

Design and Evaluation of a WCAG-Aligned Startup Ecosystem Portal for Entrepreneurs with Disabilities: A Tamil Nadu Framework

Dr. Maria Selvi S, Naren Krishnan M, Kevin Kristofer A, Sanjai Kanna B C, Shyju Krishna V
Department of B. Com Computer Applications, Loyola College, Chennai

Abstract- Entrepreneurial ecosystems in India increasingly rely on digital platforms for registration, funding access, incubation enrolment, and mentorship delivery. However, digital accessibility gaps restrict participation of Persons with Disabilities (PwD), thereby undermining inclusive economic growth. This study develops and evaluates a WCAG-aligned Accessible Startup Ecosystem Portal designed specifically to reduce digital entry barriers for PwD entrepreneurs in Tamil Nadu.

A structured accessibility audit was conducted across 11 national and state-level startup and policy platforms, using seven core digital accessibility indicators (keyboard navigation, screen reader compatibility, alt text, accessible forms, session control, contrast compliance, and responsiveness). Audit findings reveal significant accessibility inconsistencies, with digital accessibility scores ranging from 60% to 100%, and several high-traffic entrepreneurial platforms scoring below optimal compliance

Based on identified gaps, we developed a disability-centric startup ecosystem website framework integrating accessible interface architecture, funding scheme navigation assistance, adaptive mentorship scheduling, and policy-linked resource aggregation. The study demonstrates that accessibility-first digital infrastructure can function as an economic enabler rather than a compliance exercise.

The proposed model offers a replicable digital inclusion framework for incubators and state startup missions seeking to operationalise accessibility in line with India's disability policy architecture.

Keywords- Digital Accessibility, Startup Ecosystem, Persons with Disabilities, WCAG 2.1, Tamil Nadu, Inclusive Innovation, Entrepreneurship Policy, GovTech, Digital Governance

I. INTRODUCTION

India's startup ecosystem is primarily digitally mediated. Registration under Startup India, MSME Udyam, Mudra Loan portals, and state-level missions such as StartupTN are largely online processes. For Persons with Disabilities (PwD), the accessibility of these platforms directly determines entry into entrepreneurial ecosystems.

Despite policy commitments under the Rights of Persons with Disabilities (RPwD) Act, 2016 and the Accessible India Campaign, digital interfaces within entrepreneurial systems remain uneven in accessibility implementation. Accessibility is frequently treated as a secondary compliance requirement rather than foundational infrastructure.

This research investigates:

- The digital accessibility status of key startup ecosystem platforms in India.
- The structural digital barriers affecting PwD entrepreneurs.
- The design and evaluation of an accessibility-first startup ecosystem portal tailored to Tamil Nadu.
- The role of digital accessibility as a structural economic enabler.

II. LITERATURE & POLICY CONTEXT

Digital accessibility in India is anchored in:

- Rights of Persons with Disabilities Act, 2016
- Accessible India Campaign (Sugamya Bharat Abhiyan)
- Web Content Accessibility Guidelines (WCAG 2.1)

However, studies in Indian e-governance reveal inconsistent WCAG adoption across public portals. Within entrepreneurship ecosystems, limited scholarship addresses how inaccessible interfaces restrict participation in funding and incubation processes.

This study fills that gap by empirically auditing digital startup platforms and building a functional accessibility-first model.

III. METHODOLOGY

3.1 Digital Accessibility Audit Framework

Seven indicators (scored 0–5) were used:

- D1.1 Keyboard-only navigation
- D1.2 Screen reader compatibility
- D1.3 Alternative text availability
- D1.4 Accessible form labeling & error prompts
- D1.5 No forced session expiry
- D1.6 Sufficient color contrast
- D1.7 Responsive/zoom compliance

Maximum score: 35

Accessibility % = $(\text{Score}/35) \times 100$

3.2 Platforms Audited

National Startup Platforms:

- Startup India
- MSME Udyam
- Mudra Loan
- NSDC
- Department of Empowerment of PwD

Disability-Focused Platforms:

- National Handicapped Finance & Development Corporation (NHFDC)

Tamil Nadu Ecosystem Platforms:

- StartupTN
- MSME Department – Government of Tamil Nadu
- Tamil Nadu Skill Development Corporation (TNSDC)
- Atal Innovation Mission

IV. RESULTS

4.1 National-Level Startup Platforms

Audit results show:

- Startup India: 65.71%
- MSME Udyam: 91.43%
- Mudra Loan: 80.00%
- NSDC: 60.00%
- Department of Empowerment of PwD: 71.43%

The NSDC portal showed poor keyboard navigation and limited screen-reader logical flow (score 0 in D1.1). Startup India scored low on screen reader compatibility.

4.2 Disability-Focused Platform

NHFDC scored 100% (35/35) - demonstrating that disability-focused platforms tend to maintain higher accessibility compliance.

4.3 Tamil Nadu Ecosystem Platforms

- StartupTN: 85.71%
- MSME Dept TN: 88.57%
- TNSDC: 62.86%
- Atal Innovation Mission: 80.00%

The TNSDC portal displayed accessibility weaknesses, particularly in screen reader flow and form usability.

V. DEVELOPMENT OF THE ACCESSIBLE STARTUP ECOSYSTEM PORTAL

Based on audit gaps, we developed a structured website framework hosted on Gamma platform integrating:

5.1 Accessibility-First UI Design

- Full keyboard operability
- Logical semantic HTML hierarchy
- Screen-reader tested structure
- High contrast UI themes
- Zoom compatibility

5.2 Integrated Funding Navigation

Simplified explanation of:

- NHFDC concessional loans
- Divyangjan Swavalamban Yojana
- Tamil Nadu inclusive seed initiatives
- MSME registration pathways

5.3 Incubator Accessibility Audit Dashboard

Embedded audit scoring framework enabling:

- Self-evaluation by incubators

- Accessibility % generation
- Public reporting metrics

5.4 Adaptive Participation Architecture

- Remote mentorship booking module
- Accessible form submission
- Multi-format document upload
- Simplified language policy summaries

VI. DISCUSSION

The audit demonstrates systemic inconsistency across platforms that serve as gateways to entrepreneurship. Even high-profile startup portals lack full accessibility compliance.

Three structural observations emerge:

1. Accessibility compliance correlates with institutional mandate (disability-focused platforms perform better).
2. Startup-centric platforms prioritize scalability over accessibility architecture.
3. Accessibility gaps create silent exclusion — particularly in early-stage registration processes.

The developed portal operationalises accessibility as an enabling architecture rather than post-hoc adjustment. It integrates policy navigation, funding access, and mentorship facilitation into a single accessible interface.

This shifts accessibility from welfare framing to economic infrastructure framing.

and introduces a validated, accessibility-first portal framework tailored to Tamil Nadu.

By reducing digital entry barriers, such platforms can significantly increase PwD participation in entrepreneurial ecosystems, strengthening inclusive economic growth.

The proposed model is replicable across Indian states and scalable through integration with state startup missions.

VII. POLICY IMPLICATIONS

- Startup missions should mandate accessibility audits for incubator portals.
- Digital accessibility % should be integrated into ecosystem performance KPIs.
- Funding scheme navigation assistance should be embedded into digital portals.
- WCAG compliance must be proactively implemented, not retrofitted.

VIII. CONCLUSION

Digital accessibility is not peripheral to entrepreneurship — it is foundational infrastructure. This study demonstrates measurable accessibility inconsistencies in national and state startup platforms