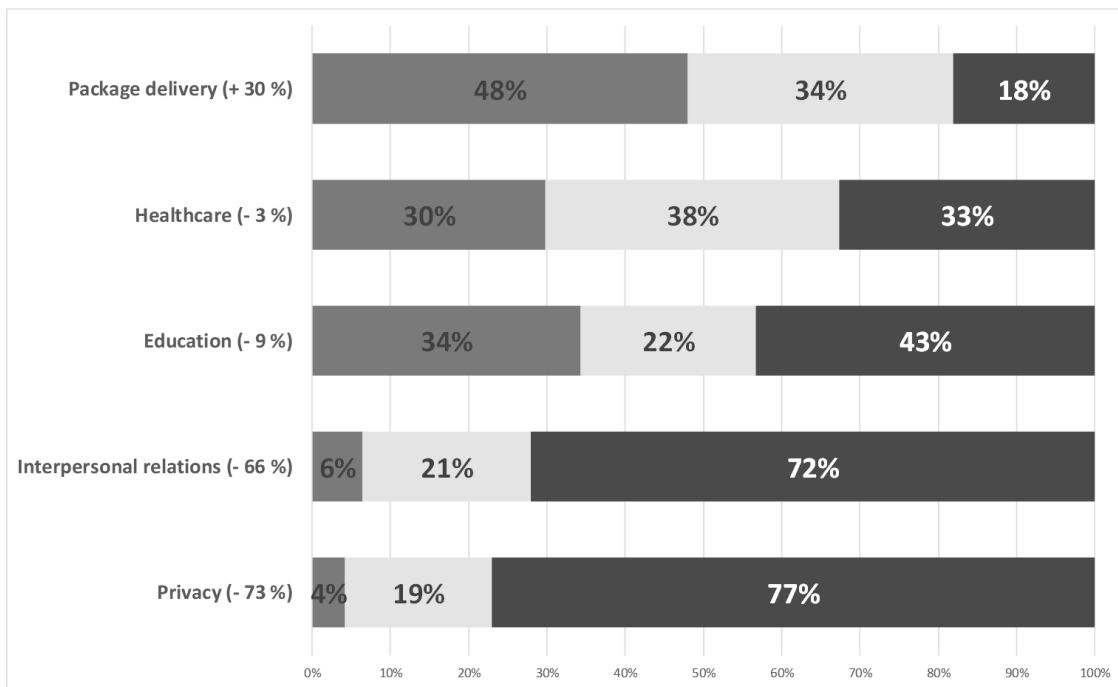
Figure 24 shows distribution of answers to the question: “What do you think will happen in the Republic of Croatia in the next 5-10 years with regard to artificial intelligence?”.



**Figure 24.** What do you think will happen in the Republic of Croatia in the next 5-10 years with regard to artificial intelligence?

The analysis shows that almost half of the respondents are concerned about job losses. All the more, the “self-fulfilling prophecy” of certain publicly stated positions calls for caution and responsibility.

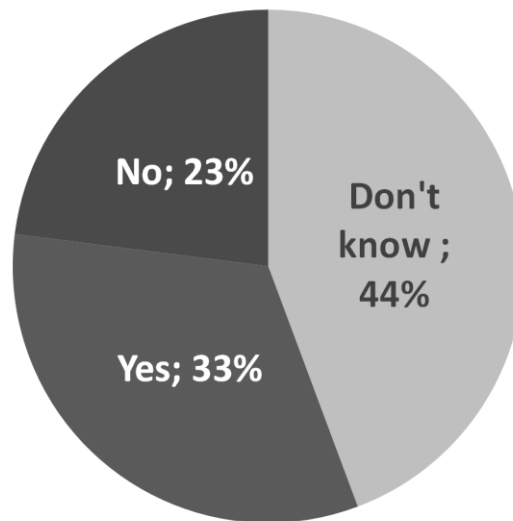
Analysis of answers to the questions: “How will AI affect ...?” showed the results (without undecideds, i.e. only those who have an opinion) that can be seen in Figure 25 (gray for “Positive influence”, light gray for “No influence”, and dark gray for “Negative influence”).



**Figure 25.** How will AI affect ...?

The analysis shows the concern or the biggest negative impact on interpersonal relationships and privacy.

Analysis of answers to the question: “Do you think that the opportunities and benefits of products and services using AI outweigh the threats and risks?” showed the results displayed in Figure 26.



**Figure 26.** Do you think that the opportunities and benefits of products and services using AI outweigh the threats and risks?

More respondents believe that the opportunities and benefits of products and services using AI outweigh the threats and risks.

Furthermore, the analysis of the respondents’ characteristics shows that:

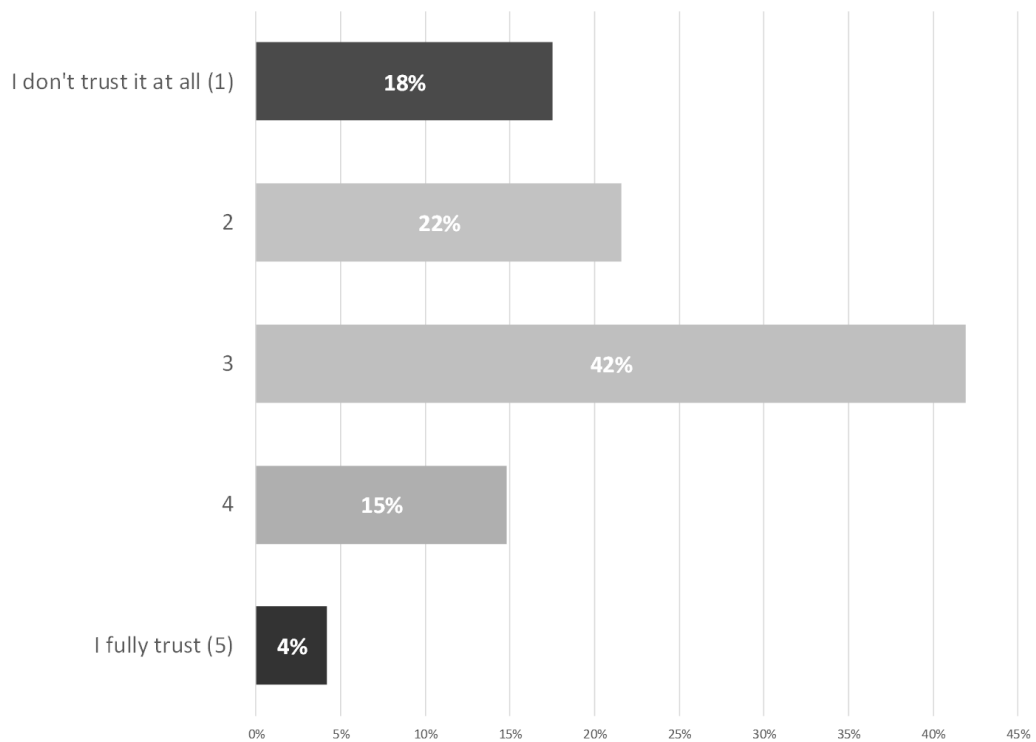
- men more often say Yes,
- those younger than 45 also choose more often, and even more often than that those aged 18-29,
- those with medium AI and digital literacy choose more often, and those with high AI and digital literacy even more often than that,
- those with higher education do not choose more often.

Analysis of answers to the question: “To what extent do you trust the application of AI systems?” showed the following results, as displayed in Figure 27.

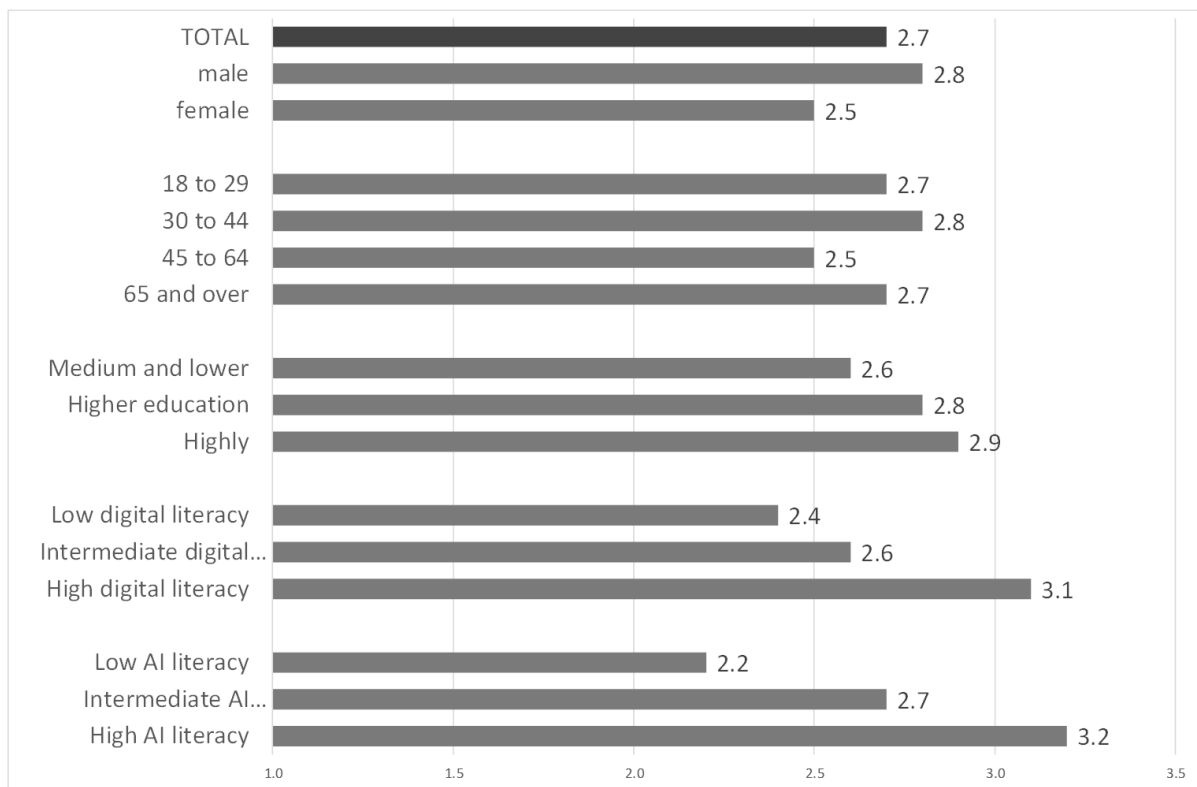
So, regardless of the results of the analysis of the answers to the previous question, there are still 20% more people who do not trust AI systems.

Figure 28 shows significant differences in trust (in AI systems) by characteristics.

And the analysis of the comparison of (dis)trust in AI in different areas is also interesting. Results of the analysis of answers to the question: “To what extent do you trust AI systems in the following areas?” are shown in Figure 29 (gray for “Trust” or grades 4 and 5; light gray for grade 3; dark gray for “No trust” or grades 1 and 2).



**Figure 27.** To what extent do you trust the application of AI systems?



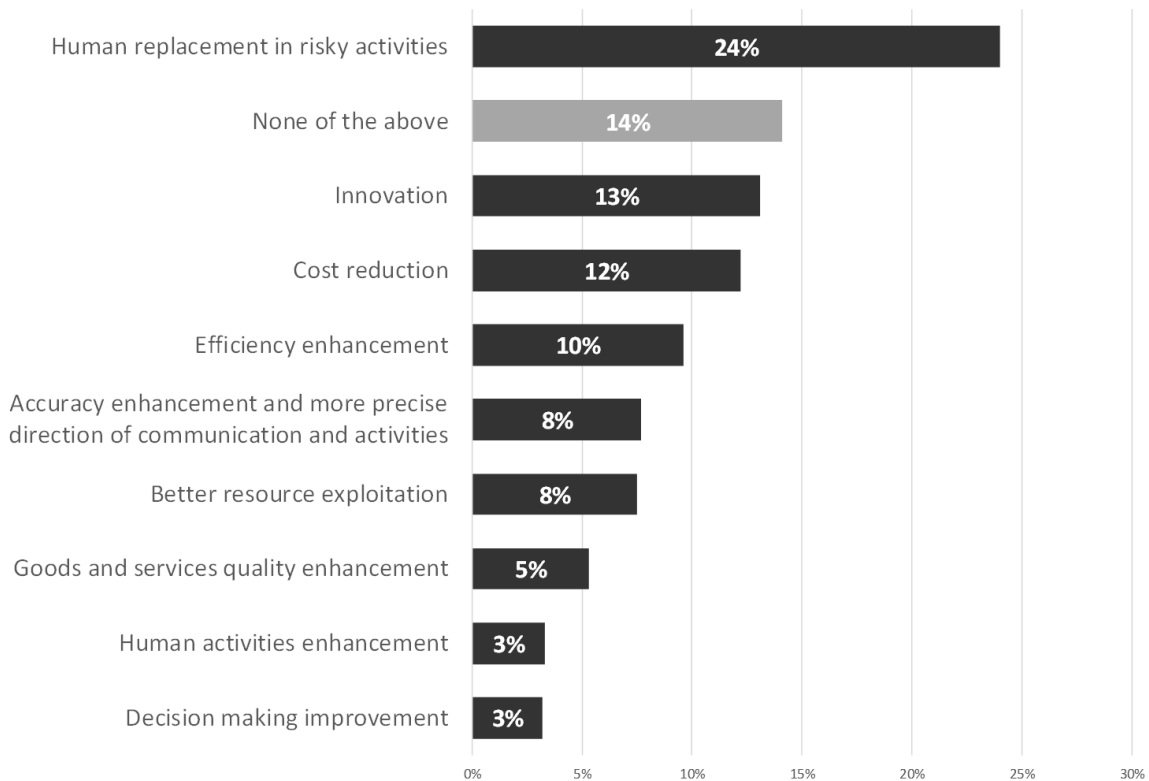
**Figure 28.** Differences in trust (in AI systems) by characteristics.



**Figure 29.** To what extent do you trust AI systems in the following areas?

It can be seen that the greatest mistrust is in the areas of “human resources management” and “security”.

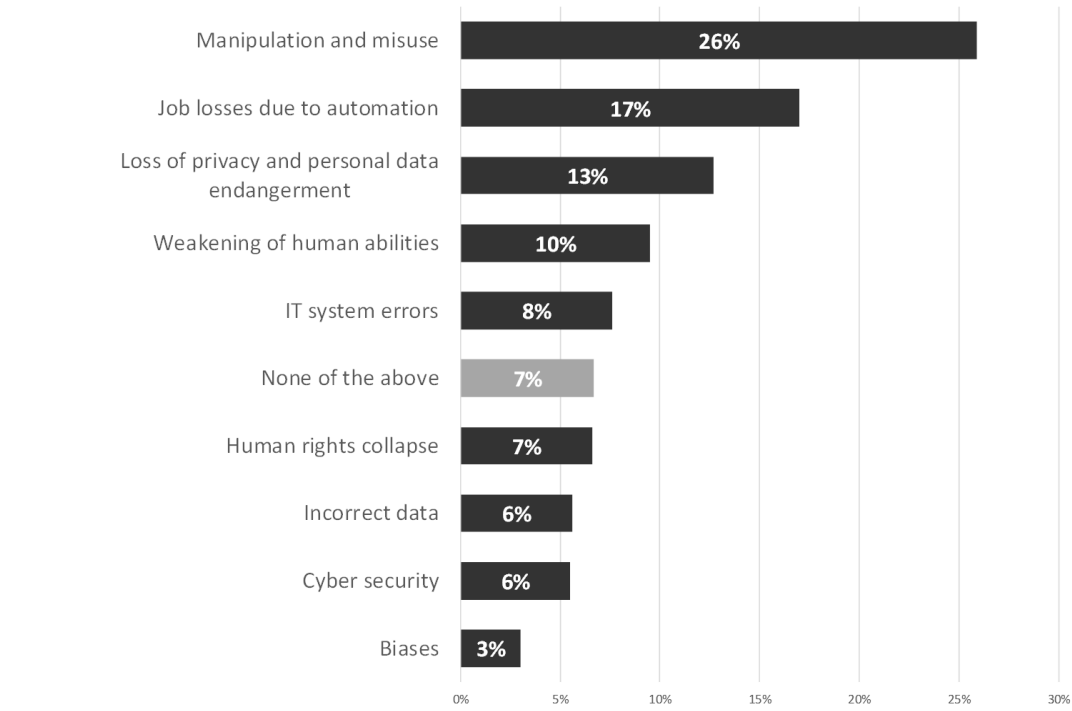
Analysis of answers to question: “What is the biggest benefit of AI, i.e. where will the most POSITIVE impact be seen?” is shown in Figure 30.



**Figure 30.** What is the biggest benefit of AI, i.e. where will the most POSITIVE impact be seen?

It is very interesting that “improvement of human activities” and “improvement of decision-making processes” are in the last place.

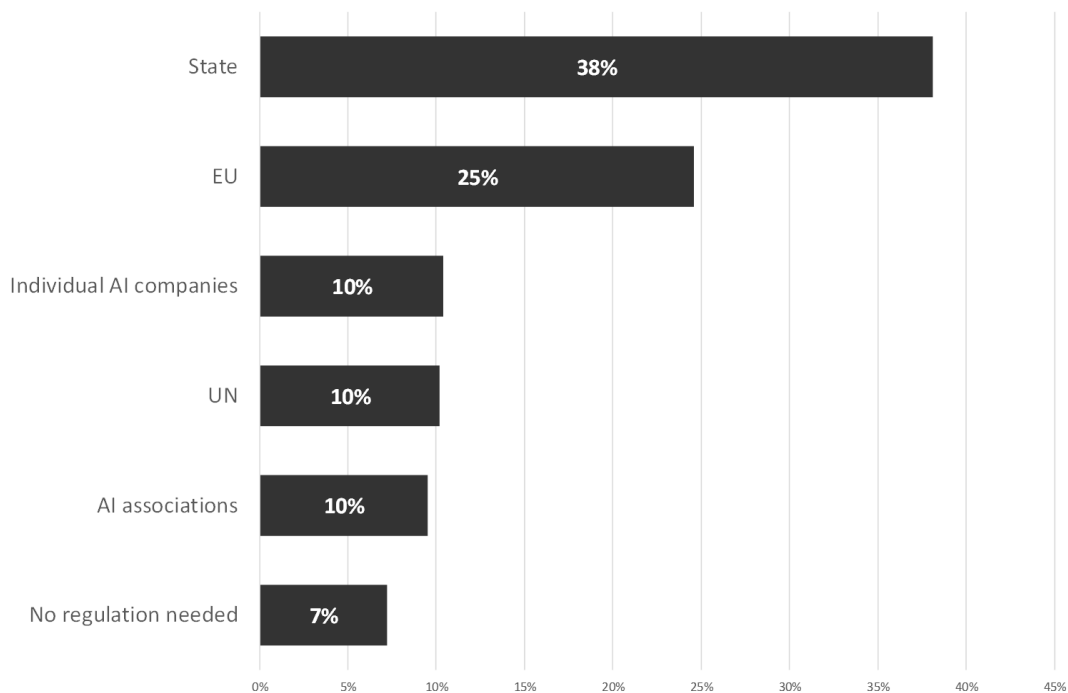
Analysis of answers to the question: “What is the biggest risk of AI, i.e. where will the most NEGATIVE impact be seen?” are shown in Figure 31.



**Figure 31.** What is the biggest risk of AI, i.e. where will the most NEGATIVE impact be seen?

It is very interesting that “cyber security” and “possibility of bias” are at the bottom of the list.

Analysis of answers to the question: “Who should be responsible for regulating artificial intelligence?” showed the following results, Figure 32.

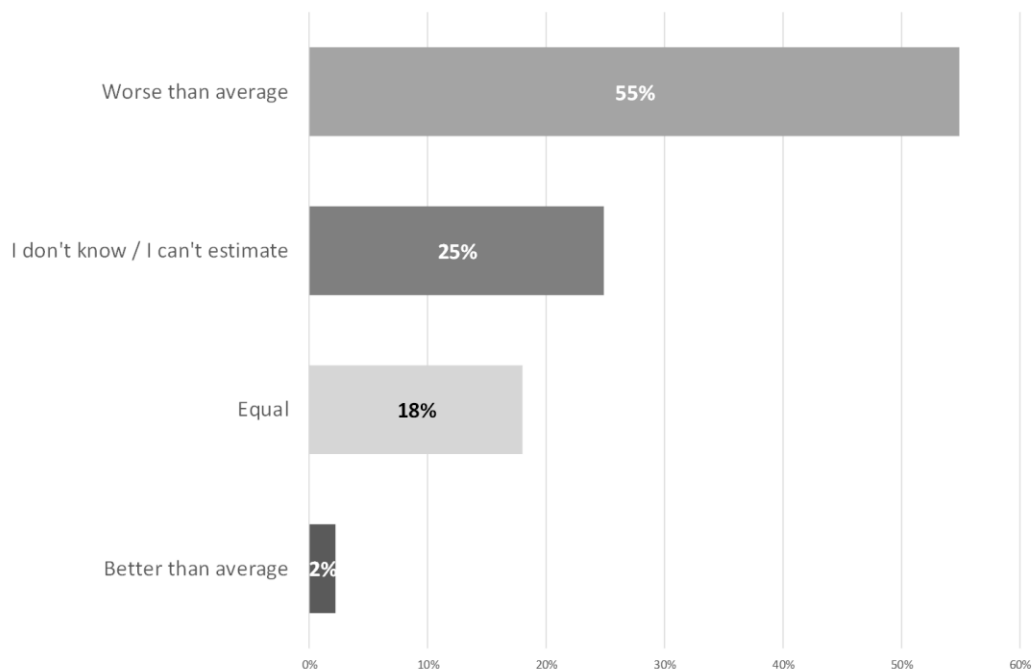


**Figure 32.** Who should be responsible for regulating artificial intelligence?

Only 7% of respondents believe that AI does not need to be regulated. Furthermore, the analysis of the respondents' characteristics showed that:

- men choose the EU more often, as do those with a high level of digital literacy,
- the country is more often chosen by those 45+, retirees, and those with a medium and low level of digital literacy.

Analysis of answers to the question: “In relation to the EU, is Croatia in terms of knowledge and use of AI...?” showed the following results, Figure 33.



**Figure 33.** In relation to the EU, is Croatia in terms of knowledge and use of AI...?

The analysis of the characteristics of the respondents showed that the highly educated, those with a medium level of digital literacy, and those with medium and high AI literacy more often believe that Croatia is worse than the EU.

## CONCLUSION

The results of the research on AI perception in Croatia can be considered as both expected and contradictory at the same time.

It is obvious that citizens are only beginning to make stand about certain issues (about 50% are undetermined or neutral in their responses to certain questions). Simultaneously, although they are highly informed about AI (sources of information), they are confused about understanding the term “artificial intelligence”. Indeed, on three occasions we noticed differences in responses about AI usage (only 14% use) and using AI tools (42% use). Hypothesis that can be generated based on these finds might suggest that Chat GPT hype has generated a negative effect of equating the notion of “artificial intelligence” AI chatbots.

Furthermore, certain correlations can be useful for policy makers, e. g. education is detected as a key factor in attitudes towards artificial intelligence. Also, portals or online articles make up key factors in AI literacy index.

The research should be continued in transversal form, with scientifically founded interpretations of discovered correlations and causalities.

The research can provide good foundation for policy creation concerning artificial intelligence, but also for academic society and researchers for future scientific research in this yet under-researched area in Croatia.

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## REMARK

<sup>1</sup>Another frequently used is OECD's definition of AI: "An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment" [14].

## REFERENCES

- [1] –: *EU AI Act*.  
<https://www.euaiact.com/article/3>, accessed 13<sup>th</sup> May 2024,
- [2] Nussberger, A.-M.; Luo, L.; Celis, L.E. and Crockett, M.J.: *Public attitudes value interpretability but prioritize accuracy in Artificial Intelligence*.  
Nature Communications **13**, No. 5821, 2022,  
<http://dx.doi.org/10.1038/s41467-022-33417-3>,
- [3] Gillespie, N.; Lockey, S.; Curtis, C.; Pool, J. and Akbari, A.: *Trust in Artificial Intelligence: A Global Study*.  
The University of Queensland & KPMG Australia, 2023,  
<http://dx.doi.org/10.14264/00d3c94>,
- [4] Centre for Data Ethics and Innovation & Department for Science, Innovation and Technology: *Public attitudes to data and AI: Tracker survey (Wave 1)*.  
<https://www.gov.uk/government/publications/public-attitudes-to-data-and-ai-tracker-survey>,  
accessed 21<sup>st</sup> April 2023,
- [5] Centre for Data Ethics and Innovation & Department for Science, Innovation and Technology: *Public attitudes to data and AI: Tracker survey (Wave 2)*.  
<https://www.gov.uk/government/publications/public-attitudes-to-data-and-ai-tracker-survey-wave-2>,  
accessed 21<sup>st</sup> April 2023,
- [6] Centre for Data Ethics and Innovation & Department for Science, Innovation and Technology: *Public attitudes to data and AI: Tracker survey (Wave 3)*.  
<https://www.gov.uk/government/publications/public-attitudes-to-data-and-ai-tracker-survey-wave-3/public-attitudes-to-data-and-ai-tracker-survey-wave-3>, accessed 10<sup>th</sup> May 2024,
- [7] Edelman Trust Institute: *2024 Edelman Trust Barometer with Key Insights around AI*.  
<https://www.edelman.com/sites/g/files/aatuss191/files/2024-03/2024%20Edelman%20Trust%20Barometer%20Key%20Insights%20Around%20AI.pdf>, accessed 13<sup>th</sup> May 2024,
- [8] Maslej, N., et al. *The AI Index 2024 Annual Report*  
AI Index Steering Committee, Institute for Human-Centered AI. Stanford University, Stanford, 2024,  
[https://aiindex.stanford.edu/wp-content/uploads/2024/05/HAI\\_AI-Index-Report-2024.pdf](https://aiindex.stanford.edu/wp-content/uploads/2024/05/HAI_AI-Index-Report-2024.pdf), accessed April 2024,
- [9] Microsoft & LinkedIn: *2024 Work Trend Index Annual Report from Microsoft and LinkedIn*.  
<https://www.microsoft.com/en-us/worklab/work-trend-index/ai-at-work-is-here-now-comes-the-hard-part>, accessed May 2024,

- [10] UN & ILO: *Mind the AI Divide: Shaping a Global Perspective on the Future of Work Report*.  
<https://www.ilo.org/publications/major-publications/mind-ai-divide-shaping-global-perspective-future-work>, accessed July 2024,
- [11] Cazzaniga, M., et al. *Gen-AI: Artificial Intelligence and the Future of Work*. International Monetary Fund, 2024,  
<http://dx.doi.org/10.5089/9798400262548.006>,
- [12] Georgieva, K.: *AI Will Transform the Global Economy. Let's Make Sure It Benefits Humanity*.  
<https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity>, accessed April 2024,
- [13] Edelman, R.: *Technology Industry Watch Out, Innovation at Risk*.  
<https://www.edelman.com/insights/technology-industry-watch-out-innovation-risk#:~:text=Resistance%20to%20AI%20Nearly%2020,AI%20rather%20than%20embrace%20it>, accessed April 2024,
- [14] Russell, S.; Perset, K. and Grobelnik, M.: *Updates to the OECD's definition of an AI system explained*.  
<https://oecd.ai/en/wonk/ai-system-definition-update>, accessed 1<sup>st</sup> March 2024.