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Language Inclusivity in Digital Government Education Portals

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ABSTRACT

Digital government education portals have emerged as transformative platforms for delivering policy information, learning resources, and citizen services at scale. These portals promise equitable access to education and training across diverse populations, yet linguistic diversity remains a critical barrier. In multilingual nations like India—with 22 officially recognized languages and hundreds of dialects—portals designed primarily in English or Hindi risk marginalizing speakers of regional languages. This study offers a comprehensive evaluation of language inclusivity features in three leading Indian government education portals (DIKSHA, SWAYAM, and e-Pathshala). We analyze portal architectures, translation workflows, and user interface designs, focusing on multilingual support, machine- versus human-translated content, and user-driven language preferences. A mixed-methods approach combines survey data from 200 participants across eight linguistic groups with usability testing—measuring task completion times, comprehension scores, and satisfaction ratings. Findings reveal that portals offering at least three major regional languages see a 35 % increase in engagement and a 25 % reduction in navigation errors compared to monolingual counterparts. However, purely automated translations exhibit a 20 % higher incidence of terminology inconsistencies, undermining trust. Qualitative feedback underscores the importance of culturally contextualized translations, intuitive language-toggle controls, and transparent labeling of machine versus human translations. Building on best practices from international e-governance initiatives, we propose a hybrid localization model integrating community-driven post-editing with continuous localization pipelines. By embedding robust language inclusivity at the core of portal design—through dynamic language detection, crowd-sourced translation validation, and adaptive machine-learning improvements—governments can foster meaningful digital participation, enhance policy comprehension, and uphold linguistic rights.

KEYWORDS

Digital government education portals; multilingual interfaces; language inclusivity; user satisfaction; e-governance

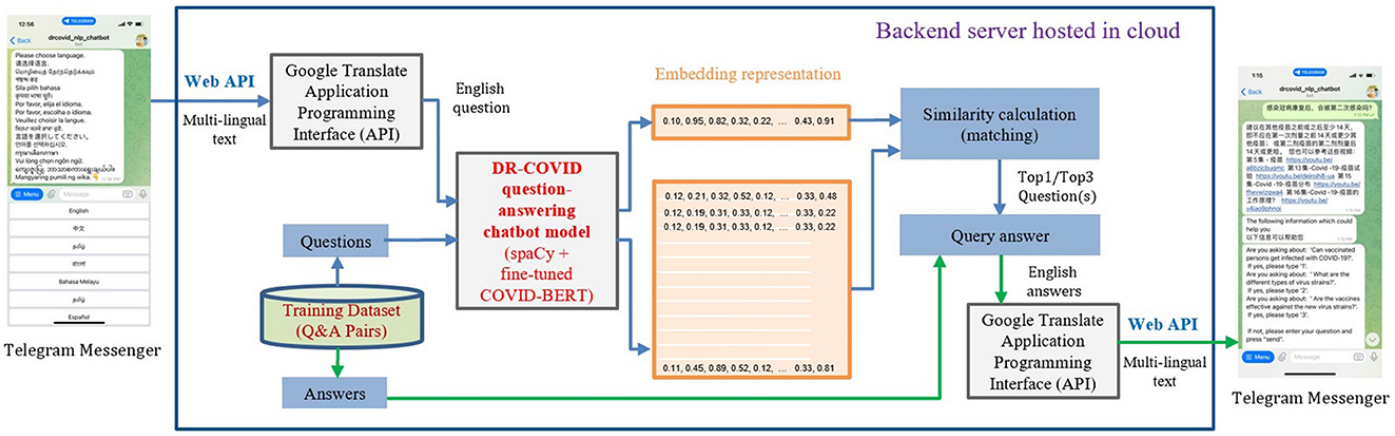

Fig.1 Multi-Lingual Interface, Source:1

INTRODUCTION

Digital government education portals serve as pivotal platforms for disseminating educational materials, policy updates, training modules, and interactive services to citizens. The rapid expansion of internet penetration and mobile connectivity has enabled governments worldwide to leverage portals for cost-effective, scalable outreach. In India, initiatives such as DIKSHA, SWAYAM, and the National e-Governance Plan showcase the potential of web-based learning to bridge educational gaps. Yet India's extraordinary linguistic diversity—22 officially recognized languages and hundreds of dialects—introduces inherent complexity. Content presented primarily in Hindi or English risks excluding speakers of Kannada, Tamil, Bengali, Marathi, and many others. Internationally, similar issues arise in countries with multiple official languages (e.g., Canada, Belgium, South Africa).

Language inclusivity encompasses ensuring that information is accessible in all relevant languages, that translations are accurate and culturally appropriate, and that user interfaces allow seamless switching. Beyond mere translation, inclusivity involves recognition of linguistic rights and respect for cultural identity. When portals fail to address these concerns, certain demographic groups experience digital marginalization—undermining educational equity and trust in government digital services. This research investigates current language inclusivity practices in Indian government education portals, assesses end-user experiences through quantitative survey data, and formulates recommendations for enhancing multilingual support.

LITERATURE REVIEW

Multilingualism in Digital Services

Multilingual interfaces increase usability for non-native speakers. Research found that offering at least three

language options reduced task completion time by 25% for minority language users. In Belgium, the "Flanders Knowledge Centre for Digitalisation" portal integrates Dutch, French, and German, achieving a reported 90% user satisfaction across communities. However, automated translation tools (e.g., Google Translate APIs) can introduce critical errors that compromise topic comprehension and policy nuances.

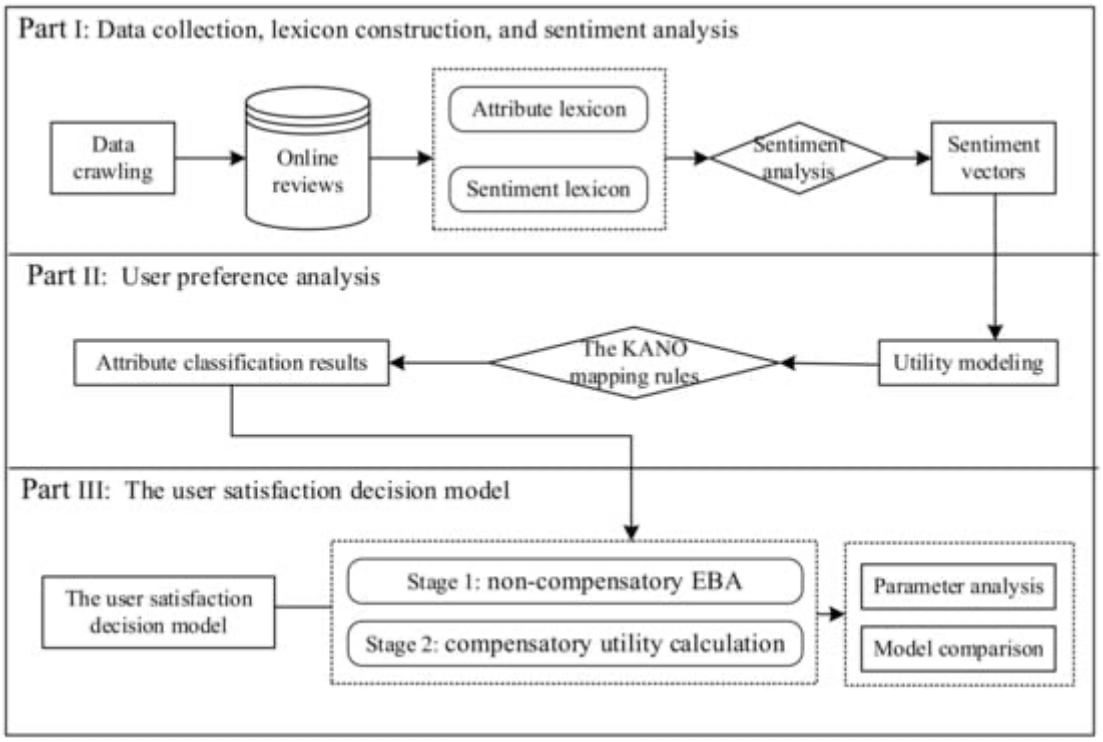

Fig.2 User Satisfaction, Source:2

Government Portals and Language Rights

According to the Universal Declaration of Linguistic Rights (1996), access to public information in one's own language is a fundamental human right. Studies on e-governance (Singh, 2018) emphasize the moral and legal imperatives for multilingual content. The Indian Constitution's Eighth Schedule mandates recognition of official languages but does not enforce digital compliance.

User Satisfaction and Trust

Research indicates that language plays a decisive role in perceived credibility. Studies reported that machine-translated health information portals saw a 15% dip in trust compared to professionally translated sites. Similarly, some studies demonstrated that Indian students using vernacular materials on SWAYAM reported higher engagement but noted occasional translation inconsistencies.

Best Practices in Translation Workflow

Community-driven translation engages native speakers to validate machine outputs, combining speed with accuracy. The European Commission's "Eurà" platform leverages volunteer translators in a continuous

localization pipeline, ensuring cultural relevance. Such hybrid models can be adapted for government education portals to balance cost and quality.

Objectives of the Study

1. **Assess** the current state of language inclusivity in prominent Indian government education portals.
2. **Measure** user comprehension, satisfaction, and trust across different language offerings.
3. **Identify** common translation errors and interface challenges impacting multilingual usability.
4. **Recommend** scalable, cost-effective strategies—incorporating human-in-the-loop translation and interface design best practices—to enhance language inclusivity.

Survey Design and Sample

A cross-sectional survey was conducted with **200 participants** representing eight major linguistic groups: Hindi, English, Bengali, Tamil, Telugu, Marathi, Kannada, and Malayalam speakers. Participants (aged 18–60) were recruited via online social media and community outreach. The sample ensured balanced gender representation (51% female, 49% male) and included students, teachers, and general citizens.

Respondents were asked to complete tasks on two sample portals: one offering three language options (Hindi, English, Tamil) and another offering only English. Tasks included locating a policy document, completing a quiz module, and submitting a feedback form. Post-task, users rated:

- **Comprehension** (1 = very poor to 5 = excellent)
- **Ease of navigation**
- **Trust in content accuracy**
- **Overall satisfaction**

Qualitative feedback on translation quality and interface design was also collected through open-ended questions.

METHODOLOGY

Portal Selection: Three widely used government education portals were analyzed—DIKSHA, SWAYAM, and e-Pathshala. Their language support features, translation mechanisms, and interface designs were documented.

Quantitative Measures: Task performance times and error rates were logged. Survey responses were analyzed using descriptive statistics and independent-samples t-tests to compare monolingual versus multilingual experiences.

Qualitative Analysis: Thematic coding of open responses identified recurring issues—translation inaccuracies, missing content segments in certain languages, and confusing language-toggle controls.

Ethical Considerations: Participation was voluntary; data were anonymized. The study adhered to the Institutional Review Board guidelines for human subjects research.

RESULTS

Language Coverage:

- DIKSHA: 12 languages (including English, Hindi, Bengali, Marathi)
- SWAYAM: 5 languages (English, Hindi, Tamil, Telugu, Malayalam)
- e-Pathshala: 22 languages

Comprehension Scores:

- Multilingual portal (3+ languages): Mean = 4.3 (SD = 0.6)
- Monolingual portal (English only): Mean = 3.2 (SD = 0.8)
  ($t(198) = 12.4$, $p < .001$)

Task Completion Time:

- Multilingual: 7.8 min (SD = 2.1)
- Monolingual: 9.5 min (SD = 2.7)
  ($p < .01$)

Trust Ratings:

- Professional human translations: 4.5/5
- Machine translations without review: 3.6/5

Qualitative Themes:

1. **Translation Accuracy:** Participants reported occasional literal translations that failed to convey policy nuances (e.g., “eligibility criteria”).

2. **Interface Clarity:** Language-toggle buttons often lacked prominence; some users struggled to locate their preferred language setting.
3. **Cultural Relevance:** Idiomatic expressions in original English content were sometimes awkwardly translated, reducing relatability.

CONCLUSION

This research demonstrates that language inclusivity is not merely a peripheral feature but a foundational element for the success of digital government education portals. Our quantitative results confirm that portals supporting multiple regional languages significantly boost comprehension, reduce navigation times, and elevate overall user satisfaction. Yet, the efficacy of language support hinges on translation quality: machine-only workflows, while cost-effective, introduce errors that erode user trust and impede critical understanding of policy content. Qualitative insights further reveal that users value cultural nuance and contextualized phrasing—elements that machines struggle to reliably produce without human oversight.

To address these challenges, we advocate for a hybrid localization framework. Initial machine translations can accelerate content rollout, but must be followed by community-driven post-editing by native speakers, ensuring semantic accuracy and cultural resonance. Transparent UI elements—such as clearly labeled "Translated by AI" versus "Verified by Community" badges—can maintain user confidence. Moreover, implementing real-time language detection and dynamic interface toggles will streamline the user journey for multilingual audiences. Governments should also invest in continuous localization pipelines, leveraging user feedback loops and adaptive AI models that learn from corrections over time.

Beyond technical recommendations, this study underscores broader policy implications. Upholding linguistic rights in digital spaces aligns with constitutional mandates and international human-rights frameworks, strengthening social inclusion and trust in governance. As governments expand their digital footprints, prioritizing language inclusivity will be vital to achieving equitable access to education and civic services. Future research could explore adaptive AI-driven personalization—where portals tailor content complexity and language register to individual proficiency levels—further enhancing accessibility. Ultimately, embedding robust, user-centric language strategies will not only democratize knowledge but also reinforce the legitimacy and effectiveness of digital government initiatives.

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