Research Article

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A Chatbot Project to Educate and Inform Citizens about Territorial Risks

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Abstract
The paper examines the application of artificial intelligence (AI) and chatbots in the public sector, focusing on territorial resilience and civic participation, especially in natural risk management. The benefits of AI, such as cost reduction and improved services, are explored, providing numerous examples of success in the public and private sectors. Despite the benefits, the paper highlights significant obstacles to adoption, including citizen distrust and privacy concerns. Finally, the paper presents the CHAT-PART project, which proposes the use of chatbots to improve communication and citizen engagement in planning resilient communities, highlighting the importance of a useful and conversational design for these tools and the need for an inclusive implementation that respects the values of public service.

The increasing adoption of Artificial Intelligence (AI) and chatbots in the public sector holds significant promise for enhancing citizen services, improving communication between government and citizens, and reducing administrative burdens. AI-based chatbots, defined as intelligent agents capable of understanding spoken language and automating communications, can offer benefits such as cost savings, increased productivity, and improved citizen satisfaction. However, their implementation faces challenges, including public distrust in machine intelligence and ethical/social obstacles related to the replacement of human employees.

Empirical research highlights varied public perceptions and implementation challenges. An experimental online survey in Japan indicated lower initial public trust in chatbot responses for sensitive areas like parental support compared to less sensitive ones like waste separation.

Studies on US state governments identified key determinants for chatbot adoption, such as relative advantage, ease of use, dynamic interactions (especially driven by the COVID-19 pandemic), leadership, and past experiences. Implementation success, conversely, is influenced by knowledge base creation, technological expertise, human and financial resources, inter-agency communication, privacy regulations, and citizen expectations. A Greek study validated AI integration into public service delivery through application scenarios in collaboration with government agencies.

Crucially, AI-based chatbots are highly applicable to risk education and management for territories. The CHAT-PART project is specifically designed to leverage this potential by building a participatory planning model for climate change adaptation and natural risk resilience. This paper aims to address the critical need for continuous, widespread, and informed citizen participation in risk governance, moving beyond traditional, often overly technical, one-way information dissemination. By focusing on specific multi-risk territories in Italy, CHAT-PART seeks to integrate specialized chatbots to foster information, training, and involvement of the population in policies and actions against natural risks, contributing to the realization of a "Good AI Society" by addressing research gaps in public trust and engagement.

CHAT-PART Project (Participatory Planning Model): *This project aims to develop and validate a "participatory planning model" for local adaptation to climate change and natural risks. This model will:*

- *Be agreed upon and calibrated with selected Italian municipalities.*
- *Be presented to local citizens and media to gather feedback and technical/institutional specifications.*
- *Incorporate a specialized chatbot designed to facilitate information, training, and broad citizen participation in the planning and management of natural risks.*
- *Be proposed and implemented in four different municipalities (Marradi, Genoa, Ercolano, Viareggio) with varying sizes and risk types, allowing for real-world testing and assessment of its effectiveness in fostering participation.*
- *Involve an initial research phase on chatbot use to facilitate citizen-government interactions, including through surveys and feedback.*
- *Include a phase for developing recommendations for building a citizen participation model.*
- *Plan for subsequent initiatives to discuss the general proposal within institutions and with citizens in different territories.*

Keywords
Artificial Intelligence (AI), Chatbots, Public Sector/Government, Citizen Services, Public Trust, Risk Education, Territorial Risk Management, Climate Change Adaptation, Participatory Planning, Innovation Adoption, Digital Transformation

Introduction

In recent years, the increasing frequency and severity of natural disasters, intensified by the effects of climate change, have underscored the urgent need for innovative, citizen-centered disaster risk management strategies. Artificial Intelligence (AI) and chatbot technologies are emerging as promising tools for enhancing communication, improving public awareness, and facilitating active citizen participation in the public sector. While chatbots have demonstrated significant potential in streamlining administrative processes and improving service delivery, their adoption in the domain of disaster risk reduction and resilience planning remains underexplored.

This research introduces the CHAT-PART project, a participatory planning model that leverages AI-based chatbots to educate, inform, and engage citizens in local climate change adaptation and risk management efforts. By focusing on multi-risk territories in Italy, the project aims to address existing gaps in public trust, knowledge dissemination, and participatory governance. Through this work, we seek to demonstrate that chatbots, when designed with user-centered principles and ethical considerations, can serve as valuable tools for fostering resilient communities and enhancing public engagement in the management of natural risks.

Methodology

The sources describe the methodologies of several distinct studies and a proposed project, each employing different research designs and data collection techniques.

Public Trust in AI Chatbots (Japanese Study)

Research Design: This was an experimental survey conducted as part of a research project on AI in the public sector. The study employed an online panel [1].

- **Participants and Sampling:** The survey was administered to an online panel of 2.2 million registered individuals by Rakuten Insight, Inc. 8,000 responses were collected from individuals aged 18 to 79 residing in Japan. Respondents were recruited to ensure diverse distribution by gender, age, and region.

Data Collection

The survey was accessible from January 30 to February 6, 2019. It was designed to test hypotheses regarding whether initial public trust in chatbot responses depended on the area of inquiry and the communicated purposes for introducing chatbot technology.

Analysis

The study indicates that "analyses based on an experimental online survey conducted in Japan generated results". These analyses suggested that public trust in chatbot responses would be lower for parental support compared to waste separation, noting a "moderate size effect". This implies the application of statistical methods to analyze the experimental data.

AI Integration in Public Service Delivery (Greek Study)

Research Design and Validation: The proposed approach for integrating AI into public service delivery was validated through a series of application scenarios.

Collaboration

- **This validation was Conducted in Close Collaboration with Three Greek Government Agencies:** The Ministry of Finance, a social security organization, and a major local government organization.
- **Application Scenario:** One specific application scenario was used to validate the approach's potential, focusing on integrating AI into public service delivery by a Greek government agency.
- **Data Collection (Implicit):** Participant feedback highlighted concerns, such as "doubts about how and whether web browsing cookies were used on the portal," indicating the collection of perceptions and concerns.

AI-Based Chatbot Adoption and Implementation in US State Governments

Research Design: This was an empirical investigation exploring the use of chatbots from a holistic perspective. The study distinguished between "adoption" (the decision to use a chatbot) and "implementation" (the process following the adoption decision), including activities designed to achieve intended goals.

The research was guided by the question: "what determinants facilitate or hinder the adoption and implementation of chatbots in the public sector?" [2].

Identification of Agencies

The research identified 47 state agencies using chatbots.

Data Collection

The study involved contacting these organizations and sending interview invitations to their employees and officials. Responses indicating interest were received from 22 state agencies. These participating agencies represented a wide range of functions (e.g., unemployment insurance, social services, tax, IT, education, public health, transportation) and geographical locations across the Midwest, Northeast, South, and West of the US.

Analysis

The "results are organized to reflect the two distinct strands of this investigation". The study identified determinants of chatbot adoption (e.g., relative advantage, ease of use, COVID-19 impact, leadership, past experiences) and factors impacting implementation and success (e.g., knowledge base creation, technological skills, human/financial resources, inter-agency communication, privacy rules, citizen expectations). The findings were presented as indicating certain roles for information technology providers and confirming challenges identified in existing literature on digital government and AI deployment.

CHAT-PART Project (A Proposed Participatory Planning Model)

Overall Objective

The CHAT-PART project (Chatbot and Participation) aims to develop a "participatory planning model" for a local adaptation plan to climate change and natural territorial risks. This model is to be grounded in risk knowledge, leveraging best practices in risk prevention and management in Italy, and considering existing institutional frameworks. It specifically intends to enhance citizen participation in planning for a resilient community [3].

Phased Approach

The project is Structured into Five Main Phases, which are Logically Sequential but may be Integrated or Concomitant in Time:

- **Phase A (Literature Research):** This involves systematic literature research to synthesize relevant content on the use of chatbots globally for facilitating citizen-institution relations, particularly noting the increase in chatbot-related keywords in educational-training institutions.
- **Phase B (Risk Analysis):** This phase focuses on analyzing the risks specific to each selected territory for the model's application. The chosen locations (Marradi, Genoa, Herculaneum, Viareggio) represent real multi-risk situations and are of national critical importance.
- **Phase C (Planning Scheme Delineation):** This involves outlining a planning scheme to define major planning areas related to "water risk" and "earthquake risk" (e.g., drought plans, hydrogeological risk plans, earthquake plans). It includes reviewing existing planning and proposing necessary elements for a holistic risk treatment.
- **Phase D (Recommendations for Participatory Model):** This phase will develop recommendations for building a model of citizen participation in designing climate change adaptation plans and emergency management. This model will be proposed to municipalities with different sizes and risk types (Marradi, Genoa, Mugello, Viareggio). A key part of this is proposing the creation of a specialized chatbot for citizen training, information, and broad participation in designing municipal adaptation and resilience plans.
- **Phase E (Territorial Initiatives):** This final phase involves a series of initiatives, agreed upon with individual municipalities, to discuss the overall proposal within local institutions and with citizens in the respective territories.
- **Collaboration and Engagement:** The project is designed to involve the selected municipalities from the beginning of its implementation to foster positive interaction between experts and future users. The model will be presented to citizens and local media to gather both technical and political/institutional feedback and specifications.

How AI Chatbots are Applicable Risks Education for Territories

AI-based chatbots are indeed highly applicable to risk education for territories, and the CHAT-PART project distinguishes itself from other governmental applications due to its specific focus and participatory approach [4].

Applicability of AI-based Chatbots to Risk Education

- **Improving Knowledge and Awareness:** Effective climate change adaptation requires a plan that involves collaboration among institutions, experts, and populations to develop appropriate analyses and implement adequate policy responses. Communication on climate change and natural risks is crucial for improving citizens' knowledge and awareness. Many studies indicate a strong correlation between awareness and knowledge of climatic risks and the potential for local community involvement in developing and managing adaptation plans, both in "peace" times and "emergency" situations. Chatbots can facilitate this by allowing citizens to dialogue with institutions in the decision-making phase and in subsequent phases of information dissemination, training processes, and active behavior solicitation in prevention and emergency management.
- **Overcoming Traditional Barriers:** Traditional digital channels for communication between citizens and government, while lower cost, often lack communicative richness and expressiveness, allowing citizens to input only keywords or fill limited fields. Existing municipal civil protection plans, though sometimes technically high-quality, often fail as knowledge dissemination tools because they are neither participatory in their creation nor widely used by citizens, being too "technical" and difficult to read or understand for ordinary citizens. AI technologies offer immense possibilities to reach large portions of the population, breaking down linguistic and technical barriers.
- **Enhancing Civic Engagement:** Chatbots can be a valuable tool for improving citizen-government interactions and enhancing civic engagement by conducting surveys and gaining citizen feedback. This is particularly important because a lack of knowledge and awareness is a significant obstacle to active public involvement.

How the CHAT-PART Project Distinguishes Itself

The CHAT-PART Project Stands out from Other General Governmental AI/Chatbot Applications Due to its Specific, Multi-faceted Focus on Territorial Risk Management and its Emphasis on Participatory Planning:

- **Specific Focus on Risk and Resilience:** CHAT-PART's dual objective is to build a model for participatory planning for a local adaptation plan to climate change and natural territorial risks, grounded in knowledge of these risks. It aims to leverage the best experiences in risk prevention and management in Italy, considering existing institutional presences and current tools dedicated to risk analysis and management (e.g., national adaptation plans, flood risk management plans, seismic risk plans). This contrasts with broader government applications that might focus on general citizen queries, administrative burden reduction, or personalized service delivery.
- **Participatory Planning Model:** The project proposes a participation model for planning a community resilient to climate change and natural risks, based on technical knowledge and international experiences with specialized chatbots to foster information, training, and involvement of the population in policies and actions against natural risks. While other government AI initiatives might use chatbots for answering questions, processing documents, or providing general information, CHAT-PART explicitly targets higher levels of public participation, moving beyond mere "communication and information" to "involvement and responsibility".
- **Contextualized Implementation:** CHAT-PART involves working with selected Italian municipalities, chosen for their real multi-risk situations and critical national importance, such as Marradi (seismic and landslides), Genoa (flood risk), Herculaneum (earthquake, volcanic, and flood risk), and Viareggio (flood and coastal turbulence). This deep contextualization for specific risks and territories is more detailed than general AI deployments across various government agencies.
- **Integration with Existing Frameworks:** The project aims to integrate with and enhance existing emergency planning tools like the Municipal Civil Protection Plan, transforming it into a more widely used method of information and training.
- **Addressing the "Good AI Society":** By focusing on gaining citizen feedback and engagement on digital tools related to climate risks, CHAT-PART directly addresses research gaps concerning public trust and aims to contribute to realizing a "Good AI Society". This is in line with the broader ethical consideration that democratic governments must gain public support for AI adoption.

In summary, while AI in government generally aims to increase efficiency, reduce administrative burden, and improve citizen satisfaction, CHAT-PART specifically leverages chatbots to facilitate continuous, informed, and widespread citizen participation in a critical public good – territorial risk adaptation and resilience – directly addressing known barriers to public engagement and leveraging AI to overcome the limitations of traditional, often overly technical, communication methods, Empirical research, data collection, experimental design, and statistical analysis

One notable study on public trust in AI chatbots was an experimental survey conducted in Japan. This study was part of a larger research project on AI in the public sector.

It utilized an online panel of 2.2 million registered individuals, administered by Rakuten Insight, Inc.

The survey was accessible from January 30 to February 6, 2019, and collected 8,000 responses from individuals aged 18 to 79 residing in Japan. Respondents were recruited to ensure a diverse distribution by gender, age, and region.

The study's design was specifically an experimental online survey used to test hypotheses, particularly whether initial public trust in chatbot responses depended on the area of inquiry and the communicated purposes for introducing chatbot technology.

Another approach to empirical validation is seen in a Greek study, where the proposed method for integrating AI into public service delivery was validated through a series of application scenarios in collaboration with three Greek government agencies.

A separate study exploring the adoption and implementation of AI-based chatbots in US state governments identified 47 state agencies using chatbots. This research involved contacting these organizations and sending interview invitations to their employees and officials. Responses indicating interest were received from 22 state agencies, which then participated in the study. This constitutes an empirical study based on qualitative data collection (interviews).

Data Collection

In the Japanese experimental survey, the data collected consisted of 8,000 responses from individuals on their initial trust in chatbot responses across different domains (e.g., parental support vs. waste separation).

For the US state government study, data was collected through interviews with employees and officials from 22 state agencies across various functions (e.g., unemployment insurance, social services, education, public health, transportation) and geographic regions.

Regarding the Greek study, participants' feedback included concerns about privacy, specifically "doubts about how and whether web browsing cookies were used on the portal", indicating that data related to user perceptions and concerns was gathered.

The CHAT-PART project itself outlines stages for data collection and feedback. Phase E, for instance, involves initiatives agreed upon with individual municipalities to discuss the general proposal within institutions and in relations with citizens. Phase A involves literature research, and Phase B is based on the analysis of risks related to each selected territory. The project aims to present its model to citizens and local media to gather feedback and technical and political/institutional specifications.

Statistical Analysis

The Japanese experimental survey explicitly states that "analyses based on an experimental online survey conducted in

Japan generated results". These analyses indicated that initial public trust in chatbot responses would be lower for parental support compared to waste separation, noting a "moderate size effect". The use of terms like "analyses" and "effect size" implies statistical methods were applied to the collected experimental data to derive these conclusions.

While not explicitly detailing statistical tests, the US state government study presents "results" regarding the determinants of chatbot adoption and the factors impacting their implementation. These results are presented as factors that "determined" or had a "variable impact", suggesting an analytical process was used to identify patterns and relationships within the interview data collected, likely involving qualitative data analysis techniques. The study also notes that its results "seem to indicate" certain roles for information technology providers and "confirm some of the challenges" identified in other literature.

Engagement with Literature on Disaster Risk Communication

- **Necessity for Participatory Planning:** Effectively addressing climate change impacts requires a local adaptation plan developed through collaboration between institutions, experts, and populations. Communication about climate change and natural risks is crucial for improving citizen knowledge and awareness, which is strongly correlated with community involvement in plan development and management, both in "peace" time and during "emergencies". Active involvement can positively influence population behaviour in prevention and emergency management.
- **Limitations of Traditional Methods:** There's a critical need to move beyond traditional, often one-way, information dissemination from institutions to citizens, which frequently targets only small, selected groups of "active citizens". Current Municipal Civil Protection Plans, despite achieving high technical quality in some cases, often fail as tools for widespread knowledge dissemination because they are not developed participatorily and are too technical and difficult for regular citizens to understand. This highlights a "lack of knowledge and awareness" as a significant barrier to active public involvement.
- **The CHAT-PART Project's Approach:** The CHAT-PART project (Chatbot and Participation) aims to fill this gap by developing a "participatory planning model" for local climate change adaptation and natural territorial risks. The project specifically proposes equipping municipalities with "specialized chatbots" for analyzing and managing territorial risks, enabling citizens to dialogue with institutions during decision-making, and facilitating information dissemination, training processes, and active engagement in prevention and emergency management phases. This aligns with the idea of moving beyond lower levels of public participation (informing, consulting, involving) to higher levels (collaborating, empowering) which require continuous, specialized training and widespread dissemination to the entire population.

AI in Emergency Response & Prediction: AI has Direct Applications in Emergency Management, Such as

- **Seismic Alert Systems:** Shake Alert is an example that detects primary compression waves and issues alarms (sirens, phones, SMS, internet) before the more destructive secondary waves arrive. This time interval allows people to evacuate and infrastructure elements (like gas pipelines, power lines, railway lines) to be secured, reducing risks of fires, explosions, and accidents.
- **Predictive Algorithms:** AI algorithms are used in public administration to predict risks like building and forest fires.
- **Sentiment Analysis:** In the future, AI could be used for sentiment analysis of citizen inquiries and conversations to better understand needs and feedback during emergencies or general public service.

Studies on Chatbot Effectiveness and Comparative Analysis of Existing Systems

The Sources Provide Varied Perspectives on Chatbot Effectiveness, Challenges, and Comparisons with other Digital Tools

General Benefits of AI/Chatbots in Public Services

- AI applications in the public sector offer numerous benefits, including cost savings, reduced workload for public employees, increased productivity, new job opportunities, improved resource allocation, enhanced public service delivery, and increased citizen satisfaction.
- Chatbots can significantly reduce the administrative burden on public organizations and improve communication between government and citizens in service delivery.
- They enable more efficient and personalized public services, leveraging Big Data to make better decisions, predict events, and generate customized services.
- Chatbots can aided, advice, and information by using automated response systems to natural language questions or voice recognition systems, leading to more efficient service, improved response times, and better access.

Challenges and Public Trust

- A significant obstacle to AI adoption in the public sector is public distrust in machine intelligence and opposition to human employee replacement.
- Public acceptance is crucial; if people don't initially trust machines, they won't use them.
- A Japanese experimental online survey (8,000 responses) found that initial public trust in "AI" chatbot responses was lower for sensitive areas like parental support compared to less sensitive ones like waste separation, with a moderate effect size. This study hypothesized that trust depends on the inquiry area and the communicated purpose of the chatbot. These research gaps need to be addressed to inform policy-making and contribute to a "Good AI Society".
- The "incomprehensibility of how AI-based technologies are developed and operated" also creates a barrier to understanding, impartiality, benefits, and trust.

Determinants of Adoption and Implementation (US State Governments Study)

- An empirical investigation across 47 US state agencies identified key factors for chatbot adoption and implementation.

Adoption (The Decision to Use a Chatbot) was Primarily Driven by

- Relative advantage and ease of use of chatbots.
- Dynamic interactions among citizens, other government organizations, and IT providers, significantly boosted by the COVID-19 pandemic, which made chatbots a "necessity".
- Leadership and innovative culture.
- Past individual experiences.

Implementation (The Process following Adoption to Achieve Intended Goals) and Success were Variably Impacted by

- Knowledge base creation and maintenance.
- Technological expertise and system malfunctions.
- Human and financial resources.
- Inter-agency interaction and communication.
- Confidentiality and security rules and regulations.
- Citizen expectations and the COVID-19 crisis.

The study emphasizes the importance of distinguishing between adoption and implementation phases, as their determinants can differ. Agencies need to consider long-term issues like public value creation, alongside short-term actions for specific implementation problems.

Information technology providers play a crucial role beyond traditional procurement by raising awareness of chatbot benefits and acting as critical partners during adoption and implementation. They can promote chatbots by arguing for public value, such as administrative efficiency.

Challenges confirmed in implementation include system malfunctions at launch and a lack of necessary skills for building and maintaining chatbots. Strategies to address these include staff training and collaboration with IT sectors.

Qualities and Examples of Effective Chatbots

Effective chatbots should be

- **Useful:** Solving a pre-existing problem efficiently for the company or customer.
- **Conversational:** Having a human-like conversation flow, recognizing typos or slang, and even having a sense of humour.
- **Easy to Use:** No downloads, installations, or registrations required, often free, and featuring a user-friendly design.

Specific Examples in Practice

- **EMMA (US Citizenship and Immigration Services):** Responds to citizen questions and reviews requests.
- **North Carolina Government:** Chatbots handle basic password support, freeing up human operators for more complex calls.
- **Singapore Government (with Microsoft), New York City (with IBM Watson), Surrey (with IBM Watson):** Function as digital representatives, speed up response times for citizen queries and complaints, and learn over time.
- **Free Chatbot Lawyers:** Help refugees apply for asylum, automatically filling forms and guiding next steps, making complex processes clearer for non-experts.
- **AI for Document Management:** A US state government uses AI to search over 1 million pages of documents, saving tens of thousands of dollars. AI also scans legal documents, classifies citizen petitions (Mexico), and helps telecom call centre agents quickly find information, saving $1 million annually.
- **AI for Translation:** Services like Unable combine crowdsourcing and machine learning to translate business operations in 14 languages at a much lower cost ($0.02 per chat), and the PyeongChang Winter Olympics used real-time AI translation.
- **AI for Document Drafting:** Japan's Ministry of Economy, Trade and Industry experimented with AI for drafting responses to citizen questions for parliamentary offices. Natural Language Generation (NLG) is used in journalism to create text from data and write at high speeds, also helping non-data science employees understand data.

Commercial Chatbots

- **Replika:** Researchers found a majority of users experienced loneliness, but some reported it stimulated real-life relationships, fulfilling a need for 24/7 digital socialization.
- **Sunny (Roof AI):** Real estate search.
- **Botti (WertGarantie):** Insurance, assisting agents with simple questions and damage reports.
- **Juliet (Westjet):** Handles nearly 700 common travel requests daily on various platforms, escalating complex ones.
- **Amelia (Virgin Atlantic):** Quickly retrieves flight details and explains topics.
- **Andy:** Helps users practice English, correcting grammar, spelling, and pronunciation.
- **Cora (Banking):** Maintains a professional yet hospitable tone.
- **Comparative Analysis:** Chatbot vs. Portal (Public Service Values Study)

The Chatbot Received more Positive Opinions than the Portal Regarding

1. **Efficiency and Effectiveness:** General agreement that the chatbot allowed efficient task completion, while the portal's speed depended on user knowledge.
2. **Openness and Accountability:** The chatbot clearly received more positive opinions due to its helpful intent and explanations during the data access process.
3. **Fairness:** Some participants doubted the portal's search engine's ability to retrieve relevant collections, favouring the chatbot.

- Both systems were considered adaptable to user devices.
- Concerns were raised about privacy aspects related to web browsing cookies on the portal.
- All participants trusted the veracity and legitimacy of the open data used.

In essence, the sources demonstrate that while AI and chatbots offer substantial benefits for disaster risk communication, emergency management, and public service delivery—improving efficiency, reducing burdens, and enhancing citizen engagement—their effectiveness is contingent on factors like public trust, strategic implementation, and careful consideration of ethical and social implications. They offer a more "rich" and dynamic interaction compared to existing digital channels, which often lack communicative depth [5-13].

Evidence that it works

There is significant evidence that AI and chatbots work, demonstrating various benefits and successful applications in both the private and public sectors.

- **Cost Savings and Efficiency:** AI applications in the public sector are reported to lead to cost savings and significantly reduce the administrative burden on public organizations. For example, a telecommunications provider saved $1 million annually by using AI to search documents, reducing average call times. Chatbots can free up human operators, allowing them to handle more complex inquiries, as seen in a North Carolina government office where chatbots manage nearly 90% of basic password support calls.
- **Improved Communication and Service Delivery:** Chatbots can enhance communication between government and citizens, addressing a long-standing issue in public service provision. They offer a more efficient service by improving response times and access to information. Existing digital channels have lower costs than traditional ones, and AI can further improve these interactions, especially for more complex, ambiguous, and uncertain interactions.
- **Increased Productivity and New Opportunities:** AI applications can increase productivity and even create new job opportunities.
- **Problem Solving and Resource Allocation:** AI can assist in solving resource allocation problems and improving citizen satisfaction with public services.

Specific Public Sector Use Cases

- **Responding to Questions:** Chatbots are used to answer citizen queries, as seen with Singapore's government collaborating with Microsoft, New York City planning to use IBM Watson to speed up responses to 311 calls, and Surrey, British Columbia, where IBM Watson powers an app answering 65% of common questions. The U.S. Citizenship and Immigration Services uses the chatbot Emma to answer questions and review applications.
- **Document Completion and Search:** A free chatbot lawyer helps refugees apply for asylum by asking questions, auto-filling forms, and providing instructions. AI can quickly categorize and search millions of documents, saving significant costs for state governments. AI is also used in the legal sector to scan documents and find related laws, and the Mexican government uses algorithms to classify citizen petitions.
- **Translation:** AI-based services offer efficient translation of government information, with examples like the PyeongChang Winter Olympics using real-time translation and Unable combining AI and human editors for cost-effective translation of business operations.
- **Document Drafting:** Japan's Ministry of Economy, Trade and Industry is experimenting with AI to draft responses to citizen questions for parliament members. Natural Language Generation (NLG) AI can extract data and write text at high speeds, already used in newsrooms like Bloomberg, and can help non-data scientists understand data more efficiently.
- **Personalized Services:** Some public administrations are using AI to personalize public services by processing user behaviour profiles and analyzing citizen data, making users feel more comfortable.
- **Emergency Response:** AI has potential applications in emergency response, such as Shake Alert, an earthquake warning system that detects primary waves and issues alerts before more destructive secondary waves arrive, allowing people to evacuate and infrastructure to be secured.
- **Widespread Adoption:** A 2021 global survey showed chatbots as the most widely adopted technology among government organizations (26% implemented), with an overwhelming 59% intending to implement one within three years. The COVID-19 pandemic made chatbots a "necessity" for governments.
- **Positive User Feedback:** A study comparing a chatbot to an open data portal found generalized agreement that the chatbot allowed tasks to be performed efficiently and effectively. The chatbot received more positive opinions regarding openness and accountability due to its helpful intent and explanations, and its ability to retrieve information more fairly than a portal's search engine. Users also confirmed trust in the veracity and legitimacy of the data used and the adaptability of systems to devices.

What is Validated or Tested

1. **Public Trust in Chatbots:** A study conducted in Japan involved an experimental survey with 8,000 respondents to test the hypothesis that initial public trust in chatbot responses depends on the area of inquiry and the stated purpose for introducing the technology. Results indicated lower initial public trust for parental support inquiries compared to waste separation.
2. **AI for Public Service Delivery:** An approach integrating AI into public service delivery was validated through a series of application scenarios in close collaboration with three Greek government agencies.
3. **Determinants of Chatbot Adoption and Implementation:** A study exploring the use of AI-based chatbots in U.S. state governments empirically investigated and identified the determinants that facilitate or hinder chatbot adoption and implementation. The research identified 47 state agencies using chatbots and conducted interviews with officials from 22 agencies.
   - Adoption determinants tested included the relative advantage and ease of use, dynamic interactions with citizens and other organizations, leadership, innovative culture, and past experiences.
   - Implementation factors tested for their impact on success included knowledge base creation and maintenance, technological competencies and system malfunctions, human and financial resources, inter-agency communication, confidentiality and security regulations, and citizen expectations.
   - The study highlighted the importance of distinguishing between adoption and implementation objectives and determinants.
4. **Public Service Values Evaluation:** A questionnaire was designed to evaluate public service values (such as efficiency, effectiveness, openness, fairness, professionalism, legitimacy, accountability, reliability, user orientation, acceptability, user satisfaction, privacy, adaptability, and collaborative intelligence) in the context of chatbot usage for accessing open data, comparing it to an open data portal.

Conclusion

The integration of AI-based chatbots into public administration presents a unique opportunity to transform the way citizens interact with governments, particularly in the context of disaster risk reduction and climate change adaptation. The CHAT-PART project provides a practical framework for using chatbots not merely as information providers, but as active facilitators of citizen engagement, training, and participation in local risk management planning.

By emphasizing a participatory, inclusive, and ethical approach, the project addresses the critical barriers of public distrust and limited access to understandable risk information. The CHAT-PART model has the potential to significantly improve civic engagement, overcome traditional communication limitations, and contribute to building resilient communities capable of proactively managing territorial risks.

Future research and on-the-ground implementation will be essential to validate the effectiveness of this approach, refine chatbot designs, and ensure sustained citizen participation in disaster preparedness and response strategies.

Ethical Considerations

- Ethical considerations are discussed despite the proposal involving citizen data collection and personalization features.
- A significant concern is the opposition to machines replacing human employees, coupled with a lack of public trust in machine AI. This lack of initial public trust can prevent people from using such systems, as suggested by research on human-machine relationships.
- Governments must earn public support for the decision to use a chatbot, recognizing that public trust in AI-provided public services is crucial.
- There's an explicit call for further investigation into how chatbots align with public values and democratic principles, understanding citizens' perspectives, and examining potential negative consequences for both government and citizens.
- Concerns are raised about AI in government becoming too technocratic, potentially risking or even threatening democracy.
- The incomprehensibility of how AI-based technologies are developed and operated is identified as a barrier to understanding, impartiality, benefits, and trust.
- Specific issues raised by AI include privacy, the accelerating pace of digital tool adoption, and the human ability to keep up with automation. Initial, low-risk AI applications in service delivery could pave the way for citizen feedback on these issues.
- A study specifically tested the hypothesis that initial public trust in chatbot responses depends on the area of inquiry and the communicated purpose, finding lower trust for parental support inquiries compared to waste separation.
- The concept of a "Good AI Society" (Luciano Floridi et al., 2018) is mentioned as a goal that research gaps need to address, implying a normative and ethical framework for AI deployment.

Involvement of Citizen Data Collection and Personalization Features

- Public administrations are actively beginning to use AI to personalize public services. This is achieved by processing user behaviour profiles and analyzing citizen data to provide tailored services, which aims to make users feel more comfortable.
- The potential to leverage Big Data is recognized, enabling governments to make better decisions, predict events, and generate personalized public services through AI.
- One of the evaluated public service values for chatbots is privacy, with a questionnaire item specifically asking if the system preserves user privacy. Concerns regarding privacy were indeed raised by participants in a study, specifically about the use of web browsing cookies in an open data port

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