

Types of AI and Their Suitability for Performing Daily Activities

Giulia KONDORT *

Bucharest University of Economic Studies, Romania

**Corresponding author, kondortgiulia@yahoo.com*

Roxana CIOC

Bucharest University of Economic Studies, Romania

roxana.cioc@yahoo.com

Abstract. *The usage of robots and artificial intelligence in the business field and in the everyday life of consumers has been a topic of discussion for a long time. While some people are fascinated by the opportunity of having robots supporting them in their daily activities, others are more hesitant. Nowadays, there are different types of robots with artificial intelligence, and consumers, depending on their preferences and needs, prefer a certain type of robot. With the help of an online survey, we found out which type of robot is most often used by the consumer and why. Among the various types of robots with artificial intelligence that were mentioned in the questionnaire, personal home assistants are the robot with artificial intelligence that consumers prefer when they want to perform an action. The second most preferred robot with artificial intelligence is the self-service portal with AI, and in third place is the personal voice assistant. The main results show that personal home assistants are robots with artificial intelligence, which is used most often by the consumer to order food, different products and to perform different activities. With the help of the results, we can also observe that consumers also use the self-service portal with AI as a navigation system or as an alarm clock. The personal voice assistant is the type of artificial intelligence robot that is least used by consumers to do something, which is again an important result.*

Keywords: Artificial intelligence, robots design, GDPR, consumer attitude and perception, human rights.

Introduction

Artificial intelligence (AI) is a rapidly evolving field that aims to create intelligent machines that can perform tasks that normally require human intelligence. The concept of AI dates to ancient times, but its modern form only emerged in the mid-20th century (Martínez-López et al., 2013). The initial vision of AI was to create machines that could reason, learn, and solve problems. Over the years, AI research has evolved significantly and has impacted various fields such as healthcare, finance, transportation, entertainment, and more.

Currently, AI is divided into two main categories: narrow AI and artificial general intelligence (AGI). The design of the narrow AI systems is to perform specific tasks, such as face recognition or playing games (for example: chess). AGI systems are designed for a more general purpose and these can perform an intellectual task like a human. Both divisions are currently used in a wide variety of applications, including automation (such as driving cars and scheduling appointments), analytics (analyze data and identify patterns, trends, and anomalies), prediction (anticipate future events, such as customer behavior and stock prices) and data-driven probability (calculate probabilities of future events).

This article will reveal the current available robot types on market that were developed in the last years, and based on their design (autonomous mobile robots, humanoids, small boxes), linked to their equipment (containing microphones, cameras, sensors, and other technologies), can change the people perception for trusting and using these in business or daily life. Basically,

depending on the robot look or figure, you may not have the feeling that you are talking with a robot, while some people attitude can change during the interaction and agree to the new technology. Other can get more confused while using it. The people approach related to the use of robots is mainly open, nevertheless to their design; thus there are still some topics of debate and mixed opinion on the matter. A similarity to the human attitude stepping outside the comfort zone, will always be exciting for us to notice and observe on machines, since now days the robots can learn from their environment and adapt to new situations that are ideal for tasks that require flexibility and adaptability.

Literature review

The Intersection of AI Efficiency and Human Perception

Artificial intelligence (AI) has revolutionized how companies engage with consumers, significantly impacting future marketing strategies. Traditional communication campaigns that only targeted consumers and their reference groups are evolving due to AI's role in decision-making. Consumers now rely on AI systems and devices for recommendations and decision support. From straightforward suggestions based on past online behavior to intricate automated decisions by intelligent assistants like Alexa or Siri, AI plays an important role in shaping consumer choices. Future marketing campaigns must address both consumers and the AI devices they use. It has become crucial for companies to appear in AI recommendation lists, as AI assistants increasingly make decisions on behalf of consumers. AI's ability to interact with consumers using natural language processing and machine learning blurs the line between human and AI interactions, profoundly impacting marketing strategies. This underscores the need for bidirectional communication between companies, consumers, and AI systems (Pelau et al., 2023).

Users perceive AI's efficiency and fascination. Although AI offers advantages such as increased efficiency and captivating interactions, it also raises concerns about its impact on human skills. The presence of AI influences users' perception of their own identity and abilities. The social circle plays a crucial role in mediating this relationship. Still the constant exposure to AI carries the risk of consumer manipulation and dependence on intelligent technologies. The close relationship between users and AI can affect cognitive abilities, thinking patterns, and social interactions. Interestingly, the positive influence of the social circle mitigates the perceived reduction in human skills caused by AI. Users who find AI efficient and fascinating, yet receive positive social influence, maintain a stronger sense of their own abilities (Pelau et al., 2023).

Trust plays a determining role in consumer-AI interactions. When consumers trust AI systems, they are more likely to engage in positive interactions and accept AI recommendations. Interestingly, factors such as attachment styles and gender characteristics can significantly impact consumer-AI relationships. Drawing inspiration from attachment theory, which is often applied to human connections, we find that it also influences how consumers emotionally connect with AI. When AI systems exhibit empathy, consumers perceive them as more trustworthy and reliable. This emotional bond enhances consumer loyalty. Understanding the multifaceted dynamics of consumer-AI interactions is critical for seamlessly integrating AI into various contexts, including shopping experiences. By fostering trust and empathy, organizations can unlock the full potential of AI while ensuring positive consumer engagement (Pop et al., 2023). Balancing technological advances with ethical considerations remains a critical challenge (Săseanu et al., 2024).

AI data processing of human feelings and support

The AI technology has developed to the point where the emotion recognition, also known as facial expression recognition (FER), researches the ability of various types of designed robots to study, understand and determine the human emotions from their facial expressions. This technology has the potential to remodel different kind of aspects from the human interaction, along with customer service (understanding customer expressions while improving their satisfaction), education (detecting signs of boredom, confusion, or engagement, to adjust teaching methods or training materials accordingly), healthcare (potential and expertise to execute more difficult surgeries or perception of insights for diagnosis and treatment), and social interactions (communication and entertainment independent of the physical location or time zone).

While AI can be trained to perform specific tasks, it is still not capable of replicating the full range of human cognitive abilities, such as common sense (as dealing with daily situations, the resolution is based on experience and context), creativity (as generating ideas and solutions based on imagination and inspiration), intuition (as ability to understand something instinctively based on emotions), and decision-making (including the human ethical and moral thinking or judging) (Jarrahi, 2018).

Despite significant progress, the technology of emotion recognition is still under development and will continue to evolve to play an important role in human-computer cooperation, for understanding nonverbal communication and being able to replicate the full range of human cognitive abilities.

GDPR for AI robots

The General Data Protection Regulation (GDPR) is a governance agreement law on data protection and privacy in the European Union (EU), that has significant implications for the development and deployment of artificial intelligence (AI) technologies related to the robots used, which often depend on the use of the personal data to make decisions, personalize experiences, or automate tasks. GDPR principles are linked to transparency, fairness, and accountability based on ethical guidelines and regulations (Kaplan & Haenlein, 2018).

The organizations that are using AI systems are also using Data Protection Impact Assessments (DPIAs) to mitigate potential risks of robots for consumers that have a range of rights under the GDPR, including the right to access, rectification, erasure, restriction of processing, portability, and objection. It is crucial that these rights must be respected by the created machines that are developed in a way that is compliant with human rights and does not discriminate based on ethnicity, age, disability, sex, sexual orientation, or any other grounds the consumers. The developed AI systems must comply and respect the data protection laws. Decisions taken by robots are taken only unless certain conditions are met, such as obtaining explicit consent from the individual or ensuring the decision is fair and has legal safeguards involving multiple layers of algorithms and data processing in the programming code (Howellsa, 2017).

What happens when AI fails?

The allocation of responsibility for AI failures can vary depending on the specific circumstances (Kong J., et. al., 2018). Robots can fail due to a variety of reasons, including inadequate training data, algorithmic bias, hardware malfunctions, cybersecurity breaches, and human error. The parties responsible for AI failures can vary depending on the situation. However, attribution of blame can prove challenging in certain instances, particularly when the underlying cause of the failure remains elusive (Holder C., et.al., 2016).

AI is still a developing technology, and its capabilities and limitations are still being explored. Therefore, it is crucial to establish ethical guidelines and regulations to ensure that robots are developed and deployed responsibly.

Methodology

The objective of this research is to empirically measure the type of artificial intelligence used by consumers to do something. To achieve the objective, a questionnaire was created. With the help of the questionnaire, we found out which type of robot is used by the consumer to achieve something. The following types of robots were present in the questionnaire: personal voice assistant, personal home assistants, the self-service portal with artificial intelligence and the smart speaker with clock. The respondents were induced to believe that the present robots have the role of executing a thing. The target group was not a specific one; the questionnaire was created for all people, regardless of gender and age. The questionnaire was created in Google Forms and distributed to the participants through social media platforms. The questionnaire includes a series of demographic variables: gender, age, and income. The questionnaire consists of 21 questions with scaled answers ranging from 1 (totally disagree) to 7 (totally agree). A total of 254 people participated in the questionnaire. Of the total of 254 respondents, 159 were women, 94 were men, and 1 person preferred not to answer this question. Most of the participants in the questionnaire (200 participants) belong to the age group between 21-40 years; 35 participants are aged between 41-60 years; 6 participants belong to the over 60 age category and 13 participants are under 20 years old. With the help of the t-test, performed in Excel and with the help of discriminant analysis, a comparison was made between personal home assistants, personal voice assistant and the self-service portal with artificial intelligence. In the following, the main results are presented.

Results and Discussions

The first graphical representation shows the average answer to the first question: What kind of robot do you use the phone function to call other people? In this graph, we can see that personal home assistants are the robots that use the phone function to call other people, with an average of 4.57. The self-service portal with AI ranks second with an average of 3.98. In third place is the personal voice assistant with an average of 3.88, which means that this type of robot is not so often used by respondents. With the help of the t-test, we can see that between the 3 types of robots there is an acceptable difference, which means that respondents do not have a preferred robot for using the phone function to call other people.

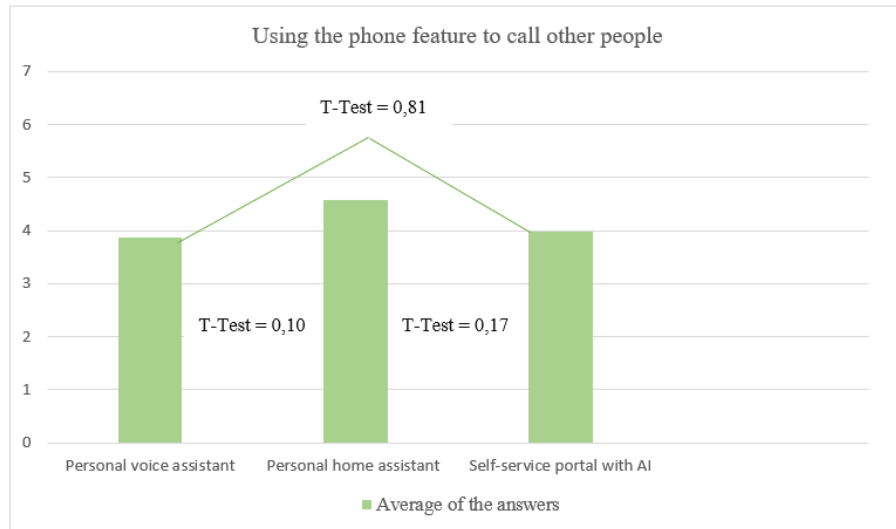


Figure 1. The type of artificial intelligence chosen to use the phone function to call other people

Source: Own research results.

Figure 2 shows the average response to the second questionnaire question: What type of robot do you use to receive weather information? The self-service portal with AI robot is the most widely used in obtaining weather information, with an average of 4.68. With an average of 4.57 was the personal home assistant, in second place and with an average of 4.55 was the personal voice assistant in third place. With the help of the average, we can say that to find out information about the weather, respondents use the 3 types of robots the same. The t-test shows that there is an acceptable difference between the personal voice assistant, the personal home assistant and self/service portal with AI, which means that to obtain weather information, the 3 robots are used by respondents to the same extent.

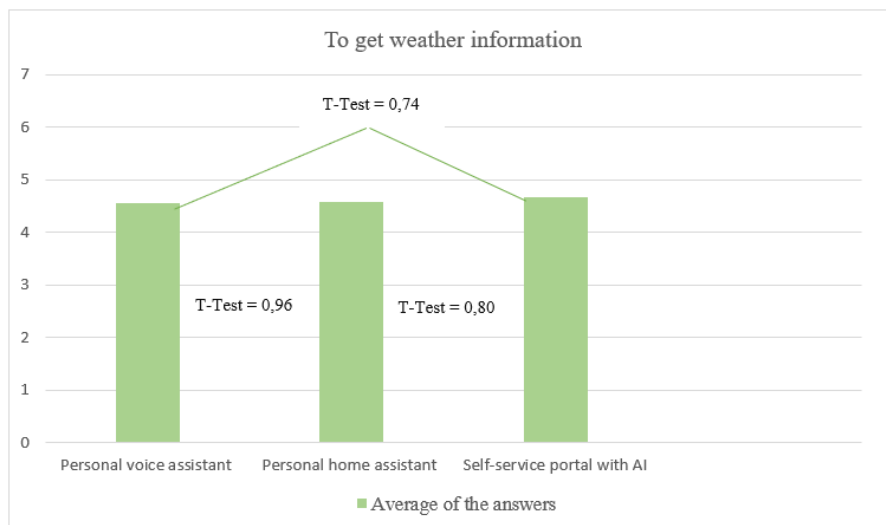


Figure 2. The type of artificial intelligence chosen to obtain weather information

Source: Own research results.

The following graphical representation represents the average answer to the question: What type of robot do you use as a navigation system? The self-service portal with AI is the most used

type of robot as a navigation system, with an average of 5.50, which means that respondents prefer this type of robot, because it includes several functions, such as: image, voice, etc. Second is the personal home assistant with an average of 5.33, which means that this type of robot is also used as a navigation system. The personal voice assistant, with an average of 4.65, is the type of robot less used as a navigation system, because this function is only a voice function, and respondents probably prefer that a navigation system can also show you the image of the route you are about to take. The t-test shows that there is a significant difference between the personal voice assistant and self/service portal with AI when used as a navigation system ($t\text{-test} = 0.03$). Both between the personal voice assistant and the personal home assistant ($t\text{-test}=0.09$) and between the personal home assistant and the self-service portal with AI ($t\text{-test}=0.62$), we see with the help of the t-test that this is an acceptable difference, which means that respondents choose to use more self-service portals with AI as a navigation system than the other 2 types of robots.

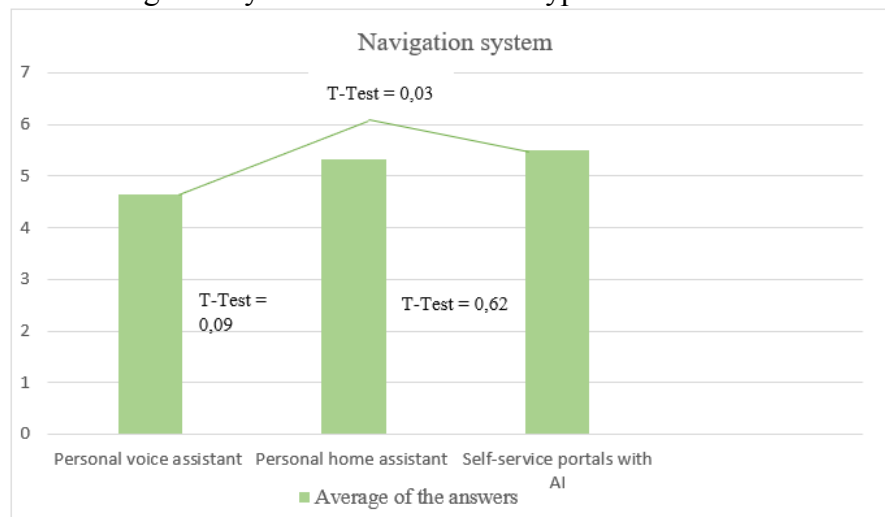


Figure 3. The type of artificial intelligence chosen for the use of the navigation system

Source: Own research results.

The following graphical representation shows robots that are used by respondents as alarm clocks. Self-service portals with AI is the most used by respondents as an alarm clock, with an average of 5.40. With an average of 5.10, we can see that personal home assistants are also used by respondents as an alarm clock. In third place is the personal voice assistant with an average of 4.52, which means that this type of robot with artificial intelligence is not so widely used as an alarm clock. The t-test shows that there is a significant difference ($t\text{-test} = 0.03$) between self-service portal with AI and the personal voice assistant, which means that the respondents prefer to use their first robot more as an alarm clock. The t-test between self-service portal with AI and the personal home assistant shows that the difference between these two types of robots is acceptable ($t\text{-test} = 0.42$), which means that the respondents use almost as much of the two types of robots as an alarm clock. The t-test between the personal home assistants and the personal voice assistant is an acceptable difference ($t\text{-test} = 0.17$).

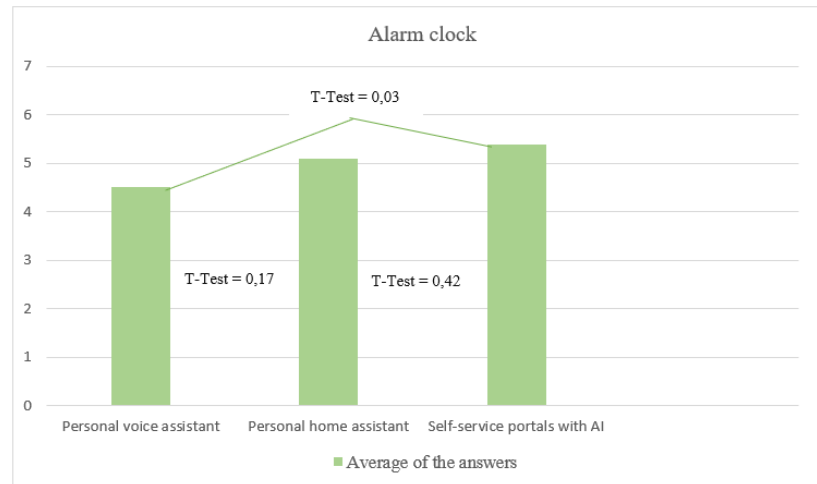


Figure 4. The type of artificial intelligence chosen to use the alarm clock

Source: Own research results.

Figure 5 shows the average response to the fifth question of the questionnaire: What type of robot do you use to order food? In first place is the personal home assistant with an average of 4.92, here we see that most respondents use the personal home assistant robot to order food. In the second place is self-service portal with AI with an average of 4.15, and in the third place is the personal voice assistant with an average of 3.71, which shows us that the two types of robots are less used by respondents when ordering food. The t-test shows that there is an acceptable difference ($t\text{-test} = 0.28$) between self-service portal with AI and personal voice assistant. With the help of the t-test we can see that there is also an acceptable difference between self-service portal with AI and the personal home assistant. The t-test shows that there is a very significant difference ($t\text{-test} = 0.00$) between the personal home assistant and the personal voice assistant, which means that to order food, respondents use the personal home assistants much more than the personal voice assistant.

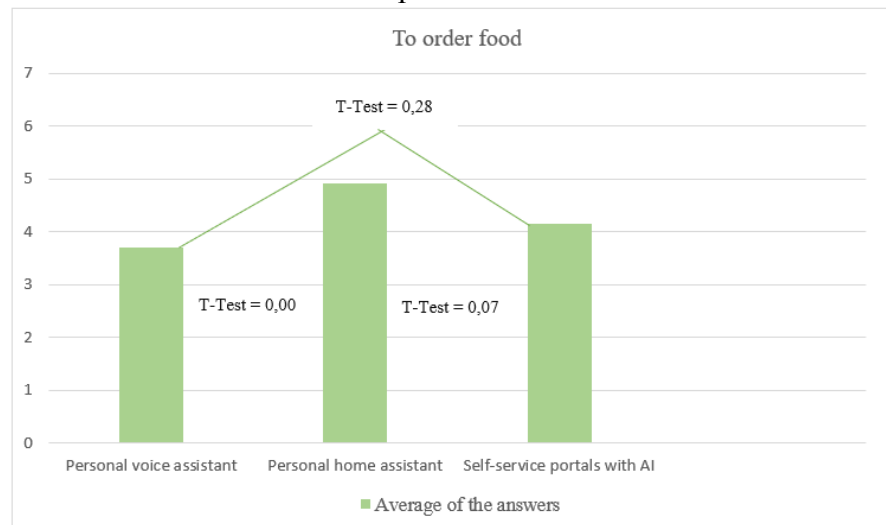


Figure 5. The type of artificial intelligence chosen to order food

Source: Own research results.

The following graph shows the average answer to the question: What type of robot do you use to order other products (clothing, books, etc.)? With an average of 4.80, the personal home assistant is the most widely used type of robot with artificial intelligence when ordering different products. With an average of 4.15, the AI self-Service portal ranks second, and the personal voice assistant ranks last with an average of 3.41, meaning that this type of robot is little used by respondents to order various products. The t-test shows that there is an acceptable difference between the self-service portal with AI and the personal home assistant (t-test = 0.13) and between the self-service portal with AI and the personal voice assistant. The t-test shows that there is a very significant difference (t-test = 0.00) between the personal home assistant and the personal voice assistant, so the respondents prefer to use the personal home assistant robot much more when ordering products.

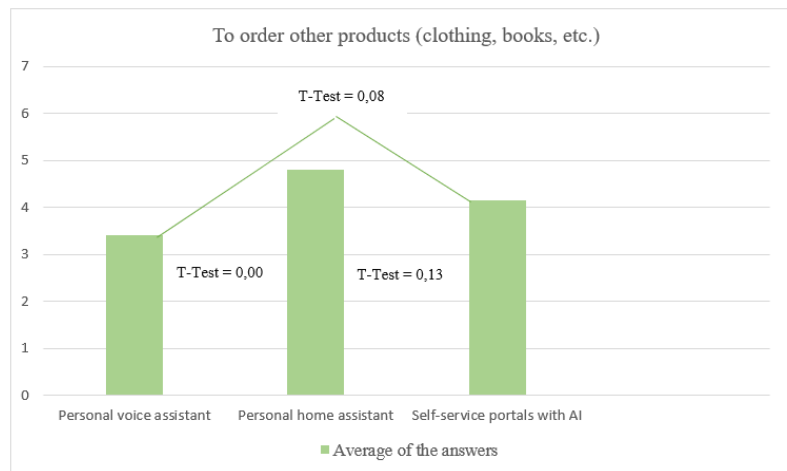


Figure 6. The type of artificial intelligence chosen to order other products

Source: Own research results.

The last graphical representation shows the averages for the last question of the questionnaire, which asked respondents to choose the type of robot used when performing different activities than those already listed. The respondents mostly chose the personal home assistant, with an average of 4.22. With an average of 3.97, the self-service portal with AI is in second place, and in third place is the personal voice assistant with an average of 3.16. The t-test shows that there is a very significant difference (t-test = 0.01) between the personal home assistant and the personal voice assistant, so respondents prefer to use the personal home assistants much more when they have to do different activities. The t-test shows that there is a significant difference (t-test = 0.04) between the self-service portal with AI and personal voice assistant. Between personal home assistants and self-service portal with AI, the t-test (t-test = 0.55) shows that there is an acceptable difference, which means that to do other activities, some respondents use the personal home assistant, and others use self-service portal with AI.

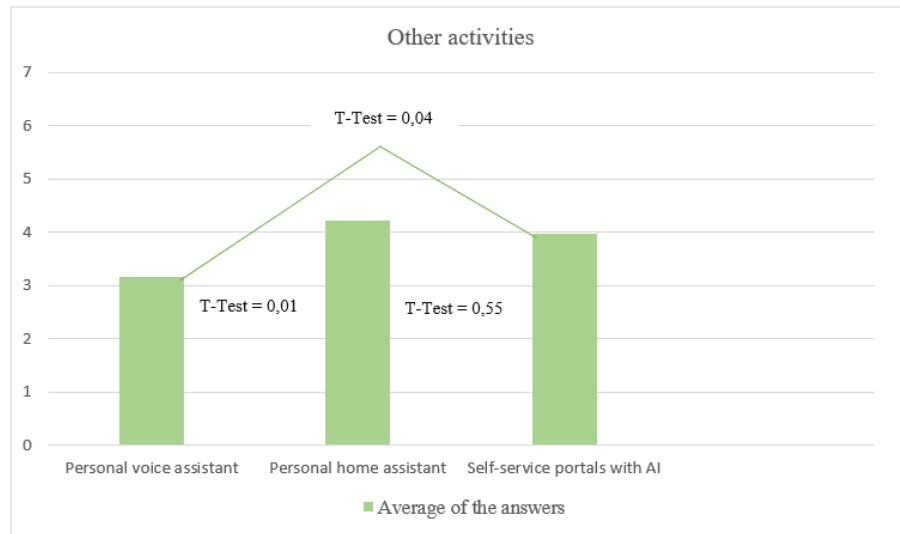


Figure 7. The type of artificial intelligence chosen for other activities

Source: Own research results.

Conclusion

In conclusion, we can say that most of the respondents chose to use personal home assistants in the various activities they do. The personal home assistant is the type of robot with artificial intelligence that is very well known, but contains a wide range of functions. When we think of a robot with artificial intelligence, we think of a robot that can do as many things as possible for us, and with the help of the questionnaire, we see that respondents prefer the personal home assistant more than the personal voice assistant and self-service portal with AI. Analyzing the results, we can say that for consumers, the functions that a robot with artificial intelligence has play a very important role when it comes to choosing only one type of robot. Likewise, in this article, we see that the respondents most preferred to use the personal home assistant for the various activities. The personal home assistant is not something you necessarily have to touch or have near you, the personal home assistant is the robot you can communicate with from a distance, you can tell it what to do, even learning from your daily routine.

Robots created and developed in recent years have made amazing strides, in changing the way we live and work. However, as technology grows, we must also address the ethical and social implications of artificial intelligence. The future of GDPR and AI robots is currently under discussion in the European Commission, which aims to provide more specific and detailed regulations for the new technologies, ensuring to protect individuals' rights while enabling the responsible development and deployment of AI robots.

Despite the challenges that come with it, AI also offers new possibilities and opportunities to shape the future. Therefore, artificial intelligence is a fascinating and important area of research and development that will continue to influence our lives. Nowadays, we live in a world where artificial intelligence dominates, coming to the aid of people. We, the people of today, are part of the world where time is very precious, not enough to achieve many things. Artificial intelligence and different types of robots help us to become freer, taking over certain tasks and even carrying them out.

References

- Benedict, T.C. Tay, Sock Ching Low, S.C., Kwang Hee Ko, Taezoon Park T. (2016). Types of humor that robots can play, *Computers in Human Behavior*, 60, 19-28, <https://doi.org/10.1016/j.chb.2016.01.042>
- Bertacchini F., Bilotta E., Pantano P., (2017). Shopping with a robotic companion, *Computers in Human Behavior*, 77, 382-395, <https://doi.org/10.1016/j.chb.2017.02.064>
- Galloway C., Swiatek L., (2018). Public relations and artificial intelligence: It's not (just) about Robots, *Public Relations Review*, 44(5), 734-740, <https://doi.org/10.1016/j.pubrev.2018.10.008>
- Grădinaru, G.I., Dinu, V., Rotaru, C.L., and Toma, A., 2024. The Development of Educational Competences for Romanian Students in the Context of the Evolution of Data Science and Artificial Intelligence. *Amfiteatru Economic*, 26(65), 14-32, <https://doi.org/10.24818/EA/2024/65/14>
- Holder C., Khurana V., Harrison F., Jacobs L. (2016). Robotics and Law: Key legal and regulatory implications of the robotics age (Part I of II), Bristows LLP, *Computer Law & Security Review*, 32(3), 383-402, <https://doi.org/10.1016/j.clsr.2016.03.001>
- Howellsa K. & Ertugana A. (2017). Applying fuzzy logic for sentiment analysis of social media network data in marketing, *9th International Conference on Theory and Application of Soft Computing, Computing with Words and Perception, ICSCCW 2017*, 24-25 August 2017, Budapest, Hungary.
- Jarrahi, M.H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making, Kelley School of Business, Indiana University, *Business Horizons*, 61(4), 577-586, <https://doi.org/10.1016/j.bushor.2018.03.007>
- Kaplan A., Haenlein M. (2019), Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence, Kelley School of Business, Indiana University, *Business Horizons*, 62(1), 15-25, <https://doi.org/10.1016/j.bushor.2018.08.004>
- Kong Joo Shin K. J., Tada N., Manag S. (2019). Consumer demand for fully automated driving technology, Economic Society of Australia, Queensland, *Economic Analysis and Policy*, 61, 16-28, <https://doi.org/10.1016/j.eap.2018.10.002>.
- Martínez-López, F.J., Jorge Casillas J. (2013). Artificial intelligence-based systems applied in industrial marketing: An historical overview, current and future insights, *Industrial Marketing Management*, 42(4), 489-495, <https://doi.org/10.1016/j.indmarman.2013.03.001>.
- Pelau, C.; Dabija, D.C.; Serban, D. (2023). The Physical Presence and Relationship Distance for Efficient Consumer-AI-business Interactions and Marketing, in: Wang, C.L. *The Palgrave Handbook of Interactive Marketing*, Palgrave-Macmillan, <https://doi.org/10.1007/978-3-031-14961-0>
- Pelau, C.; Ene, I.; Pop, M.I. (2021). The Impact of Artificial Intelligence on Consumers' Identity and Human Skills, *Amfiteatru Economic*, 23(56), 33-45, <https://doi.org/10.24818/EA/2021/56/33>.
- Pop, S.; Pelau, C.; Ciofu, I.; Kondort, G. (2023). Factors predicting consumer-AI interactions, *Proceedings of the 8th International Conference on New Trends in Sustainable Business and Consumption (BASIQ)*, 592-597.
- Săseanu, A.S., Gogonea, R.M. and Ghiță, S.I. (2024). The Social Impact of Using Artificial Intelligence in Education. *Amfiteatru Economic*, 26(65), 89-105, <https://doi.org/10.24818/EA/2024/65/89>