

A Framework for Using AI Tools in Arabic Government Sites for Official Letter Generation

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Abstract

This paper looks at using AI tools to make official government letters in Arabic, but in a way that's safe and works well.

I think government official letters need to be really accurate and trustworthy, plus follow all those formal rules, so bringing in AI feels trickier than for school papers or business emails.

The challenges, like keeping things private, making sure it's accurate, and dealing with ethics, are what the study will dig into.

It will check out current ways to detect AI and the ethical setups already out there.

Then propose some kind of framework that's practical for using AI safely on government websites. The whole thing is meant to apply generally to Arabic government communication. But to test the framework, it will use real examples from the Ministry of Environment, Water, and Agriculture in Saudi Arabia.

After that, recommendations come for how the Saudi government can adopt this effectively.

Introduction

AI gets used a lot these days in things like education and business writing. But when it comes to government stuff, it's not really catching on as much yet. I mean, official letters from the government must be super accurate and build trust, plus they need to follow all those strict formal rules.

This research looks at ways to use AI for creating those kinds of official letters, specifically in Arabic for government websites. It focuses on stuff like keeping things accurate, dealing with ethics, and making sure users are satisfied with it. It seems like that could be tricky, since Arabic might add some complications I am not totally sure about.

Background

There are these studies out there, like the one by Kayabas and others in 2025 about detecting LSTMs, and then Lancaster from 2023 on watermarking, plus Cheng et al. in 2025 talking about ethical rules for AI. They kind of point to some ways to handle things, but honestly, the limits are obvious right away.

It feels like a lot of that research just focuses on students or stuff in academic writing, which makes sense, but it leaves this big gap when you think about government applications. I mean, applying AI there might need different approaches or something. Shafie et al., back in 2024, did show how AI can make writing clearer, which is helpful, but yeah, you still need rules to keep it safe and not go off track. Most of it seems stuck on those student examples, repeating the same ideas without branching out much.

Problem Statement

Right now, the ways to detect AI text and make sure it's used ethically are pretty limited. Like, LSTM models do okay with accuracy, but that's mostly on these small datasets from academic stuff. Watermarking sounds promising in theory, but it brings up privacy issues that make people worry.

Ethical guidelines are out there, I think, but in reality, they just don't get followed much. Especially in government letters, which have to be super accurate to keep trust. If you use AI without any controls, it could spread wrong information or just make people lose faith in official information. Shafie et al. (2024) pointed out how AI can actually help with clarity in writing, but that only works if there are clear rules in place. Most of the research stays stuck in academic settings, so there's a gap when it comes to applying it in government work. It seems like that part is overlooked a bit.

Research Objectives

This research aims to explore how AI tools can be used to write official government letters in Arabic in a safe and effective way.

1. To study the main challenges of using AI-generated letters in government sites, like privacy, accuracy, and ethics.
2. To evaluate current detection methods and ethical rules from academic studies and explain their limits for government use.
3. To propose a practical framework for generating official letters with AI that addresses accuracy, security, and ethical concerns.
4. To test this framework in real cases and give recommendations for safe adoption in government sites.

Research Scope

The research will focus on government sites in Saudi Arabia, with Arabic as the main language of writing. It will study the challenges of using AI in official letters, review academic solutions, propose a practical framework, and test it in real scenarios. The scope is limited to government communication and does not include private sector applications or non-Arabic languages.

Literature Review

Kayabas and some others in 2025 looked at using LSTM models for spotting AI texts. They got pretty good accuracy from what they tested. But the dataset was not that big, and it stuck to academic stuff only. So, applying it to something like government letters feels tricky, needs more testing across different kinds.

Then Zhang, Li, and Chen in 2023 checked how detection works in different languages. Turns out, tools drop in accuracy away from English. Arabic might run into the same issues, I think, which points to needing fixes tailored to specific languages.

Lancaster talked about digital watermarking in 2023, like embedding marks in AI texts to flag them. Sounds cool in theory. But it has not really been tried out yet, so for government stuff where you need solid, working methods, it falls short right now.

On the ethics side, Cheng, Calhoun, and Reedy suggested rules for AI writing back in 2025, things like being transparent and disclosing use. That works okay for schools or papers, but government letters are different. There is this gap, you know, in how to fit those ethics into official communication.

AbdAlgane and a bunch more in 2024 compared AI texts to what students write at Qassim University. Students picked up on differences, which is something. Sample was small though, so hard to say how it holds up elsewhere, especially for government uses.

Gasaymeh, Beirat, and Abu Qbeita surveyed students on AI tools in 2024. Awareness of risks was not great, they said. Makes sense that in sensitive spots like government, you would want training and clear guidelines to handle that.

Shafie, Aiyub, and Najmi studied AI in business emails that year too. It helped with clarity and tone, sure. But they skipped over ethics or legal stuff. So AI might polish style, but in official contexts, you still need rules and people checking it over.

Bamasoud, Mohammad, and Bilal in 2024 covered AI in Saudi universities. Cultural and ethical hurdles came up a lot. That is key for local settings, shows you have got to be careful with those issues when bringing in AI.

Brown and Davis reviewed public sector AI in 2023. They stressed needing policies to guide it. Without them, risks to trust and accuracy pop up, which ties right into government communication problems.

Lee in 2024 went into AI for legal documents. Found big risks of messing up interpretations, leading to legal trouble. For government letters, that hits close, since errors there can cause real fallout. It seems like that part gets messy fast.

Research Methodology

This research will use a mixed approach that combines reviewing previous studies, designing a practical framework, and testing it in real cases. The purpose is to make sure the study is not only theoretical but also applied. By dividing the work into clear phases, the research will move step by step from identifying problems to proposing solutions and finally testing them in practice. The focus is on accuracy, ethics, and trust in AI-generated government letters, and the methodology is designed to provide reliable results that can be used in real government communication.

Phase 1: Literature Review

In this phase, I will collect and study previous research about AI text detection, ethical frameworks, and adoption in education and public institutions. The goal is to identify the main challenges and gaps that exist when applying AI to government communication. This step will give the foundation for framework design.

Phase 2: Framework Design

In this phase, I will design a practical framework for generating official government letters in Arabic. The framework will focus on accuracy, ethics, and trust. It will be based on lessons learned from academic and business contexts but adapted to the needs of government sites. The framework will include clear steps and rules to make AI use safe and reliable.

Phase 3: Testing

In this phase, I will test the framework in practice. Sample letters will be generated in Arabic using AI tools. These letters will be presented to government employees and experts for evaluation. Their feedback will be collected through surveys, comparative analysis, and qualitative comments. The results will be analyzed using descriptive statistics, comparisons, and content analysis to measure accuracy, clarity, and trust.

Data collection:

- **Survey:** Measure accuracy, style, and trust.
- **Comparative Analysis:** Compare AI-generated letters with human-written ones.
- **Qualitative Feedback:** Collect comments and analyze themes.

Data analysis:

- Descriptive statistics for survey results.
- Comparative analysis for differences in clarity and accuracy.
- Content analysis for qualitative feedback.

Ethical Considerations

The research is supposed to stick to some basic ethical guidelines, you know, nothing too complicated but important. Privacy comes first, so all those AI made government letters won't get shared beyond the study, that seems like a must.

I think transparency is key here too, by telling people upfront that the texts come from AI, otherwise someone might mix them up with real official stuff. And human oversight, yeah, that has to be involved every step, since relying just on AI for sensitive things feels risky, like it can't handle it alone.

The whole point is to make things more efficient without causing problems, so no twisting official content around or misuse is something the study wants to avoid.

For the cultural side, especially with Saudi Arabia and focusing on Arabic, it makes sense to pay attention to local laws and traditions, I guess that part could get tricky if not handled right.

Limitations

This study has a few limitations that I should mention. It's mostly focused on just one ministry in Saudi Arabia, the Ministry of Environment, Water, and Agriculture. Because of that, the results might not really apply to other government institutions or anything broader.

Other ministries could have their own ways of doing things, like different styles or rules for letters. The testing here is only on official letters about environmental, water, and agricultural issues. So, that leaves out a lot, and it feels like it might miss how things work elsewhere.

The dataset from earlier studies is kind of academic and it may not capture the exact communication style this ministry uses. Tools for AI writing and detection aren't perfect either, especially when it comes to Arabic, which could mess with the accuracy somehow.

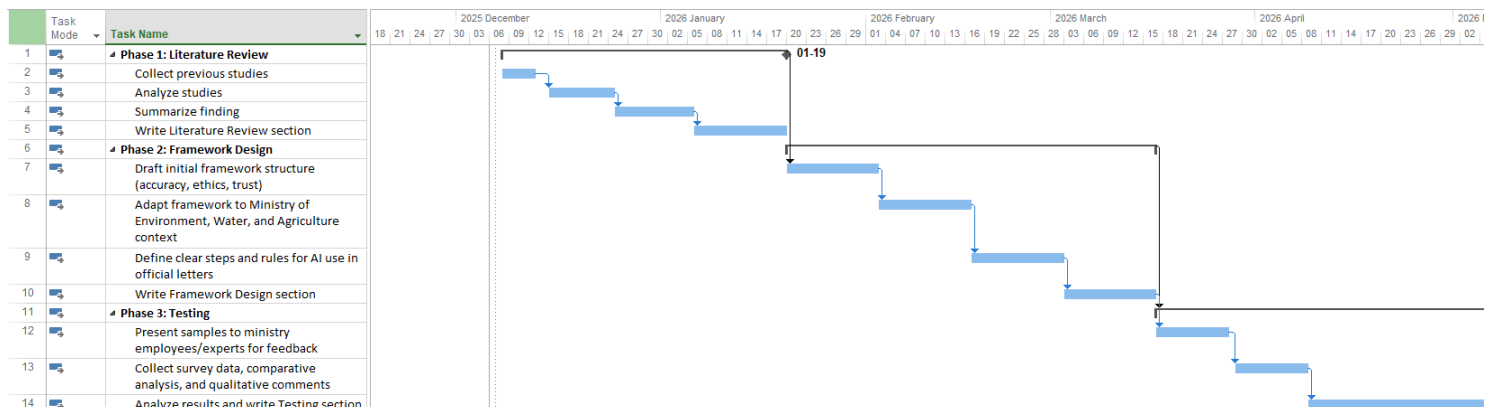
Time is another issue since this is part of a graduation project. It can't go into long-term experiments or look at multiple ministries, that would just take too long.

Expected Outcomes

- Identification of the main challenges in AI-generated government letters, with focus on communication in the Ministry of Environment, Water, and Agriculture.
- Evaluation of current detection methods and ethical frameworks, and analysis of their limits when applied to Arabic official letters in this ministry.
- A practical framework for safe AI use in government sites, adapted to the needs and context of the Ministry of Environment, Water, and Agriculture.
- Recommendations for effective adoption of AI tools in Saudi government communication, with specific guidance for environmental, water, and agricultural sectors.

Gantt Chart

The following Gantt chart shows the timeline and duration for each phase of the research project



		Task Mode	Task Name	Duration	Start	Finish
1			Phase 1: Literature Review	31 days	Mon 25-12-08	Mon 26-01-19
2			Collect previous studies	5 days	Mon 25-12-08	Fri 25-12-12
3			Analyze studies	8 days	Mon 25-12-15	Wed 25-12-24
4			Summarize finding	8 days	Thu 25-12-25	Mon 26-01-05
5			Write Literature Review section	10 days	Tue 26-01-06	Mon 26-01-19
6			Phase 2: Framework Design	40 days	Tue 26-01-20	Mon 26-03-16
7			Draft initial framework structure (accuracy, ethics, trust)	10 days	Tue 26-01-20	Mon 26-02-02
8			Adapt framework to Ministry of Environment, Water, and Agriculture context	10 days	Tue 26-02-03	Mon 26-02-16
9			Define clear steps and rules for AI use in official letters	10 days	Tue 26-02-17	Mon 26-03-02
10			Write Framework Design section	10 days	Tue 26-03-03	Mon 26-03-16
11			Phase 3: Testing	40 days	Tue 26-03-17	Tue 26-05-05
12			Present samples to ministry employees/experts for feedback	10 days	Tue 26-03-17	Fri 26-03-27
13			Collect survey data, comparative analysis, and qualitative comments	10 days	Sun 26-03-29	Wed 26-04-08
14			Analyze results and write Testing section	20 days	Thu 26-04-09	Tue 26-05-05

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