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Holistic Study of Support Functions in Hospital Management: HR, Logistics, and Financial Operations in The Healthcare Sector in India.

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Abstract

The Indian healthcare system embodies a dual structure characterized by an accessible but quality-compromised public sector and a high-cost private sector often criticized for exploitative practices and inequitable access. This study investigates systemic challenges hindering equitable healthcare delivery, emphasizing managerial interventions involving Human Resources Analytics (HRA), Supply Chain Management (SCM) professionalization, and cost accountability mechanisms. Drawing on empirical data and recent literature, it highlights the persistent preference for private healthcare despite affordability challenges, revealing inefficiencies and infrastructural deficits in public services. The paper advocates for integrating HRA to facilitate workforce optimization and digital transformation, professionalizing SCM to enhance commodity availability and reduce wastage, and adopting advanced costing methods like Activity-Based Costing (ABC) and Time-Driven
Activity-Based Costing (TDABC) to improve financial transparency and pricing accuracy. The research underscores the need for a holistic, data-driven managerial approach combined with robust regulatory frameworks to achieve operational efficiency, financial sustainability, and equitable healthcare access across India. The findings have significant implications for policymakers, healthcare managers, and educators seeking to bridge the efficiency divide in a rapidly evolving sector.

1. Introduction

India’s healthcare system is at a critical juncture, shaped by demographic shifts, rapid urbanization, and rising expectations for quality care. With a population exceeding 1.4 billion, growing burden of chronic diseases, and persistent rural-urban disparities, the healthcare landscape is complex and multifaceted. The sector is divided between a public system that aims to provide affordable care but is frequently undermined by resource constraints and quality issues, and a burgeoning private sector marked by advanced technology and specialization but often inaccessible due to high costs (Kamal Krishna et al., 2025).

This dichotomy presents a paradox: while public hospitals offer widespread reach, they struggle with infrastructure deficits, limited specialty services, and bureaucratic inefficiencies that drive patients toward private facilities despite financial barriers. Conversely, the private sector’s profit orientation, though contributing to technological advancement, has led to concerns over unnecessary investigations and inflated costs, raising ethical and affordability challenges (3SC Solution, 2025).

Addressing these systemic challenges requires a comprehensive managerial framework that leverages data and technology for workforce optimization (Human Resources Analytics), professionalizes supply chain management to ensure reliable availability of medical commodities, and implements precise cost accounting techniques to promote transparent and fair pricing. This paper examines the multifaceted components of this framework and their potential to transform healthcare delivery in India.

2. Systemic Challenges in Indian Healthcare

2.1 Public Sector Deficiencies and Patient Preferences

Public healthcare in India is challenged by chronic underfunding, inadequate infrastructure, and workforce shortages. With approximately 1.3 government hospital beds per 1,000 population, well below WHO recommendations, the strain on existing facilities is acute, particularly in rural areas (Kamal Krishna et al., 2025). Studies indicate that 23.3% of metropolitan residents cite lack of specialty services as a major drawback, while 19.4% of undergraduates identify infrastructural inadequacies as critical (Kamal Krishna et al., 2025). These deficits result in long wait times, insufficient diagnostic capabilities, and reduced patient confidence.

The bureaucratic nature of public hospitals further compounds inefficiencies. Complex referral systems, delayed procurement processes, and fragmented management structures contribute to service delivery delays and low patient satisfaction. Consequently, despite lower costs, many patients prefer private hospitals for perceived higher quality and quicker access to specialized care, creating a demand-supply mismatch that overwhelms the private sector.

2.2 Commercialization and Financial Barriers in Private Healthcare

The private healthcare sector in India has witnessed rapid growth, fueled by increased investment, urban demand, and advanced medical technology. However, commercialization has introduced ethical concerns, including the prevalence of unnecessary surgeries and diagnostic tests motivated by profit rather than clinical need (3SC Solution, 2025). For example, common but sometimes unwarranted procedures like appendectomies and tonsillectomies have been reported at inflated rates in some private settings.

Financial barriers remain significant, with 17.5% of urban residents acknowledging the high cost of private care as a major obstacle (Kamal Krishna et al., 2025). Out-of-pocket expenditure accounts for over 60% of total health spending in India, pushing millions into poverty annually. This financial risk deters many from seeking timely care or leads to catastrophic health expenditures, perpetuating socioeconomic inequities.

2.3 Regulatory Framework

India's regulatory environment for healthcare is evolving but faces enforcement challenges. The National Health Mission (NHM) aims to strengthen public health infrastructure and expand service coverage, while the National Accreditation Board for Hospitals and Healthcare Providers (NABH) establishes quality standards for private hospitals (Ministry of Health and Family Welfare, India). Recent policies, such as

the Ayushman Bharat scheme and the National Digital Health Mission, emphasize universal health coverage and digital integration.

Nonetheless, regulatory fragmentation, lack of standard treatment guidelines enforcement, and limited monitoring capacity undermine quality control. The absence of standardized pricing regulations enables arbitrary charges in private hospitals. Strengthening regulatory oversight and harmonizing policies across public and private sectors are essential for ensuring quality, affordability, and accountability.

3. Managerial Interventions for Reform

3.1 Human Resources Analytics (HRA) and Digital Transformation

Digital transformation in healthcare is revolutionizing service delivery through electronic health records (EHR), telemedicine, AI, and predictive analytics. However, the human resource component is critical for successful adoption. HRA applies data analytics to optimize workforce planning, recruitment, training, and retention, anticipating demand fluctuations and aligning skills with technological needs (Kamal Krishna et al., 2025).

For example, predictive analytics can forecast staffing shortages, enabling proactive hiring and training. AI-driven tools assist in identifying skill gaps and tailoring continuing education programs. Successful Indian hospitals integrating HRA report improved employee engagement, reduced turnover, and enhanced patient outcomes. However, major barriers include data silos, cultural resistance, and inadequate analytics skills among HR staff. Compliance with data privacy laws like HIPAA and GDPR adds complexity but is essential for safeguarding sensitive information (World Economic Forum, 2025).

3.2 Professionalization of Health Supply Chain Management (SCM)

Efficient SCM is critical for ensuring timely availability of medicines, vaccines, and medical devices. India's vast geography, fragmented supply chains, and infrastructure disparities challenge efficient logistics, especially cold chain management essential for vaccines and biologics (3SC Solution, 2025). Supply chain roles are often filled by clinicians or administrative staff without formal training, leading to inefficiencies and stockouts.

Professionalization strategies include embedding SCM competencies in pre-service curricula for healthcare workers, establishing dedicated SCM cadres, and offering continuous skill development through short courses and technology-enabled learning. Innovative capacity-building efforts, such as hackathons combined with mentorship, have demonstrated success in developing localized, practical logistics solutions. Strengthening SCM not only reduces wastage and costs but also improves patient safety by ensuring uninterrupted treatment availability.

3.3 Advanced Cost Accounting Systems

Traditional hospital costing methods often allocate overheads indiscriminately, obscuring the true cost of services and impeding pricing transparency. Adoption of Activity-Based Costing (ABC) and Time-Driven

Activity-Based Costing (TDABC) enables granular tracking of resource utilization per procedure, facilitating accurate budgeting, pricing, and profitability analysis (ScienceDirect, 2018).

In India, hospitals with turnovers exceeding INR 35 crores are mandated to maintain cost records, supporting fair reimbursement under government insurance schemes such as the Pradhan Mantri Jan Arogya Yojana (PM-JAY). The integration of costing systems with hospital management software enhances real-time data availability for decision-making. Cost and Management Accountants (CMAs) play an instrumental role in designing and auditing these systems, helping hospitals comply with regulations and optimize resource allocation.

4. Case Study: Bridging the Efficiency and Affordability Divide in Indian Healthcare

4.1 Introduction and Context

India's healthcare sector features a prominent dual structure: a public system aimed at providing free or minimal-charge care, and a rapidly expanding private sector characterized by high investment and commercial orientation. This case study analyzes the critical duality where citizens face compromised quality in affordable public facilities versus high costs in high-quality private facilities. It proposes integrated solutions for systemic efficiency.

4.2 Problem Definition

A. Inefficiency and Quality Deficits in the Public Sector

- Lack of Infrastructure and Specialty Services: Public healthcare services lack basic infrastructure and specialized services, motivating preference for private hospitals.
- Major Drawbacks: A significant percentage of metropolitan residents report shortage of specialty services; undergraduates highlight infrastructure deficits.
- Operational Constraints: Bureaucratic hurdles, resource constraints, and high patient loads result in long wait times and compromised care.

B. Unaffordability and Commercialization in the Private Sector

- Profit Orientation and Over-treatment: Private hospitals pass high-tech equipment costs onto patients through unnecessary tests and procedures.
- Financial Barrier: High costs threaten access, exacerbating disparities.
- Unnecessary Procedures: Increase in unwarranted surgeries and tests, necessitating enforcement of standard treatment guidelines.

4.3 Proposed Solution: The Integrated Efficiency and Affordability Initiative (IEAI)

A. Strengthening Public Healthcare Infrastructure and Services

- Invest in infrastructure and streamline administrative processes.

- Enhance specialization and workforce training.
- Leverage technology via NHM initiatives.

B. Ensuring Affordability and Accountability

- Regulate costs and mandate cost transparency using ABC/TDABC.
- Enforce NABH accreditation and treatment protocols.

C. Promoting Public-Private Partnerships (PPPs)

- Leverage private sector efficiency while maintaining public access.

4.4 Implementation Plan

Phase	Focus Area	Actionable Steps
I	Public Sector Revival	Streamline admin processes, increase funding, recruit and train personnel, adopt telemedicine in rural areas.
II	Cost Accountability	Mandate ABC/TDABC costing in large private hospitals, set uniform hospitality cost standards, use cost databases.
III	Service Quality & Oversight	Enforce NABH compliance, implement treatment protocols, pilot PPPs in underserved regions.

4.5 Conclusion

Holistic improvements combining public sector strengthening, private sector cost regulation, technology use, and PPPs can bridge the efficiency and affordability divide in Indian healthcare.

5. Data Tables

Table 1: Public vs Private Healthcare Drawbacks and Preferences (Sample Data)

Dimension	Statistic (%)	Source
Lack of Specialty Services	23.3	Self- Observation
Lack of Infrastructure	19.4	Self- Observation
Financial Affordability Threat	17.5	Self- Observation
Preference for Private Hospitals	16.5	Self- Observation

Table 2: Cost Accounting Methods and Characteristics

Method	Description	Advantages	Challenges
Traditional Costing	Simple allocation of overheads	Easy to apply	Inaccurate for complex services
Activity-Based Costing	Allocates costs based on activities and drivers	Accurate, granular	Resource-intensive, complex
Time-Driven ABC (TDABC)	Calculates costs based on time and capacity	Simplifies ABC, actionable data	Requires detailed time studies
Micro Costing	Bottom-up costing of each resource used	Highly accurate	Very resource and data intensive
Ratio of Cost to Charges	Uses cost-to-charge ratios for indirect cost allocation	Simple	Less accurate, ignores variability

6. Discussion

The persistent inefficiencies in India's public healthcare system drive patients to expensive private alternatives, perpetuating affordability challenges and ethical concerns over exploitative practices. Bridging this efficiency divide requires organizational maturity characterized by integrated managerial approaches spanning human resources, supply chain, and financial systems. Policymakers must enforce standardized treatment guidelines and regulate pricing to protect patients and ensure affordability. Healthcare institutions should invest strategically in HRA technologies and SCM professionalization to optimize service delivery and operational efficiency. Education and training curricula must evolve to embed these competencies, creating a workforce equipped for a digital and data-driven healthcare environment.

Adoption barriers such as resistance to change, skill deficits, and regulatory complexity can be mitigated through stakeholder engagement, incentives, and capacity-building initiatives. Public-private partnerships (PPPs) offer promising models to leverage private sector efficiency while expanding public service reach. Furthermore, technology-enabled solutions, including AI and blockchain, present opportunities to enhance transparency, accountability, and patient trust.

7. Conclusion

Transforming India's healthcare system demands a strategic, managerial framework that addresses operational inefficiencies and financial opacity through digital workforce optimization, supply chain professionalization, and advanced cost accounting. These interventions, supported by robust regulatory enforcement and educational reforms, are vital to achieving equitable, efficient, and sustainable healthcare delivery. By bridging the efficiency divide, India can realize its vision of universal access to high-quality healthcare, improving population health and economic resilience.

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