International Journal of
Entrepreneurship and Project Management
(IJEPM)

Domain Investigations and Critical Review of Stakeholder Engagement in AI-Enabled Digital Transformation Program through the CPMAI Lens and PMI

Fatima Mohamed Al Mandoos, Fatima Kazim and Fatima Abdulla

IPRJB
INTERNATIONAL PEER REVIEWED JOURNAL AND BOOK PUBLISHING

International Journal of Entrepreneurship and Project Management
ISSN 2518-2838(Online)
Vol.11, Issue 1, No.1. pp 1 - 16, 2026

www.iprjb.org

Domain Investigations and Critical Review of Stakeholder Engagement in AI-Enabled Digital Transformation Program through the CPMAI Lens and PMI

[1*]Fatima Mohamed Al Mandoos
Hamdan Bin Mohammed Smart University
[2]Fatima Kazim
Hamdan Bin Mohammed Smart University
[3]Fatima Abdulla
Hamdan Bin Mohammed Smart University

Article History

Received 7th February 2026

Received in Revised Form 11th March 2026

Accepted 9th April 2026

How to cite in APA format:

Al Mandoos, F., Kazim, F., & Abdulla, F. (2026). Domain Investigations and Critical Review of Stakeholder Engagement in AI-Enabled Digital Transformation Program through the CPMAI Lens and PMI. *International Journal of Entrepreneurship and Project Management*, *11*(1), 1–16. https://doi.org/10.47604/ijepm.3709

Abstract

Purpose: The aim of the research is to analyse and evaluate the concept of stakeholder engagement in public sector programs powered by AI and to identify the ways of its improvement through CPMAI and PMI principles.

Methodology: The use of a qualitative multiple case study design took place, with six programs under study, along with the five semi-structured interviews with professionals. Patterns as well as best practices were identified through cross-case comparison.

Findings: The barriers to stakeholder engagement include one-way communication, marginalization of some groups of stakeholders, poor ethical disclosure, and unrestrategic use of AI. Although AI will bring higher efficiency, it does not necessarily increase participatory governance. The innovative frameworks such as the Stakeholder Engagement Intelligence Framework (SEIF) may combine the predictive, adaptive, and ethically governed engagement.

Unique Contribution to Theory, Practice and Policy: The merger of AI and CPMAI and PMI principles will enhance trust, involvement, and policy responsiveness, providing a repeatable technique for the use of digital improvements in the public sector.

Keywords: *Artificial Intelligence Governance, Stakeholder Engagement, Digital Transformation, Public Sector Innovation, CPMAI Framework, Project Management Institute (PMI), Smart Governance*

JEL Classification Codes: *O33, H83, D83*

INTRODUCTION

Artificial intelligence (AI) is increasing followers in the programmes of the public sector to improve responsiveness, automate services, and enhance decision-making (OECD, 2025). Nevertheless, the implementation of AI in government also requires substantial interaction with other stakeholders, such as citizens, civil society organisations, frontline staff and partners in the business, to provide a level of transparency, inclusivity, and legitimacy (Heymans & Heyman, 2024). According to recent studies, the role of stakeholder trust and involvement in the success of digital government transformation with the help of AI is mediating, i.e., automated services and AI-based decision support increase trust and participation in their turn, which subsequently lead to the achievement of the outcomes of transformation (Bokhari *et al*., 2025).

Nonetheless, stakeholder engagement in AI-based governance still has several gaps. Research reveals that an unequal balance of power, a narrow form of deliberation during the early phases of AI application, and ineffective interfaces as a voice of stakeholders can hinder the participation of the inclusive process (Kawakami *et al*., 2024). Simultaneously, the level of people trusting AI and the AI application by the government is declining worldwide, which accentuates the need to establish a sturdy engagement process (Bullock *et al*., 2025). As such, equitable, transparent and evolutionary stakeholder engagement in AI-driven public transformation programmes is not merely a technical problem, but it is a governmental necessity.

Problem Statement

With the growing technology, stakeholder engagement in public sector AI programs is always a challenge. Local projects exhibit an excellent institutional foundation and digital architecture that have a shortcoming in the one-way communication channel, insufficient inclusivity of marginalised groups, and the existence of weak feedback cycles. On the same note, the mechanisms of consultativity or participation can be identified and seen in global initiatives, but there are still loopholes in predictive engagement, ethical transparency, and long-term viability (Aragon *et al*., 2017; Sipahi & Saayi, 2024). These difficulties demonstrate that even digital transformation would not necessarily help in realising participatory, accountable, or inclusive governance.

Research Aim & Objectives

Aim

The aim of the research is to analyse and evaluate the concept of stakeholder engagement in public sector programs powered by AI and to identify the ways of its improvement through CPMAI and PMI principles.

Objectives:

- To identify the main problems and weaknesses in the stakeholder engagement process.
- To explore the potential of CPMAI and PMI principles to fill these gaps.
- To understand the views of stakeholders about the role of AI in the areas of engagement, inclusivity, and trust.
- To create a more developed conceptual framework for AI-supported stakeholder engagement.

Research Questions

RQ. 1 What are the main difficulties and the shortcomings in the process of the stakeholders' involvement in the public sector programs which are driven by AI
RQ. 2 In which ways do the principles of CPMAI and PMI indicate the best practices for stakeholder engagement in these programs?
RQ. 3 What is the opinion of the stakeholders concerning the impact of AI on engagement, inclusivity and trust in public programs?

Research Scope

The study will be concerned with the AI-based stakeholder engagement in the chosen local and international contexts. Public programs. This paper discusses how the CPMAI and PMI concepts can tackle the gap in engagement, focusing on adaptive, ethical and inclusive practices.

LITERATURE REVIEW

The use of artificial intelligence (AI) as an essential enabler in establishing digital transformation in the government has been evident over the years (OECD, 2025). The opportunities of AI include the possibility to automate repetitive procedures, make predictions, and increase the level of data-driven governance. Nonetheless, the successful implementation of AI in government programs is also interconnected with the proper stakeholder engagement. In the absence of a structured stakeholder engagement, AI projects are likely to fail to see admiration, diminished trust, and unfair results.

Stakeholder Engagement in AI-Driven Public Programs

Stakeholder engagement is a multidimensional process which involves communication, participation, feedback, and trust-building (Chow & Leiringer, 2020). Stakeholder engagement is closely related to stakeholder theory, which proposes that organisations ought to identify and manage the interests of everyone or groups that are impacted by their operations (Freeman & McVea, 2005). The stakeholder theory stresses transparency, participation and accountability as key factors of governance. Within the framework of the digital transformation under the condition of AI-enabling, emphasizes the need to address the inclusive and responsive nature of the engagement processes so that the technological innovations could be consistent with the social expectations and trust. AI-based initiatives are especially hard to engage with, as technologies are complicated, there is an ethical concern, and the possibility of unintended side effects. Experiments demonstrate that traditional methods of stakeholder management, which are usually confined to upper-down reporting and consultation, do not reflect the dynamic demands of the engaged parties, nor do they incorporate their feedback into the process of introducing AI (Kawakami *et al*., 2024).

To develop effective engagement, it is necessary to have adaptive, iterative, and transparent mechanisms that enable stakeholders to know, contribute to and shape AI-driven services. As an illustration, the credibility of government AI efforts is predicted through the notions of fairness, accountability, and inclusiveness (Bokhari *et al*., 2025; Bullock *et al*., 2025). In areas where they are poor in these aspects, the possibility of the citizens adopting digital services is reduced, and the AI systems may strengthen existing disparities.

Challenges in Current Stakeholder Engagement

Studies recognise a number of common deficiencies in all stakeholder engagement of AI-based initiatives in the public. To begin with, communication gaps impair two-directional communication, and in many cases, it becomes a reporting dashboard or regular surveys (Sipahi & Saayi, 2024). Secondly, insufficient inclusiveness is still an issue because discriminated or digitally marginalised groups are often left out of decision-making (Aragon *et al*., 2017). Thirdly, AI decision-making lacks ethical transparency in many cases, which destabilises trust and legitimacy. Absence of explainable artificial intelligence (XAI) protocols, insufficient data management, and insufficient accountability mechanisms are some of the factors that bring scepticism among stakeholders (Heymans & Heyman, 2024). Lastly, predictive engagement gaps occur when systems involving AI are applied in an analytic mode instead of being anticipatory in terms of predicting stakeholder needs and enhancing interactions (Kawakami *et al*., 2024).

These have been issues that have been manifested in both local and international efforts. In the case of Smart Dubai Pulse and Happiness Agenda initiatives, the most complex data infrastructure with underwhelming participation strategies is provided, versus the robust regulatory choices that are just starting to formulate policies without significant involvement of citizens in their creation (OECD, 2025; Sipahi & Saayi, 2024). The example of Barcelona and its platform, Decidim, is an illustration of being receptive to the chances of inclusive participation but fails to scale and maintain a long-term interest (Aragon *et al*., 2017). All these cases point to the importance of organised, AI-powered structures that could systematically increase the involvement of stakeholders.

Integrating AI and Project Management Principles

The latest sources point to the prospects of the integration of AI lifecycle models and traditional project management principles that enhance the results of engagement. The Cognitive Project Management of Artificial Intelligence (CPMAI) is an iterative method that involves the preparation of data, AI modelling, implementation, and lifelong ethical learning (Batool *et al*., 2025). The correspondence of CPMAI to Project Management Institute (PMI) standards of stakeholder engagement will enable governments to establish adaptive, evidence-based, and open methods to incorporate stakeholder feedback into AI governance (PMI, 2021).

Research shows that predictive analytics, natural language processing (NLP) and AI-driven dashboards have the potential to turn the input of stakeholders into actionable insights to facilitate inclusivity, transparency and trust (Knox *et al*., 2025). Indicatively, sentiment analysis of citizen feedback (with the help of AI) can highlight underrepresented groups and detect new issue threats, thus in advance, leading to proactive action. AI could serve to act as an analytic and participative tool rather than a black-box system due to such technological features and systematic PMO management. The research on AI governance and digital transformation has progressed, yet current studies still concentrate on how technologies are used and which governance systems exist because they lack studies about stakeholder engagement methods. The current situation shows that there is no connection between AI lifecycle frameworks and project management standards, which hinders organizations from achieving their goals through inclusive and adaptive and ethical

stakeholder participation. The gap requires a theoretically founded framework, which the study accomplishes through the creation of SEIF.

Theoretical Framework

The research utilizes Stakeholder Theory (Freeman & McVea 2005) which requires organizations to identify stakeholders and manage their interests through inclusive, transparent, and accountable methods. The theory demonstrates its significance through AI-enabled public sector programs because it identifies the necessity of participatory engagement and trust-based engagement methods. Stakeholder theory demonstrates that governments must maintain ongoing relationships with stakeholders to achieve proper technological development which meets public needs. The theory fails to operate within AI-driven environments because it lacks solutions for algorithmic opacity and data bias and predictive and adaptive engagement systems. The study develops stakeholder theory through combining CPMAI and PMI principles with stakeholder theory to create a new framework. The Stakeholder Engagement Intelligence Framework (SEIF) development process uses predictive analytics and adaptive feedback loops and ethical oversight through this integrated approach. The study advances stakeholder theory through its alignment with AI-enabled digital transformation which exhibits both dynamic and complex characteristics.

Conceptual Framework

The Stakeholder Engagement Intelligence Framework (SEIF) aims to apply the Cognitive Project Management for Artificial Intelligence (CPMAI) framework to the Project Management Office (PMO) environment and develop a structured AI-based model of stakeholder engagement. SEIF integrates the iterative AI lifecycle of CPMAI with the PMI performance areas of engagement to turn the static communication into an adaptive and data-driven feedback system (PMI, 2021). This model is supposed to reinforce openness, inclusiveness, and trust between the stakeholders in digital transformation procedures.

The SEIF framework consists of five interrelated components, namely, the inputs, the processes, the tools, the outputs, and the outcomes. All these aspects create a holistic feedback ecosystem that allows responsible AI-supported stakeholder management in program management offices (PMOs).

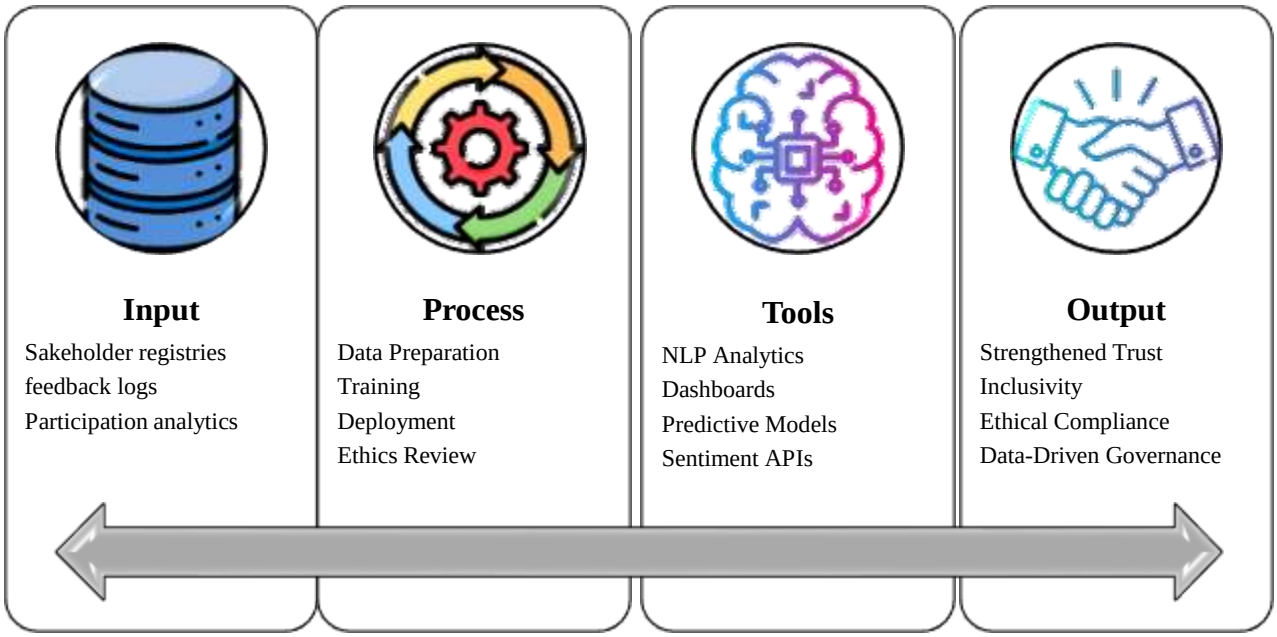

Figure 1: SIEF Integrating CPMAI Stages within PMO Governance for AI-Enabled Stakeholder Management

METHODOLOGY

The research uses a qualitative multiple case study method to study how stakeholders participate in AI-powered public programs. The six case studies were conducted together with five semi-structured interviews, using purposive sampling to select participants. The data is collected through interviews and secondary sources which included policy reports and academic literature. The stiudy used thematic analysis to discover important patterns which related to engagement and inclusivity and trust.

Research Design

The research utilised a qualitative research design, which is suitable to investigate the problem of interest of intricate phenomena, stakeholder engagement in AI-driven public programs (Creswell & Creswell, 2018). The multiple case study methodology is used to analyse six public sector programs, two local ones in Dubai, another local initiative, two international ones and one global one. In such a way, the analysis of the role of governance structures, AI implementation, and engagement strategies in various administrative and cultural settings can be performed in a thorough manner (Yin, 2018). With both local and global cases, cross-case comparison can be done, pointing to the similarities of challenges, best practices, and lessons learned.

Sampling and Participants

In this study, purposive sampling was employed to choose participants who had the necessary knowledge or experience in digital governance, control over AI applications and stakeholder management. Five semi-structured interviews were conducted with the professionals working at the government agencies, civil society organisations and consulting companies related to AI-

enabled public programs. This primary data gathering is supplemented by secondary data in the form of official project reports, policy papers and literature reviews in peer-reviewed journals on the chosen case studies.

Data Collection

Data was gathered through semi-structured interviews and cross-case document reviews. The interviews were conducted that allowed to bring out the participants' opinions on stakeholder engagement in AI programs. The secondary data includes official reports, program evaluations, and an academic review of the six programs, all of which provide further context and allow the insights of the interviews to be verified. The use of both primary and secondary sources yields very strong evidence-based results and reduces bias to a minimum (Saunders *et al*., 2023).

Data Analysis Techniques

The qualitative data were analysed through thematic coding with the framework suggested by Braun & Clarke (2019). Transcripts and documents of interviews were evaluated multiple times to discover the recurrence patterns, themes, and shortcomings in stakeholder involvement practices. Manual coding presented a chance to interpret the data contextually and thus, all six case studies could be compared which helped to established some best practices of implications and areas of improvement (Saldana, 2021).

Ethical Considerations

Ethics were highly observed during the study. Participants were given informed consent, and their anonymity and confidentiality were guaranteed. All the data were safely stored and sensitive information anonymised to preserve the identity of the participants. The references to the sources of secondary data were listed correctly, which proves the integrity of academic research and compliance with the ethical principles of research (Bryman, 2016).

RESULTS

Theme 1

Communication Gaps

The participants emphasised that one of the common obstacles is communication, and most of the interaction is carried out in only one direction using dashboards, surveys or information updates. This dynamic was explained by the Participant who said:

> *"People send feedback, but they can hardly notice the outcome. It has the effect of a single-direction flow."*

This was curtailed by the absence of two-way, iterative communication, making the stakeholders less confident about the process. This trend resembles issues present in smart governance literature, as much of the effort in both data collection and engagement mechanisms is frequently focused on the former (Albino *et al*., 2015; Bryson *et al*., 2014).

Inclusivity Issues

All respondents admitted that less digitally literate or even marginalised communities are still underrepresented. One of the participants said:

"People who are already familiar with digital tools are mostly the ones who find the time to speak to us. Others just do not get involved."

Some of the major contributors were the digital divides and unequal access to technologies of participation. These results correspond to the criticism of smart city engagement models being a great way to unintentionally favour digitally empowered populations (Capdevila & Zarlenga, 2015; Cardullo & Kitchin, 2019).

Ethical Transparency

According to the participants, the explanation and ethical supervision in AI-based engagement procedures are a matter of concern. The absence of clear XAI protocols created distrust where the results of the algorithm were employed to make decisions with the general population. One of the participants noted:

"It can happen that sometimes we do not understand how the AI came to its conclusion, so how then can we defend it to stakeholders?"

The literature on global AI governance has pointed out the conflicting views and the need for transparency, accountability, and justice in AI systems (Floridi *et al*., 2018; Jobin *et al*., 2019). Some respondents associated these issues with more general data accountability gaps in different departments.

Predictive Engagement Gaps

Although AI tools are available in certain processes, the participants noted that the interaction is mostly reactive. The use of AI systems was not always intended to predict the changing needs of the population. According to Participant:

"The systems assist when there are responses returned, but it does not enable them to speculate on future needs of the people."

This weakness minimises proactive interaction and cuts off the potential of AI, which is strategic. International literature also indicates that predictive analytics within public engagement is not an advanced field, and it is repeatedly hampered by data issues and governmental restrictions (Tan & Taeihagh, 2020; Tumpa & Naeni, 2025).

Theme 2

Trust and Confidence in AI

The participants had diverse perceptions regarding trusting AI-enabled processes. The component of transparency, clear rationality of decisions and an illusion of the neutrality of AI-generated findings were linked to trust. As the Participant stated:

"There is no reason why, unless we are aware of how AI functions, the stakeholders will trust it."

This is indicative of general conclusions that trust is the keystone of AI governance structures (OECD, 2023).

Perception of Expressed Gains of AI Implementation

Notwithstanding doubts, respondents recognised a great prospect. AI was interpreted as a solution that has the potential to increase productivity, eliminate numerous repetitive operations, and offer real-time data about the sentiments of the population. Participant noted:

> *"AI assists us in classifying feedback as fast as possible. It makes us save a good deal of handwork."*

These views can be correlated with the studies that also prove the effectiveness of AI in facilitating decision-making and making it more responsive (Calzada, 2018; Tumpa & Naeni, 2025).

Concerns and Limitations

There were fears that revolved around the risks of ethical concerns, absence of inclusiveness and potentiality of biased algorithmic inferences. A common remark among participants was that AI is a black box, which is to say, there is a lack of understanding of the inner logic of AI. Participant explained it in the following way:

> *"It would appear that the system is chosen by itself, and we just do not know the reasons why."*

These observations reflect a global criticism of the necessity of equal, open, and participatory AI applications in the work of the state (Floridi *et al*., 2018; Jobin *et al*., 2019).

Feedback regarding Engagement Mechanisms

The stakeholders mentioned that they were more willing to engage in cases when engagement platforms were transparent, dynamic, and directly related to actual outcomes. According to Participant:

> *"People will get involved when they perceive change and when they get informed of the process of making decisions."*

This supports the idea that the quality of engagement is enhanced when the mechanisms are geared towards being inclusive, iterative, and well-governed, which is in line with the perspectives of public value governance (Bryson *et al*., 2014).

Discussion

Summary of Findings

Table 1: Summary of Findings

Main Theme	Sub-Themes	Interview Insights (5 participants)	Cross-Case Insights (6 Programs)	Overall Interpretation
Theme 1: Barriers & Challenges in Stakeholder Engagement	Communication Gaps	Engagement is mostly one-directional; dashboards and surveys dominate. Stakeholders do not see outcomes of their input.	Dubai Pulse, Singapore Smart Nation, and Abu Dhabi SG show top-down communication with limited feedback loops.	Governments excel in collecting data but lack *iterative, two-way engagement.*
	Inclusivity Issues	Digitally literate groups engage more; marginalised or low-tech populations are excluded.	Digital-first initiatives (Happiness Agenda, Decidim Barcelona) unintentionally sideline non-digital groups.	Inclusivity requires *intentional design*, not just digital infrastructure.
	Ethical Transparency	Participants cannot explain AI decisions; the lack of XAI reduces trust.	Estonia's e-Governance & Smart Nation face transparency concerns despite mature digital systems.	Ethical transparency must be embedded in AI governance.
	Predictive Engagement Gaps	AI tools are used reactively; no prediction of stakeholder needs.	Predictive engagement remains underdeveloped in the Dubai Pulse & Happiness Agenda.	AI potential is underused for *anticipatory governance*.
Theme 2: Stakeholder Perceptions of AI in Engagement	Trust & Confidence in AI	Trust depends on clarity, fairness, and transparent AI decision-making.	Global trend: declining trust in government AI systems.	Trust-building is central to AI-enabled transformation.
	Perceived Benefits	Efficiency, automation, fast classification of feedback, and real-time insights.	Seen in Singapore Smart Nation & Estonia's data platforms.	AI enhances operational capacity but not necessarily participation.
	Concerns & Limitations	Ethical risks, bias, and lack of explainability; AI is seen as a "black box."	Similar concerns are documented in global AI ethics literature (Floridi, Jobin).	Efficiency without fairness undermines legitimacy.
	Preferred Engagement Mechanisms	Stakeholders prefer adaptive, transparent, outcome-linked platforms.	Decidim Barcelona shows strong participation when platforms are responsive, but struggles with scalability.	Engagement must be *iterative, transparent, and human-centred*.

Challenges

The interview analysis indicated that stakeholder engagement has a wide-ranging barrier that has continued to hinder the process, as it has been found to be already gross in 6 comparative programs serving the public sector. There were recurring issues with communication gaps, and dashboards and reports were deemed as one-way only, preventing iterative discussions and consultative changes. This is the case with Dubai Pulse, Singapore Smart Nation, and Abu Dhabi Smart Government, where the information flow followed a top-down pattern (OECD, 2023; Sipahi & Saayi, 2024). The numbers suggest that although AI-supported platforms may gather a wide range of stakeholder data, the lack of established feedback streams makes such platforms less responsive, which is one of the main requirements of participatory governance (PMI, 2021; Tumpa & Naeni, 2025).

Another primary area of concern was inclusiveness. It has been found that the marginalised groups and citizens who are less digital were underrepresented in the processes of engagement. Certain difficulties were also noted in Dubai Pulse and the Happiness Agenda, whereby the digital-first designs unwillingly marginalised some groups (Al-Azzawi, 2018; Zakzak & Salem, 2019). Even Barcelona Decidim, which is well known on the topic of participatory design, demonstrated the inability to reach all demographic groups because of the complexity of the platform and the lack of digital literacy (Aragon *et al*., 2017). These results highlight the fact that digital infrastructure cannot ensure the incorporation of all stakeholders, and instead, it requires intentional planning and response to changes.

Ethical transparency proved to be a very significant variable that impacted trust. The concern raised by the participants concerning the transparency of AI-based decision-making relates to the experiences of Estonia's e-Governance and Smart Nation, since in these countries, algorithm-based processes are seen as a black box (Floridi *et al*., 2018; Jobin *et al*., 2019). In the absence of tools of explainable AI and clear responsibility, the trust in stakeholders decreases. This highlights the fact that ethical governance in AI should be integrated into AI governance frameworks as opposed to an add-on.

Lastly, the predictive engagement potential of AI is not fully used. The process of interaction, interviews showed, is predominantly reactive: AI is used to report trends instead of predicting the needs of the stakeholders. Cross-case analysis of the Happiness Agenda and Dubai Pulse indicates that predictive analytics would have enabled the real-time data to be used as an active engagement strategy (Tumpa & Naeni, 2025). This is why this gap contributes to the importance of such a structured approach as SEIF, where engagement is explained by predictive AI modelling, integrated with iterative data entry and feedback loops, thus becoming anticipatory, ethical, and inclusive.

Role of AI in Stakeholder Engagement

The attitude of the participants towards AI regarding engagement was delicate, as it was based on appreciation of efficiency and doubt of fairness and transparency. The capability to process feedback as quickly, the automation of reporting, and the provision of real-time insights is also noted to be beneficial in AI and is currently evident in Singapore Smart Nation and Estonia e-Governance (Sipahi & Saayi, 2024; OECD, 2023). Nevertheless, stakeholders always moved to

state that efficiency is not the same as meaningful participation. It lowers trust and can demotivate participation because it has been reported in various programs since the process of AI decisions seems to be a black box (Calzada, 2018; Cardullo & Kitchin, 2019).

The respondents appreciated adaptive and inclusive systems, which implies that they are ready to participate when AI systems are inclusive and learnable. As an example, predictive dashboard, sentiment analysis, and NLP-powered feedback may lead to responsiveness if supplemented with ethical consideration and human-in-the-loop governance. SEIF is an operationalisation of this functionality, which includes the usage of artificial intelligence sources within the lifecycle of continuous engagement: information input, predictive algorithms, instrument support, action-feedback loops, and ethical guidance (Heymans & Heyman, 2024; Miller, 2025). This is facilitated by revelations of cross-cases: although Barcelona Decidim has the most robust participatory design, it is poorly scaled, yet Dubai Pulse and Smart Nation have well-developed digital infrastructure but low inclusivity. SEIF fills these gaps with the development of both technological skills and well-presented governance and ethical concerns.

Trust and legitimacy are also important, as noted in the analysis. The respondents kept on reiterating that stakeholder trust is hinged on transparency, impartiality and sensitivity. Despite the fact that mature digital systems need continuous transparency to uphold trust, Estonia's e-Governance proves that they also demand constant transparency (OECD, 2025). Trust-building is explicitly operationalised by SEIF through its connection between real-time analytics and adaptive engagement policies and moral review systems, staying sensitive to the concerns of various stakeholders and providing them with adequate representation.

The cross-case analysis implies that one can talk about the fact that, as the level of digital maturity of every program differs, one can apply SEIF techniques, which include iterative learning, predictive analytics, and ethical oversight, to all of them. SEIF operationalises the synergy of AI, CPMAI, and PMI principles, creating a comprehensive framework for adaptive, ethical, and inclusive stakeholder engagement. The SEIF can be better involved and adaptive to feedback in Dubai and Abu Dhabi, and be more scalable and incorporate predictive processes in Barcelona or Estonia, without making participatory values less important.

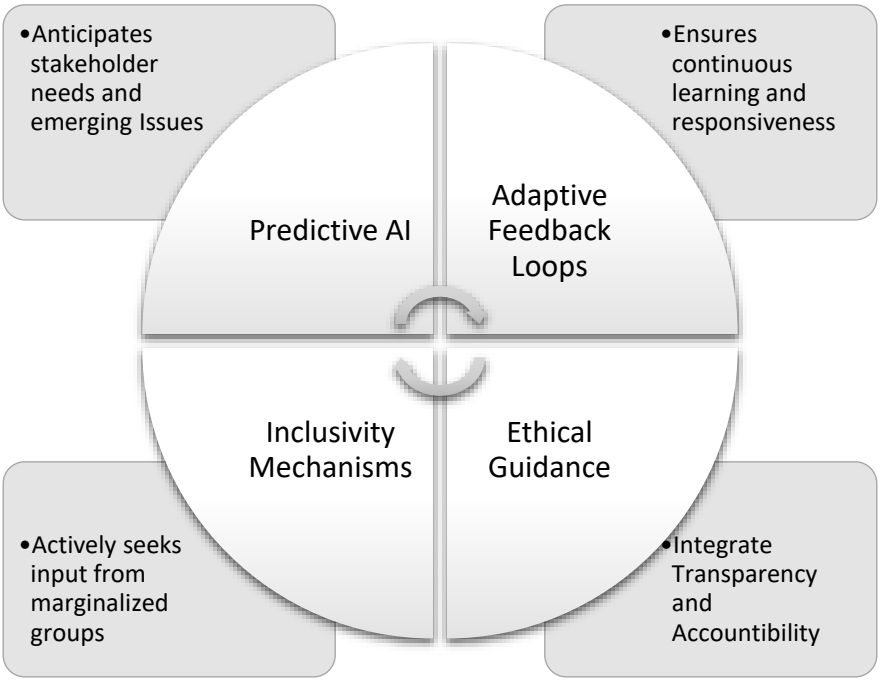

Figure 2: SEIF Framework

Conclusion

This paper has analysed stakeholder involvement in AI-based digital transformation programmes, discussing six governmental projects in the public sector, using semi-structured interviews and a cross-case study. The major conclusions include the presence of chronic communication, inclusivity, and ethical transparency barriers. A one-way interaction mechanism, inadequate representation of marginalised groups, and opaque processes of AI were reported by stakeholders and undermined trust. As much as AI integration was efficient and responded in real-time, it was mostly reactive because it did not foresee possible emerging concerns among stakeholders. The cross-case studies also showed that the positive impacts of high-level digital infrastructure and institutional support, as in Singapore and Estonia, were not necessarily connected with participatory governance, and thus well-structured and human-centred frameworks, such as the SEIF, is important in improving the quality of engagement.

Theoretical & Practical Implications

Theoretically, this research helps close the gap between project management principles (PMI) and AI governance (CPMAI), proving that the predictive abilities and ethical regulations could be enhanced by the iterative and data-driven engagement processes. SEIF applies these ideas and offers a socio-technical framework in which AI can facilitate an adaptive feedback loop, participatory decision-making, and stakeholder trust that builds on previous research related to smart city participatory models (Al-Azzawi, 2018; Batool *et al*., 2025; Sipahi & Saayi, 2024). In practice, the research indicates that the programs developed in the public sector are recommended to integrate AI-enabled analytics with ethical and adaptive engagement activities to make sure that marginalised populations are represented and feedback is used to make real-time policy

corrections. Application of SEIF may boost the transparency, inclusiveness, and trust in any culturally and technologically diverse setting of governance.

Recommendation

The findings lead to the conclusion that three major recommendations have to be made, which will help to improve the interaction with the stakeholders in the case of the AI-enabled public programs:

The present interaction is primarily based on one-way dashboards and surveys. The public sector should move towards communication systems that let the stakeholders know how their opinions affect the decision-making process. Studies indicate that the existence of visible feedback loops can greatly enhance trust and participation. Also, AI-based sentiment analysis can provide the necessary support in faster categorisation and answering of the public's concerns.

The digitally marginalised groups are still not fully represented. In order not to aggravate the problem of digital divides, the public sector should employ hybrid engagement models which include offline consultations, simplified digital interfaces, and SMS feedback options. Inclusiveness is said to require a deliberate approach, not just having the necessary digital infrastructure.

The primary factor that lowers trust in AI systems is their "black box" nature. The public sector should provide the use of explainable AI tools together with ethical supervision throughout each of the AI cycle stages. Heuristic, simple, and user-friendly algorithm explanations are in agreement with the international AI ethics standards and boost citizens' belief.

Limitations

However, this research has some limitations. There are five participants on whom the primary qualitative data were gathered, which limits the possibility of generalisation. The cross-case analysis was based on the secondary sources, i.e. information regarding local and international programs might not be fully relied upon in terms of stakeholder experience or implementation peculiarities. Also, they were based on limited local and global cases, which limits the researchers' possibility of generalisations.

Future Research Directions

Further studies are recommended to adopt mixed-methodology, such as conducting a survey of a larger sample of stakeholders and an empirical investigation of SEIF in ongoing programs, in order to quantify its effects on engagement, trust, and policy effectiveness. Longitudinal comparative studies could be conducted to measure the development of iterative AI-based stakeholder management over time and across different governance cultures. This type of investigation would be more effective in proving the possibility of larger-scale implementation and maintenance of AI-enabled engagement systems in the digital transformation plans in the public sector.

REFERENCES

Al-Azzawi, A. (2018). Dubai happiness agenda: Engineering the happiest city on earth. In *Smart cities in the gulf: Current state, opportunities, and challenges* (pp. 195-221). Springer

Albino, V., Berardi, U., & Dangelico, R. M. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. *Journal of Urban Technology*, *22*(1), 3-21.

Aragón, P., Kaltenbrunner, A., Calleja-López, A., Pereira, A., Monterde, A., Barandiaran, X. E., & Gómez, V. (2017, September). Deliberative platform design: The case study of the online discussions in Decidim Barcelona. In *International Conference on Social Informatics* (pp. 277-287). Springer

Batool, A., Zowghi, D., & Bano, M. (2025). AI governance: a systematic literature review. *AI and Ethics*, 1-15.

Bokhari, S. A. A., Park, S. Y., & Manzoor, S. (2025). Digital Government Transformation Through Artificial Intelligence: The Mediating Role of Stakeholder Trust and Participation. *Digital*, *5*(3), 43.

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589-597.

Bryman, A. (2016). Social research methods. Oxford University Press.

Bryson, J. M., Crosby, B. C., & Bloomberg, L. (2014). Public value governance: Moving beyond traditional public administration and the new public management. *Public Administration Review*, *74*(4), 445-456.

Bullock, J. B., Pauketat, J. V., Huang, H., Wang, Y. F., & Anthis, J. R. (2025). Public Opinion and the Rise of Digital Minds: Perceived Risk, Trust, and Regulation Support. *Public Performance & Management Review*, 1-32.

Calzada, I. (2018). (Smart) citizens from data providers to decision-makers? The case study of Barcelona. *Sustainability*, *10*(9), 3252.

Capdevila, I., & Zarlenga, M. I. (2015). Smart city or smart citizens? The Barcelona case. *Journal Of Strategy And Management*, *8*(3), 266-282.

Cardullo, P., & Kitchin, R. (2019). Being a 'citizen'in the smart city: Up and down the scaffold of smart citizen participation in Dublin, Ireland. *GeoJournal*, *84*(1), 1-13.

Chow, V., & Leiringer, R. (2020). The practice of public engagement on projects: From managing external stakeholders to facilitating active contributors. *Project Management Journal*, *51*(1), 24-37.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). Sage Publications.

Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., ... & Vayena, E. (2018). AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and Machines*, *28*(4), 689-707.

Freeman, R. E., & McVea, J. (2005). A stakeholder approach to strategic management. *The Blackwell handbook of Strategic Management*, 183-201.

Heymans, F., & Heyman, R. (2024). Identifying stakeholder motivations in normative AI governance: a systematic literature review for research guidance. *Data & Policy*, *6*, e58.

Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. *Nature Machine Intelligence*, *1*(9), 389-399.

Kawakami, A., Coston, A., Heidari, H., Holstein, K., & Zhu, H. (2024). Studying Up Public Sector AI: How Networks of Power Relations Shape Agency Decisions Around AI Design and Use. *Proceedings of the ACM on Human-Computer Interaction*, *8*(CSCW2), 1-24.

Knox, S., Marin-Cadavid, C., & Oziri, V. (2025). Stakeholder engagement-as-practice in public sector innovation. *International Public Management Journal*, *28*(1), 153-168.

Miller, G. J. (2025). Framework for Managing Artificial Intelligence (AI) Projects: Avoiding Harms, Losses, and Damages. In *International Program and Project Management—Best Practices in Selected Industries* (pp. 135-162). Cham: Springer Nature Switzerland.

OECD. (2023). *Smart city data governance: Challenges and the way forward*. OECD Urban Studies.

OECD. (2025). *Governing with Artificial Intelligence*. OECD.

PMI. (2021). *The standard for project management and a guide to the project management body of knowledge (PMBOK Guide)* (7th ed.). Project Management Institute.

Saldaña, J. (2021). The coding manual for qualitative researchers.

Saunders, M. N., Lewis, P., & Thornhill, A. (2023). *Research Methods for Business Students*.

Sipahi, E. B., & Saayi, Z. (2024). The world's first "Smart Nation" vision: the case of Singapore. *Smart Cities and Regional Development (SCRD) Journal*, *8*(1), 41-58.

Tan, S. Y., & Taeihagh, A. (2020). Smart city governance in developing countries: A systematic literature review. *Sustainability*, *12*(3), 899.

Tumpa, R. J., & Naeni, L. (2025). Improving decision-making and stakeholder engagement at project governance using digital technology for sustainable infrastructure projects. *Smart and Sustainable Built Environment*, *14*(4), 1292-1329.

Yin, R. K. (2018). *Case study research and applications* (Vol. 6). Thousand Oaks, CA: Sage.

Zakzak, L., & Salem, F. (2019). Building a happy city—the case of Smart Dubai's happiness agenda. In *Future Governments* (pp. 271-301). Emerald Publishing Limited.