THE FUTURE OF PUBLIC ADMINISTRATION IN ROMANIA. PERSPECTIVES ON INTERACTING WITH THE PUBLIC THROUGH ARTIFICIAL INTELLIGENCE

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Abstract: *Artificial Intelligence (AI) is one of the most revolutionary and fascinating technological innovations of the last century. From its first theoretical approaches in scientific research to its practical application in various areas of our lives, AI has come an impressive way, radically transforming the way we interact with technology and the world around us. Among the most interesting and promising applications of artificial intelligence is that of conversational intelligence. The use of such features in interacting with the citizens in public administration can bring many benefits, including improved efficiency, increased transparency and easier access to information and services. The present research aims to analyse the relationship between the user and the virtual assistant in the context of the digitized interaction between citizens and public administration. Following the application of a questionnaire, 255 responses were analysed in order to establish the profile of the citizen who would use this type of service, referring to socio-economic parameters but also to the specific degree of trust in AI.*
Key words: *Artificial intelligence; Effective public administration; virtual assistant; conversational AI.*

1. INTRODUCTION

Artificial Intelligence (AI) represents a technological frontier with the potential to reshape society, economy, and culture as it stands as one of the most transformative technological advancements of the 21st century. Machine learning algorithms, inspired by the human brain, have the capacity to learn and improve from experience, leading to advancements in natural language processing, image recognition, and decision-making processes. With its capabilities of deep learning, a subset of machine learning, AI systems can achieve unprecedented accuracy and efficiency in complex tasks, becoming a powerful tool in tackling complex problems and improving efficiency in many fields [15, 17].

Conversational AI refers to the development of systems capable of interacting with humans naturally and providing relevant and contextual responses in conversations. Such systems have enabled the emergence of virtual assistants, chat agents and other applications that have transformed the way we communicate and obtain information [26].

2. LITERATURE REVIEW

Conversational AI has been conceptualized in literature as the study of techniques for creating software agents capable of performing natural dialogues with humans [10]. The literature has identified, over time, several theories attempting to explain the interaction between AI and humans, determining both the factors that positively and productively influence this interaction and the elements that interfere in this relational environment. Recent contributions to the field have also emphasized the growing institutional relevance of conversational AI, particularly in public administration, where such systems are increasingly adopted to enhance service delivery and administrative efficiency. International examples - such as Canada's and Estonia's chatbot platforms for digital identity management, or Finland's and Singapore's pilot programs for AI-driven public communication -

illustrate the expanding role of conversational agents beyond commercial domains, suggesting a global shift toward automation in citizen - state interactions. These developments provide valuable context for understanding the psychological, sociological, and ethical frameworks that shape the way humans engage with AI intelligence.

Social response theory outlines the application of social rules by humans in relation to AI. Thus, humans tend to use positive and polite social behavior even when they are aware that they are talking to a chatbot. These behaviors include using polite language, expressions of politeness, and acknowledging feedback received from the virtual assistants. Users can also avoid criticizing or offending the software, even if they provide a wrong or frustrating answer [1, 13].

Social presence theory examines the degree to which the conversational agent is perceived as a real person as well as how the social characteristics of chatbots influence consumers' behavioral intentions. Studies have shown that there is a social presence effect in interactions with virtual assistants and other AI entities. People can perceive virtual assistants as "present" and develop feelings of connection or empathy towards them, even though they know they are just computer programs with no real consciousness. Findings suggest that chatbots have a direct and positive impact on the retailer experience, for example, and when comparing touch-controlled and voice assistants, studies have shown lower consumer satisfaction with voice assistants, with researchers relating this to perceptions of control and concluding that users displaying independent self-construal tendency are reluctant to voice-based conversational AI [6,8,13]. Also, on aspects related to the perception of control, a series of studies demonstrate that consumers often perceive the suggestions of virtual assistants as limitations of personal freedom, thus showing reluctance instead of gratitude [22,25].

Researchers [3,20,21] applied the theory of anthropomorphism to analyze the user experience after interacting with virtual assistants. Virtual assistants that can answer questions and tasks in a more sophisticated and natural way boost the tendency to be perceived as intelligent and aware. Users demonstrate a high degree of satisfaction when they are impressed by the virtual assistant's ability to understand and respond appropriately to complex commands or ambiguous questions. Identifying two types of users, present-oriented individuals and future-oriented individuals, Roy and Naidoo's [20] study demonstrates that the individual who focuses on concrete factors in the immediate, sensory present, has a higher degree of satisfaction when the conversational level is pleasant and warm , and does not analyze the degree of competence of the answer, while future thinking individuals opt for the quality of the answer to the detriment of the conversational style.

The perspective on the quality of the response is also addressed by referring to the individual's attitude towards the ability to make mistakes. Studies show that users display a high degree of satisfaction regardless of the virtual assistant's potential mistakes for which they need additional clarification. In the context of the customer relationship, additional clarifications made by the chatbot are perceived as increased attention to the customer's needs [22].

The study [5] explained the self-determination theory by measuring motivation in relation to the individual's perception of being autonomous and controlled. The theory examines human motivation and the importance of satisfying basic psychological needs to achieve a state of well-being and personal development. In relation to virtual assistants, self-determination theory can provide relevant insight into the motives and satisfactions behind human interaction with virtual assistants. People need to feel they have the skills and resources to face challenges and achieve their goals. In the case of virtual assistants, this need can be met when users perceive that they can get relevant and useful answers, or when the virtual assistant helps them complete complex tasks successfully. Also, individuals want to feel free to make decisions and have control over their actions. In interacting with virtual assistants, meeting this need can be achieved when users feel free to choose to communicate with the virtual assistant, decide on their actions, and receive support tailored to their needs and preferences. Some studies show potential

drawbacks of chatbot systems compared to classic interface systems, particularly regarding the perception of autonomy and cognitive load, which can ultimately impact user satisfaction [12,19].

Chatbot systems may provide a higher level of automation, leading to a reduced perception of autonomy for users. In classic interface systems, users often have more control over the interaction and can navigate the interface based on their preferences. In contrast, chatbot interactions might feel more constrained and predetermined, leaving users with fewer choices and less perceived autonomy. Also, chatbot interactions can sometimes be less intuitive and may require users to learn specific commands or syntax to communicate effectively with the AI. This added cognitive effort can lead to a higher cognitive load for users compared to classic interface systems, where familiar buttons or menus provide a more straightforward interaction, thus resulting in a reduced degree of satisfaction [21].

The Technology Acceptance Model (TAM) offers a systematic framework for understanding the intricate relationship between humans and technology. By focusing on perceived ease of use and perceived usefulness, TAM provides valuable insights into the factors driving adoption of technology. By analyzing perceived ease of use and perceived usefulness, TAM assists in understanding user attitudes, predicting behavior, and guiding the design and improvement of virtual assistants to ensure their successful integration into users' lives [11].

Studies consistently show that age difference significantly influences the acceptance of virtual assistants. Younger users, being more digitally fluent and accustomed to technology, tend to adopt virtual assistants more readily due to their perceived ease of use and usefulness. Older users, while more cautious due to technological barriers, can benefit from targeted educational efforts and user-friendly design to enhance their acceptance levels [2, 9, 20].

Applying the TAM model into identifying the factors behind the adoption of virtual assistant technology, a study conducted on a sample in Romania revealed that, in the case of Romanians, satisfaction with the use of a service is among the most important aspects to be considered. The same study highlights the fact that young people are more interested in using digital technologies, but also that education is an important aspect in profiling the consequent user of technology containing AI features [7].

According to DESI (Digital Economy and Society Index) 2020, Romania ranks last in the EU on the Digital Public Services Index and ranks last in terms of pre-filled forms and fully online services, indicating a systemic problem in terms of quality and usability of services. Between 2015 and 2018, there was no significant improvement in the quality of digital public services for businesses, Romania ranking last in the EU in this respect.

Although with the potential to address some of these issues, virtual assistants are used to a limited extent in the public sector. In 2018, Cluj City Hall implemented the first virtual civil servant, named Antonia, an AI software capable of processing over 60 requests. The government implemented virtual assistant ION as part of an AI project, followed by the National Energy Regulatory Authority, which launched in the autumn of 2022 a virtual assistant to use the online platform for changing electricity and natural gas suppliers nationwide.

Recent studies also emphasize the growing relevance of conversational AI in public administration at international level. For example, Estonia and Canada have implemented chatbot-based platforms to assist with digital identity management, while pilot programs in countries like Finland, Germany, and Singapore have demonstrated how virtual agents can facilitate public service delivery, improve citizen engagement, and reduce bureaucratic delays [4, 10].

3. HYPOTHESIS DEVELOPMENT

In view of the evolution of technology and the benefits it can bring in terms of increasing the quality of life, reducing the time caused by excessive bureaucracy, easy access to information and the speed of solving basic problems, it is important to analyze the factors that determine the user's predisposition to access the specific services of virtual assistants. Studies

show that there is a gap between urban and rural areas in the use of internet services, i.e., in trusting technology to solve everyday problems [11, 16]. Furthermore, in analyzing the factors that determine the propensity to use advanced methods of technology to improve life, scientific literature has identified educational background as a determining factor. Finally, literature pays particular attention to the financial sector, so for example a family's budget influences its members' behavior and their interest in technological products [22].

Generally, studies suggest that people living in urban areas are more confident in technology and more likely to use virtual assistants to improve their quality of life. One aspect to consider according to literature is digital literacy and level of education. Thus, people with a higher level of education may be more comfortable with technology and more confident in using virtual assistants [12, 22].

Hence, based on previous research, we formulate the following hypotheses:

- Hypothesis 1 – There is a significant relationship between the residential environment and the level of trust in virtual assistants;
- Hypothesis 2 – H_0 There is no significant relationship between the level of education and the degree of interest in using virtual assistants; H_1 There is a significant relationship between the level of education and the degree of interest in using virtual assistants;
- Hypothesis 3 – There is a significant relationship between household income and members' interest in using virtual assistants.

4. METHODOLOGY

We collected the data using a questionnaire distributed via Google Forms. A total of 255 valid responses were used for analysis, processed through the Statistical Package for the Social Sciences (SPSS), employing both descriptive statistics and nonparametric tests. The participants in the survey ranged in age range from under 18 to over 65, as shown in Table 1. The descriptive analysis indicates that the age distribution is relatively balanced across the key categories of public administration service beneficiaries. Both minors and individuals within the retirement age range were included in the study to identify potential differences in the propensity to use such services across age groups. According to the results, 20% of respondents were aged 18–24, 21.6% were between 25–34, 19.6% were aged 35–44, 16.9% belonged to the 45–54 age group, 9.8% were aged 55–64, 5.5% were over 65, and 6.7% were under the age of 18.

5. DISCUSSIONS AND RESULTS

To determine whether there is a significant relationship between the residential environment and the level of trust in virtual assistants, we performed a Spearman correlation test, as shown in Table 2. Analyzing the data in Table 2, we see that there is a statistically significant correlation between the residential environment and the level of trust in virtual assistants, thus validating the first hypothesis.

Table 1

Age distribution of questionnaire respondents.

Age Category	Frequency	Percent
Under 18 years old	17	6.7%
18–24 years old	51	20.0%
25–34 years old	55	21.6%
35–44 years old	50	19.6%
45–54 years old	43	16.9%
55–64 years old	25	9.8%
Over 65 years old	14	5.5%
Total	**255**	**100%**

Table 2

Correlation between the residential environment and the level of trust in virtual assistants.

	Residential Environment	Trust in Virtual Assistants
Residential Environment	1.000	-0.175**
Sig. (2-tailed)	—	0.005
N	255	255
Trust in Virtual Assistants	-0.175**	1.000
Sig. (2-tailed)	0.005	—
N	255	255

For the second hypothesis we conducted a nonparametric Kruskal- Wallis's test, as shown in the figures below.

Table 3, representing the test summary, shows that there are no significant correlations between the two variables and decides to retain the null hypothesis. The distribution of the interest in using virtual assistants across the level of education (Figure 1), the distribution of the interest in using virtual assistants among the respondents (Figure 2) and the distribution of the level of education among the respondents (Figure 3) are the graphical information underlying the Kruskal-Wallis's test.

Analyzing the results from the test we conducted, we see that the p-value is 0.313 and thus greater than 0.05. Therefore, the null hypothesis is retained, and we assume that there is no difference in the interest of using and virtual assistant depending on the level of education. Analyzing the results achieved in the study, we can observe a predisposition of the subjects contrary to the research studies mentioned in the present article. As far as our respondents are concerned, there was no significant difference in relation to the level of education, which may signify both a homogeneous culture among the population in terms of openness to technology and specific tools, and a general tendency to improve the quality of life through the facilities offered by technology.
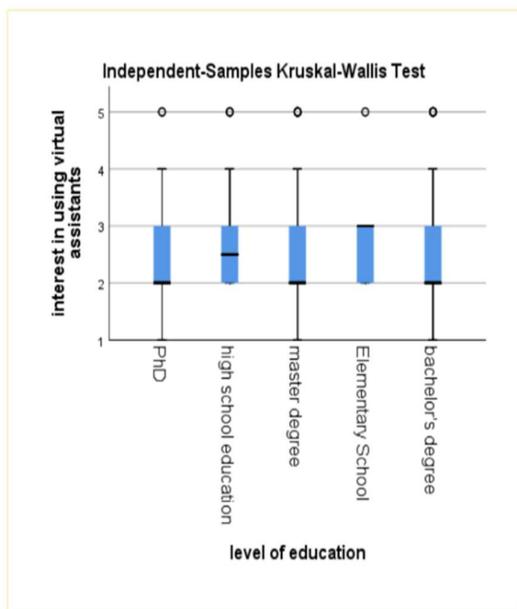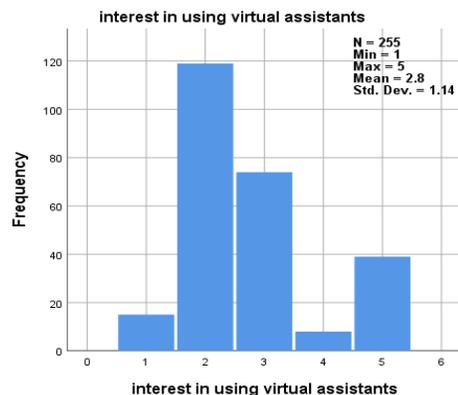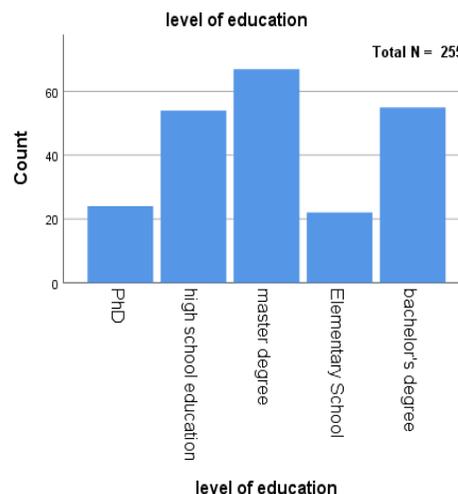

Fig. 3. The distribution of interest in using virtual assistants on the sample of respondents

Fig. 4. The distribution of level of education on the sample of respondents

Fig. 2. The distribution of interest in using virtual assistants across levels of education

Table 3

Correlation between the monthly household income and the interest in using virtual assistants.

Null Hypothesis	Test	Sig.	Decision
The distribution of interest in using virtual assistants is the same across categories of education level	Independent-Samples Kruskal-Wallis Test	0.313	Retain the null hypothesis
			Value
Total N			255
Test Statistic			8.224[ab]
Degrees of Freedom			7
Asymptotic Sig. (2-sided test)			0.313

To determine whether there is a significant relationship between household income and members' interest in using virtual assistants, we tested using a Spearman correlation test, as seen in Table 4. The results showed that the correlation is significant, thus validating hypothesis 3.

6. CONCLUSIONS

In a context where time efficiency has become a critical societal value, virtual assistants stand out as viable instruments for streamlining interactions between citizens and public institutions. The findings of this study reveal a general openness among Romanian respondents toward the integration of conversational AI in public service delivery. Notably, the analysis challenges prevailing assumptions in literature by indicating that the level of formal education does not significantly influence interest in using such technologies. This divergence may be attributed to the increasing ubiquity of intuitive interfaces and mobile-first platforms, which enable technology adoption even in the absence of advanced digital literacy.

Equally important, the study underscores the persistent influence of the residential environment, reflecting structural inequalities in digital infrastructure and access. These disparities are compounded by the systemic weaknesses in Romania's public digital services, as reflected in its consistently low performance on European benchmarks such as the Digital Economy and Society Index. Such infrastructural deficiencies may affect not only the actual capacity of citizens to use AI tools but also their trust in the institutions that deploy them.

From a practical standpoint, the implications of these findings suggest that public administration reform must be accompanied by targeted investment in digital infrastructure, particularly in rural or underserved areas, as well as by sustained efforts to enhance public trust and familiarity with AI-based interfaces. Furthermore, ensuring that virtual assistant services remain free of charge and accessible to individuals regardless of their income level is essential to avoid exacerbating existing social disparities. The introduction of such tools within administrative workflows should be accompanied by user support mechanisms and public communication strategies that reinforce transparency, autonomy, and responsiveness.

Although limited in scope to a national sample, this research contributes to the growing body of evidence on the socio-economic determinants of AI adoption and offers relevant insights for policymakers seeking to implement inclusive and effective digital transformation strategies in public governance.

Ultimately, the successful adoption of conversational AI in public administration depends not only on technological feasibility, but also on institutional readiness, intersectoral collaboration, and the development of coherent policy frameworks that align innovation with equity and long-term civic engagement. This transformation requires not merely the deployment of digital tools, but also a cultural and organizational shift within public institutions, fostering adaptability, responsiveness, and trust-building mechanisms to ensure that AI-driven solutions genuinely serve the needs of all citizens.

Despite the potential benefits, the future of AI in public administration for sustainability is not without its challenges. These risks must be addressed through responsible governance and careful implementation [27]. Furthermore, strong leadership is needed similar with the one in business organizations [28].

7. LIMITATIONS AND FUTURE RESEARCH

This study presents several limitations that should be acknowledged. The relatively small sample size of 255 respondents may constrain the generalizability of the findings and limit the statistical power to detect more subtle effects. Additionally, the geographic focus on Romania restricts external validity, as digital infrastructure, public service quality, and user behavior vary significantly across countries.

The finding that education level does not significantly influence interest in virtual assistants diverges from established literature and may reflect contextual factors such as the widespread availability of intuitive technologies

and mobile access. Furthermore, Romania's systemic digital challenges, including limited public e-services and uneven internet coverage, likely impact user experience and perceived usefulness, thereby influencing results. Future studies should aim for larger, more diverse samples, cross-national comparisons, and deeper exploration of mediating variables such as digital literacy, trust, and institutional accessibility.

8. REFERENCES

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Viitorul administrației publice în România. Perspective privind interacțiunea cu publicul

Inteligența artificială (AI) este una dintre cele mai revoluționare și fascinante inovații tehnologice ale secolului trecut. De la primele sale abordări teoretice în cercetarea științifică până la aplicarea sa practică în diverse domenii ale vieții noastre, inteligența artificială a parcurs un drum impresionant, transformând radical modul în care interacționăm cu tehnologia și cu lumea din jurul nostru. Printre cele mai interesante și promițătoare aplicații ale inteligenței artificiale se numără cea a inteligenței conversaționale. Utilizarea unor astfel de funcții în interacțiunea cu cetățenii în administrația publică poate aduce numeroase beneficii, printre care îmbunătățirea eficienței, creșterea transparenței și facilitarea accesului la informații și servicii. Prezenta cercetare își propune să analizeze relația dintre utilizator și asistentul virtual în contextul interacțiunii digitalizate dintre cetățeni și administrația publică. În urma aplicării unui chestionar, au fost analizate 255 de răspunsuri pentru a stabili profilul cetățeanului care ar utiliza acest tip de serviciu, cu referire la parametrii socio-economici, dar și la gradul specific de încredere în AI

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