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Redesigning Public Transit: An Inclusive Interior Approach to KR Puram Railway Station

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Abstract

The renovation of public infrastructure is critical to enhancing user experience, safety, and accessibility, particularly in high-traffic areas like railway stations. This research paper focuses on the interior renovation of the KR Puram Railway Station in Bengaluru, Karnataka, India. Aiming to transform it into a modern, efficient, and inclusive space. The primary focus areas include the ladies' waiting area with an integrated lactation room, accessible public washrooms, and designated café areas that provide comfort and functionality to daily commuters.

The design approach is centered on user-centric planning, ergonomics, and sustainable interior materials, while also ensuring cost-efficiency and ease of maintenance. Through strategic zoning, thoughtful circulation design, and incorporation of Vastu principles, the project ensures a positive energy flow and spatial clarity. The renovated station is envisioned as a model for public space design that meets the diverse needs of users including women, children, the elderly, and differently abled individuals. This research highlights the intersection of design, functionality, and public welfare in the context of urban infrastructure development.

Keywords: Railway Station Renovation, Inclusive Interior Design, Public Amenities, Lactation Room, Mother and Child Facilities, Nursing Zone, Accessible Washrooms, Barrier-Free Design, Sustainable Materials, Transit Infrastructure, Spatial Planning, Universal Accessibility

Introduction

Railway stations are key elements of urban infrastructure, supporting mass transit, regional connectivity, and public interaction. In fast-growing cities like Bengaluru, the need for functional and inclusive transit hubs is increasingly critical. Yet, many stations continue to operate with outdated spatial layouts that do not meet the diverse needs of today's users.

This research focuses on the interior renovation of KR Puram Railway Station, aiming to create a modern, inclusive environment that prioritizes comfort, safety, and accessibility. The design introduces a ladies' waiting area with a lactation room, barrier-free washrooms for differently abled users, and café zones that improve passenger convenience. The project highlights how thoughtful spatial planning and user-focused design can enhance the overall experience of public infrastructure.

Aim: The aim of this project is to renovate the interior spaces of KR Puram Railway Station to create a functional, inclusive, and user-friendly environment that enhances the overall passenger experience. The design focuses on improving accessibility, safety, and comfort by incorporating modern amenities such as a dedicated ladies' waiting area with a lactation room, universally accessible washrooms, and well-integrated café areas.

Background & Literature Study

Importance of Railway Stations in Urban Design

Railway stations are essential elements of urban infrastructure, acting as public spaces that serve thousands of users daily. While India has made significant progress in expanding rail connectivity, many stations still operate with outdated layouts that lack inclusivity, comfort, and accessibility for all user groups.

Indian Railway Design Guidelines
The Indian Railways Station Redevelopment Guidelines (2020) [1] emphasize the need for passenger-centric design, incorporating features such as barrier-free access, well-zoned waiting areas, and commercial spaces to improve functionality and experience. Examples like Rani Kamlapati (Habib Ganj) and Gandhinagar Capital railway stations illustrate how thoughtful interior planning can create more engaging and inclusive spaces.

Role of Inclusive and Supportive Infrastructure
Reports from the Centre for Science and Environment (CSE) and various design publications advocate for climate-responsive materials, efficient space utilization, and caregiving support facilities such as lactation rooms. These features are especially important in public transport hubs, which must cater to women, elderly passengers, children, and individuals with disabilities.

Integration of Commercial Amenities
Incorporating café areas and shaded seating zones contributes to commuter convenience, reducing stress during long waiting periods and fostering a more welcoming environment.

Need for Renovation at KR Puram
Despite the availability of such standards, stations like KR Puram often lack these fundamental amenities. This study proposes a design intervention that includes a ladies' waiting area with a lactation room, barrier-free public washrooms, and multiple café areas-ensuring comfort, dignity, and accessibility in alignment with evolving public infrastructure norms.

Research
KR Puram Railway Station, located in the eastern corridor of Bengaluru, is a crucial transit point for thousands of daily commuters. Despite its strategic location and increasing passenger footfall, the station suffers from chronic infrastructural and functional deficiencies that compromise safety, accessibility, and user comfort. The absence of inclusive design features limits usability for women, elderly passengers, and differently abled individuals. Overcrowded circulation areas and lack of designated amenities further affect the overall experience. These shortcomings highlight the urgent need for a user-focused interior renovation.

Lack of basic passenger amenities
The station is critically under-equipped in terms of essential public services. reports highlight that functional washrooms and drinking water facilities are either inadequate or completely absent on several platforms. with only one operational toilet on platform 4 and most water taps dysfunctional, passengers are often forced to wait without access to basic hygiene. this neglect is especially concerning for women, children, and the elderly.

Poor accessibility for differently abled and elderly
accessibility remains a major challenge. the station lacks lifts, escalators, and barrier-free pathways, making it difficult for differently abled individuals and senior citizens to navigate the premises. staircases and foot overbridges are narrow (approximately 2.4 meters), worn down, and often overcrowded, particularly during peak hours. there is no tactile flooring for the visually impaired, nor are there support features like ramps or handrails on all platforms.

Unsafe and inadequate circulation infrastructure
The only foot overbridge is structurally outdated, poorly lit, and situated uncomfortably close to high-voltage electrical wiring. it lacks sufficient width to handle commuter traffic, creating high congestion during boarding times. these structural limitations not only delay circulation but also pose safety risks, especially during emergencies or rush hour congestion.

Chaotic entry points and poor integration
the station has limited multimodal integration. the pedestrian pathways leading to the station are unsafe, often blocked by illegal vending stalls, and surrounded by unregulated autorickshaw and cab parking. passengers coming from adjacent metro or bus stations must cross high-speed roadways without pedestrian crossings or signals, creating hazardous commuting conditions.

No dedicated zones for vulnerable users
There is no designated waiting area for women, no nursing/lactation rooms, and no safe, comfortable spaces for families or caregivers with infants. as the number of women commuters increases, the lack of gender-sensitive infrastructure becomes a significant failure in public service design.

Design Strategy
The design strategy focuses on creating an inclusive, functional, and user-centric environment within the existing structure of KR Puram Railway Station. The approach emphasizes spatial clarity, safety, accessibility, and comfort through the following key principle with include a dedicated ladies' waiting area with a lactation room to support.

Zoning and Spatial Reorganization
Clear demarcation of functional zones such as waiting areas, circulation paths, café spaces, and restrooms to reduce congestion and improve wayfinding.

Inclusive and Universal Design
Integration of barrier-free access points, ramps, wider circulation paths, and tactile indicators to support differently abled and elderly users.

Women-Centric Facilities: A dedicated ladies' waiting area with a secure and private lactation room designed to provide comfort, hygiene, and privacy for nursing mothers.

Amenity-Driven Planning: Introduction of multiple café areas and well-maintained public washrooms that enhance usability and encourage longer dwell time in safe zones.

Material and Lighting Strategy
Use of low-maintenance, durable materials and well-planned ambient and task lighting to ensure safety, visibility, and aesthetics in all areas.

Fig 1: Exiting Room

Fig 2: Rendered Room

Problem-Solving Approach

This design directly addresses common challenges faced by commuters at KR Puram Railway Station. These include overcrowded spaces, a lack of women-specific facilities, poor accessibility, and the absence of caregiver-friendly zones. The new spatial plan offers clear zoning for different functions, improves privacy for female passengers through designated areas, and includes facilities like lactation rooms and accessible washrooms. The design also considers user comfort during extended waiting periods by incorporating café areas and ergonomic seating

Fig 3: Railway Station

Fig 4: Lactation Room Render

Conclusion

The interior renovation proposal for KR Puram Railway Station illustrates the critical role of design thinking in redefining the usability and inclusivity of public infrastructure. As railway stations continue to serve as vital lifelines in urban mobility, their spatial and experiential quality must evolve to meet the needs of a growing and diverse population. This research addresses key limitations within the existing station layout-such as inadequate facilities for women, absence of lactation rooms, poor accessibility for differently abled individuals, and limited user-centric amenities-and offers targeted design solutions that are practical, adaptable, and socially responsible.

The project emphasizes the integration of inclusive spatial planning, accessible infrastructure, and improved amenities such as café zones and ergonomic seating to enhance commuter comfort and convenience. By introducing a dedicated ladies' waiting area, universal-access washrooms, and barrier-free circulation paths, the design not only adheres to national accessibility standards but also reflects a commitment to equitable public design.

Furthermore, the study demonstrates that user-centered design strategies-grounded in spatial clarity, functional zoning, and material efficiency-can significantly elevate the quality and dignity of public spaces. The proposed interventions are scalable and replicable, offering a potential blueprint for other railway stations across India.

In conclusion, the renovation of KR Puram Railway Station is not just a physical upgrade, but a design-led initiative that advocates for safety, inclusion, and comfort within mass transit environments. It reflects the broader shift towards creating infrastructure that supports the diverse rhythms and realities of everyday life in a rapidly urbanizing context.

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