AI Adoption in Public Services: Competency Gaps*

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Abstract

As AI becomes increasingly integrated into public sector services, identifying the professional profiles and competencies necessary for its responsible implementation has become a critical priority. This study investigates the specific skills, knowledge areas, and professional attributes required for the ethical and effective deployment of AI in public services. Drawing on empirical insights from an expert workshop and follow-up interviews, we propose a competency framework that emphasizes not only technical expertise but also policy, legal, and ethical dimensions. Our findings contribute to ongoing debates on workforce preparedness and educational program design for AI governance in both the public and private sectors.

Keywords

AI adoption, responsible AI, competency framework, expert workshop

1. Introduction

In recent years, organizations across the public and private sectors have increasingly leveraged AI to address complex societal problems. However, this accelerated adoption raises critical challenges regarding the human capital needed to ensure that AI is responsibly integrated into public services. Specifically, it prompts a closer examination of the competencies required by professionals to navigate technological, ethical, and institutional complexities, and of the educational frameworks necessary to prepare them effectively. The objective of this study is to develop a foundational framework for a curriculum or training program dedicated to preparing professionals for the responsible adoption of artificial intelligence (AI) in the public sector. Specifically, we aim to identify and analyze key societal challenges and barriers associated with AI implementation, and, based on this analysis, to articulate the interdisciplinary competencies necessary to ensure that AI technologies are deployed ethically, inclusively, and effectively. Our research is guided by three main research questions: RQ1: What societal challenges and barriers arise in AI adoption within public services? RQ2: What interdisciplinary competencies are needed to address these barriers responsibly? RQ3: How can these competencies inform the development of educational and training programs?

2. Methodology and results

To explore these questions, a participatory workshop was organized involving a total of 55 stakeholders - 25 participating offline and 30 online. Participants represented a diverse set of profiles, including public sector employees (40%), technology providers and AI developers (20%), and academics representatives (40%). The workshop methodology combined semi-structured brainstorming sessions with group discussions. Participants were divided into working groups and assigned real-world case studies of

Proceedings EGOV-CeDEM-ePart conference, August 31 - September 4, 2025, University for Continuing Education, Krems, Austria.
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AI implementation in public sector contexts. Each group was tasked with: (1) Identifying responsible AI challenges associated with their assigned case (e.g. AI-driven diagnostic tools in healthcare, implementing predictive analytics within smart city infrastructures, AI-driven translation); (2) Mapping the main stakeholders and ownership of tasks; (3) Analyzing barriers and risks to implementation; (4) Brainstorming the interdisciplinary competencies needed to address these challenges.

The workshop discussions revealed several recurring societal challenges that cut across different use cases: algorithmic bias, lack of transparency, ethical risks in automated decision-making, insufficient human oversight, and citizen distrust. Across these challenges, participants emphasized that technical capacity alone is insufficient; effective and responsible AI adoption requires a broader set of interdisciplinary competencies. The experts workshop also identified that a clear gap exists in AI literacy and governance skills among current staff in public services To address the identified barriers responsibly, two complementary dimensions of competencies were identified. The first dimension, managerial competencies, focuses on strategic, organizational, and innovation-related capacities necessary for leading AI adoption in complex public sector environments. The second dimension, policy, legal, and ethical competencies, emphasizes the ability to ensure that AI technologies are aligned with legal frameworks, ethical standards, and societal values. Together, these dimensions provide a holistic foundation for the responsible integration of AI into public services.

3. Discussion and conclusion

The findings demonstrate that embedding AI responsibly into public services demands more than strengthening technical expertise. It calls for cultivating a new professional profile: public sector leaders and managers equipped with an integrated set of technical, managerial, ethical, and legal competencies. A critical insight from the workshop is the centrality of the Human-in-the-Loop AI principle, which ensures that human judgment, ethical oversight, and public accountability remain present throughout the AI system lifecycle - from design to deployment and evaluation. Furthermore, participants emphasized that education and training programs must go beyond traditional technical curricula, adopting interdisciplinary and challenge-based learning formats. Curricula should integrate technical modules with ethics, governance, regulatory frameworks, and human-centered design, cultivating professionals capable of navigating complex socio-technical ecosystems. The study thus provides a preliminary competency framework to guide the design of education programs fostering Responsible AI innovation in public sector services. Our research underscores the urgent need for structured, interdisciplinary education to prepare the public sector workforce for AI adoption. Future initiatives must ensure that human agency, ethical reflection, and regulatory awareness remain central pillars of AI integration efforts. Further validation of the competency framework will be pursued through pilot training programs and longitudinal studies on professional outcomes.

Acknowledgments

This work was supported by the AI Policy Lab at the Department of Computing Science, Umeå University, and by the European Union through the Erasmus+ Programme under the project AICOSERV (AI Technologies for Sustainable Public Service Co-Creation), Project No. 101180346, funded by the European Education and Culture Executive Agency (EACEA).

Declaration on Generative AI

During the preparation of this work, the authors used ChatGPT for spell checking. After using this service, the authors reviewed and edited the content and take full responsibility for the publication's content.