Artificial Intelligence – A Perspective of Human Acceptance

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Please cite this paper as:
Maiorescu, I., Bucur, M.,Ban, O., Sabou, G.C. and Cohen Tzedec, B., 2024. Artificial Intelligence – A perspective of Human Acceptance In: R. Pamfilie, V. Dinu, C. Vasiliu, D. Pleșea, L. Tăchiciu eds. 2024. *10th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Almeria, Spain, 6-8 June 2024. Bucharest: Editura ASE, pp. 573-578
DOI: 10.24818/BASIQ/2024/09/082

Abstract

As Artificial Intelligence (AI) is continuously improving and invading more and more areas of human activity, humankind reacts in different ways to it. Along with the obvious benefits that AI brings to humanity, there are also the negative aspects already noticed in the human living. The current paper presents the results of a quantitative research on 512 respondents of all ages and genders, the research hypotheses aiming to identify whether there are differences about the perception of AI explained by age, as well as to see the relation between human control role in preventing the destructive role of AI. The research results analysis indicates that the degree of apprehension about AI as future destroyer of humanity is associated to human control role in AI development and, that age influences the level of AI acceptance by humans.

Keywords

Artificial intelligence development; AI threat for humanity destruction; AI trust; AI fear; AI benefits; human control.

DOI: 10.24818/BASIQ/2024/09/082

Introduction

The rapid progress and diversity of advanced AI technologies has triggered changes in all fields of human activity, bringing positive, as well as negative reactions of people. As a response to these innovations, individuals behave differently, some expressing interest in using it, while not truly understanding the underlying mechanism of functioning when interacting with highly developed AI systems, this leading to certain concerns about the implications of AI's growing capabilities (Liehner et al, 2023). This apprehension is also pointed out in the research of Acemoglu (2021),especially in respect to the decisions AI take and may have a negative impact on people lives, especially because of algorithms errors, privacy infringements, and jobs losses, as well as in respect to the psychological negative effects of humanizing AI by associating human-like qualities to intelligent technologies (Uysal, Alavi and Bezençon, 2022).

By making users understand, in a transparent manner, how AI systems function, mistrust cad be reduced and thus increased the level of AI acceptance among users (Hoff and Bashir, 2015), as trust is of most importance for the continuous usage, hence development and improvement of AI (Pal, Babakerkhell and Zhang, 2021). However, this continuous improvement of AI brings concerns regarding the ethics of this technological development and its impact on human society (Floridi et al., 2018; Jobin, Ienca and Vayena, 2019; Floridi, 2023). Understanding these responses is very important for a responsible development of AI, without prejudicing the humanity. The current paper aims to investigate how humanity perceives AI and how it has adapted to AI thus far. In the first part of the paper, there are presented positive and negative issues related to AI acceptance by humans, while the second part of the paper discusses the results of the quantitative research deployed with the purpose of identifying the perception of humans about AI.

1. Review of the scientific literature

Artificial Intelligence (AI) has proved to be a transformative technology with many benefits for humanity in various fields of activity, such as healthcare for early disease detection, personalized treatment plans, and predictive analysis (Iliashenko, Bikkulova and Dubgorn, 2019), transportation by optimizing routes, enhancing efficiency and safety while reducing congestion and emissions (Bharadiya, 2023), and education through personalized adaptive learning experiences according to specific individual student needs and automatic examination (Schiff, 2021). Furthermore, AI applications are used for decision making, including in disaster management, by analyzing the vast relevant data to provide predictions and help preventing the natural calamities, consequently saving lives and infrastructures (Guha, Jana and Sanyal, 2022). The economic area is also assisted by AI algorithms which analyze data and interpret market fluctuations and tendencies, facilitating thus the strategies of development, the manner of investing, risk management, and fraud detection (Hassan, Aziz and Andriansyah, 2023). Moreover, AI helps companies with data analysis, automation of routine tasks, and enhanced customer experiences, leading to increased productivity and competitiveness (Davenport and Ronanki, 2018; Wamba-Taguimdje et al., 2020). If, on one hand, the scientific literature emphasizes AI's important role in providing help for humans in their social and business activities, as well as in developing new technologies, on the other hand, numerous studies indicate a growing apprehension on the potential for AI surpassing human capabilities and its implications for human control. Studies of Bostrom (2014), Tegmark (2017) discuss about the concept of artificial superintelligence (ASI) – an AI that exceeds human intelligence and is able to take over human control, urging for proactive measures to safeguard humanity's future, by interdisciplinary collaboration and ongoing ethical reflection in AI research and development.

Similarly, Harari (2018) warns against the concentration of power in AI systems, arguing for the preservation of human autonomy and control, while Knel and Rüther (2023) raise the problem of AI diminishing the significance of human lives in a world where all tasks are performed by AI. All these works highlight the need for careful consideration of AI governance to prevent undesirable outcomes.

Studies indicate that AI-driven automation could lead to widespread job changes and losses, aggravating socioeconomic inequalities (Brynjolfsson and McAfee, 2014; Frey and Osborne, 2017). Furthermore, AI algorithms have been shown to preserve the biases present in training data, leading to wrong outcomes in areas such as workforce recruitment and criminal justice (Barocas and Selbst, 2016; Obermeyer et al., 2019).

Ethical dilemmas brought by using AI in decision-making processes, particularly in sectors like healthcare and finance, where errors could have life-altering consequences are discussed in the research of Burrell, (2016) and Mittelstadt et al. (2016). Moreover, there are concerns about individual autonomy and civil liberties which may be lost because of AI based surveillance technologies that may bring infringements on privacy rights (Lyon, 2018; Zuboff, 2019). In the same time, the rise of AI deepfake technologies with the purpose of bringing misinformation to humans poses significant threats to the integrity of information (Korshunov and Marcel, 2018) and democratic processes (Allcott and Gentzkow, 2017), while the potential of AI to be used as weapon in cyberattacks or autonomous weapons systems raises global security concerns (Scharre, 2018; Kvasňovský, 2020).

Research methodology

Following a review of the specialized literature, a quantitative research study was conducted to assess how artificial intelligence (AI) is perceived by humans. This research was based on the results of an online questionnaire distributed via Google Docs platform from February to March 2024 to a non-randomly selected sample of 573 individuals aged between 19 and 65, residing in different regions of the country, with diverse work experiences, yielding a total of 512 valid questionnaire responses. The data collected from the online questionnaire were initially processed using Microsoft Excel and subsequently analyzed using the statistical software Minitab 21.

We set the following research hypotheses:

- H1. Younger respondents a) trust more than older ones AI; b) believe more than older ones in the benefits of AI for humanity; c) reject more than older ones the idea of AI as a threat for the destruction of humanity; d) reject more than older ones the idea of AI as cause for future jobs losses; e) they fear less than older ones AI.
- H2. There is an association between respondents' degree of perceiving AI as future destroyer of humanity and human control role in AI development.

Results and discussion

Pearson Chi Square test for independence was used to test the first research hypothesis: H1- Younger respondents a) trust more than older ones AI, b) believe more than older ones in the benefits of AI for humanity, c) reject more than older ones the idea of AI as a threat for the destruction of humanity, d) reject more than older ones the idea of AI as cause for future jobs losses, e) they fear less than older ones AI. The result of this analysis is presented in Table no.1 below.

Table no. 1. Pearson Chi Square Test of independence between Age and human perception of AI

Null hypothesis (H_0) – statistic context	Tested variable	Cross variable	Decision	P-value*
There is no association between variables	Humanity will benefit from AI	Age	Reject H_0	**0.008***
	AI will destroy humanity		Reject H_0	**0.004***
	I fear AI		Reject H_0	**0.013***
	AI will cause jobs losses		Accept H_0	0.261
	I trust AI		Reject H_0	**0.021***

*Note: *significance level 0.05*

By analyzing the distribution of cell counts for each of the statements cross variable Age, we noticed that that respondents below 35 years agree, while respondents aged 50-65 disagree in higher counts than expected that "Humanity will benefit from AI".

Analysing the distribution of answers for the statements "AI will destroy humanity" and "I fear AI", respondents older than 35 years have less counts than expected in the disagree cells and more counts than expected in the agree cells. Conversely, young respondents, below 35 years, disagree more than expected with these statements.

The distribution of answers for Trust in AI cross Age, indicates that respondents under 35 years agree in higher than expected number that they trust AI, meanwhile ages 35 – 65 disagree in higher than expected counts the idea that they trust AI.

In what regards the statement "AI will destroy humanity" cross "Age" it was noticed from the distribution of cells, again, that young respondents with: age under 35 in higher than expected number disagree with the idea that AI will destroy humanity, meanwhile ages 35 – 65 agree with the statement in higher than expected number.

It can be said that, in general H1 is confirmed, since younger respondents, age below 35, a) trust more than older ones AI, b) believe more than >35 old in the benefits of AI for humanity, c) reject more the idea of AI as a threat for the destruction of humanity and e) they fear less than >35 old respondents AI. However, there is no age driven pattern associated to the d) rejection of "AI will cause future jobs losses".

The 1-Sample Sign Test for median was used because data was not symmetric. We assumed that respondents agree in high extent that: AI causes jobs losses, AI benefits humanity, respondents fear AI and, that eventually, AI will lead to the destruction of humanity. Also, we assumed that respondents don't trust AI. Consequently, we tested the median H_0: $\eta = 3$ vs. H_1: $\eta \neq 3$, where 3 is the middle of the scale (1-strongly disagree and 5 -strongly agree with the statements) the results being presented in table no. 2.

Table no 2. Sign Test: human perception of AI

Null hypothesis H_0: $\eta = 3$
Alternative hypothesis H_1: $\eta \neq 3$

Variable	Number < 3	Number = 3	Number > 3	P-Value	Median
I fear AI	257	163	92	0.000	2
I trust AI	158	186	168	0.618	3
AI will destroy humanity	229	169	114	0.000	3
Humanity will benefit from AI	89	129	294	**0.000**	4
AI will cause jobs losses	95	135	282	**0.000**	4

*Note: *significance level 0.05*

The results indicate a general disagreement with the statement "I fear AI", while the opinions of respondents about " I trust AI" are distributed quite normally, the median being positioned at 3. The majority of respondents agree that humanity will benefit from AI, but in the same time AI will cause jobs losses. For

the statement " AI will destroy humanity" data is skewed to the right, the median being tested and positioned at 2.5. This means that the majority disagrees with the idea that AI will destroy humanity.

Next we tested the median for respondents perception about how AI will change in the future. Several alternatives were provided as answers:1- disappear, 2- regress; 3- stays the same, 4- develop up to a point where humans can maintain control, 5 – develop beyond human control. The 1-sample Sign test was applied, the results being presented in table no.3. We assumed that the majority of respondents will anticipate development, rather than decline in AI, hence we tested the median H_0: $\eta = 4$ vs. H_1: $\eta > 4$.

Table no. 3. 1-Sample Sign test for how AI will change in the future

Null hypothesis	H_0: $\eta = 4$			
Alternative hypothesis	H_1: $\eta > 4$			
Variable	**Number < 4**	**Number = 4**	**Number > 4**	**P-Value**
How AI will develop in the future	26	286	200	0.000*

*Note: *significance level 0.05*

Only 5% of respondents believe that, in the future, AI will remain just as it is now, relapse or even disappear. The large majority of respondents anticipated future continuous evolution of AI, but out of these, 39% anticipate that AI will develop beyond human control, while more than half (56%) believe AI will develop as much as humans can keep it under control. In what concerns the respondents that anticipate AI will develop beyond human control (n=200), only 22.5% disagree with the idea of AI threatening humanity. The Spearman correlation between AI future development variable and users level of agreement with the statement " AI will destroy humanity" indicates a quite strong, positive relationship r=0.422. We wanted to investigate more precisely how these differences are distributed, but due to the low number of respondents that anticipate a future AI stagnating at the current level, involuting or even disappearing from human life (overall n=26 - 5% of the total respondents), Pearson Chi Square test was invalid (many low expected counts). Hence, by removing for this analysis the 26 rows of data, we tested the association between perception of AI as future destroyer of humanity and the two alternatives of AI development indicated by the 95% of respondents: up to a point under human control and beyond human control. The results of Pearson Chi Square test: 107.909, for 2 degrees of freedom, indicate that the p-value is below 0.05 the cut-off level, failing thus to reject the hypothesis of independence, as expected.

Table no. 4. Pearson Chi Square Test between Alternatives of future AI development and the perception of AI as future destroyer of humanity

	AI will destroy humanity			
	Disagree	**Neither agree, nor disagree**	**Agree**	**All**
AI will develop up to a point under human control	**171**	**93**	**22**	286
	127.11	*92.98*	*65.91*	
AI will continue to develop beyond human control	**45**	**65**	**90**	200
	88.89	*65.02*	*46.09*	
All	216	158	112	486

Cell Contents
Count
Expected count

By analysing the table it can be seen that there are higher counts than expected for respondents who agree that AI will continue to develop beyond human control and also strongly agree that AI will lead in the future to the destruction of humanity. Conversely, there are higher counts than expected of respondents who disagree with the idea of AI as future destroyer of humanity and consider that AI will develop as long as it is under human control. This association points to the fact that the destruction of humanity by AI is associated with its development beyond human control, hence it *confirms H2 the degree of perception of AI as future destroyer of humanity is associated to human control role in AI development.* Also, by applying Pearson Chi Square test for the above mention set of data (n=486), between variables „Age" and „Alternatives of AI future development", there were found no statistically significant associations.

Conclusions

AI brings undeniable benefits to humans, or else it wouldn't have expanded and improved with such rapidity. Nevertheless, there are concerns regarding the evolution of AI, including the fear of escaping the control of humans. The current paper aimed to bring in discussion these issues and, by deploying a quantitative research study, focussed on identifying the degree of AI acceptance by humans, referring to AI benefits and threats for humanity. The analysis of retrieved data revealed that there is a discrepancy between generations in what concerns the perception of AI, since younger respondents, aged below 35 years old trust in AI and believe in the benefits of AI for humanity more than older ones do. Also, this young generation rejects the idea of AI as a threat for the destruction of humanity in higher-than-expected numbers, as compared to older generations who are more inclined to agree with the idea of AI as a destructor of humanity. Similarly, young people below 35 years fear less AI than those above this age. Our study didn't find any associations between age and respondents' acceptance of the idea that AI will cause future jobs losses.

Our study also pinpointed to the fact that the degree of considering AI as future destroyer of humanity is associated to human control role in AI development, respondents' belief that AI will develop as long as it is manageable by humans being linked to their less pessimistic view of a future where humanity is destroyed by AI. On the contrary, respondents with more apprehensions about the potential of AI to destroy humanity are those who indicate in higher-than-expected counts that AI will develop uncontrolled, beyond human possibilities to stop or change it. Age was found to be independent of respondents' perspective about AI future development: under or beyond human control. Future research in this area could continue to explore the multifaceted nature of AI acceptance and perceptions, taking into account other factors such as culture, ethics and societal values. It will be possible to investigate AI while addressing potential risks and concerns.

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