

SYNOPSIS

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in

Healthcare Analytics

by

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Under the Supervision and Guidance of

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Synopsis for Dissertation

Title of the Research:

Operational Analytics and MIS-Based Decision Making for Improving Diagnostic Service Efficiency: A Case Study of Crystal Diagnostic Centre, Thane

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Abstract:

Research aims to explore how operational analytics and management information systems (MIS) can be used to enhance the efficiency and decision-making of operations in a diagnostic healthcare environment. The study was carried out at Crystal Diagnostic Centre, Thane with the operational and financial data obtained as part of their internship. Key performance indicators (KPIs) are assessed, as are trends in patient volume, revenue, payment behavior, collection efficiencies and service use. Data was analyzed using dashboard set-up and Microsoft Excel. The results prove the potential of using MIS data for converting it into meaningful information which can be utilized for operating planning, performance tracking and resource allocation. Healthcare analytics are a crucial component in improving the effectiveness of healthcare organizations and also in evidence-based management practices, the study notes.

Introduction:

Every day in healthcare organizations, there are lots of operational and financial data being produced. The value of such data comes when these are analyzed and used properly to make management decisions. Management Information Systems (MIS) create a framework for gathering, organizing and reporting operational information, and healthcare analytics transforms these data into useful insights.

Crystal Diagnostic Centre is a diagnostic healthcare centre that offers sonography, Doppler studies, X-ray, ECG and pathology investigations. The collected operational data through the centre's MIS was used during internship period to understand the pattern of utilization of the services, how the centre generates revenue, how the patients pay and how the services are performed.

This research report examines the benefit of operational analytics in an environment of a diagnostic centre to monitor performance, identify operational trends, and influence decision making.

Literature Review:

Past research has focused on the increasing importance of healthcare analytics, MIS for providing efficient healthcare operations, financial management and service delivery. According to research, healthcare organizations are increasingly using KPI monitoring, dashboard reporting and performance analytics to aid managerial decision making.

Patient volume analysis, revenue monitoring, collection efficiency assessment and reporting of service utilization have been emphasized in several studies in the context of healthcare organizations. Implementing MIS effectively helps organizations in achieving better data visibility, tracking the performance metrics, and supporting strategic planning.

Though there have been great strides in healthcare analytics, many diagnostic centers are still struggling to leverage common day-to-day operational data to inform decisions. This research tackles this gap by analysing how analytics can be used in a diagnostic centre setting with the support of MIS.

Objectives/Aims of the Study:

- To review operational and financial information created via the MIS, located at Crystal Diagnostic Centre.
- To assess patient volume, revenue generation, payment collection and service utilization key performance indicators (KPIs).
- To assess patient payment patterns and collection efficiency using operational analytics.
- To establish reporting systems based on dashboards for managerial decisions.

To offer suggestions to improve operational performance by using MIS analytics.

Methodology:

- **Research Design:** Descriptive and Analytical Study
- **Data Source:**
 - Gathering operational information from MIS records.
 - An in-depth examination of patient volume and revenue reports. In-depth analysis of patient volume and revenue reports. Collecting payment and payment-related data
- **Data Collection Methods:**
 - Extraction of operational data from MIS records

- Review of patient volume and revenue reports
- Collection of payment and collection-related information
- Compilation of service utilization statistics

➤ **Analysis Tools:**

- Microsoft Excel
- KPI Analysis
- Dashboard Reporting
- Descriptive Statistical Analysis
- Trend Analysis

➤ **Expected Outcomes:**

- Better knowledge of patient volume and patient revenue patterns.
- Key operational performance indicators identified.
- Evaluation of payment habits and collection effectiveness.
- Building actionable insights for operational improvement.
- Recommendations for improving decision making based on MIS.

➤ **Timeline:**

- **02 March 2026 – 15 March 2026:** Understanding organizational processes, project planning, literature review, and familiarization with the Management Information System (MIS).
- **16 March 2026 – 15 April 2026:** Collection and compilation of operational and financial data from MIS reports and departmental records.
- **16 April 2026 – 15 May 2026:** Data cleaning, KPI analysis, revenue analysis, payment pattern analysis, service utilization assessment, and dashboard development.
- **16 May 2026 – 31 May 2026:** Interpretation of findings, preparation of recommendations, dissertation writing, review, and final report submission.

References:

- Healthcare Analytics and MIS Literature Sources
- Operational Management and KPI Monitoring Studies
- Crystal Diagnostic Centre MIS Reports (2026)
- Financial and Operational Data Records (2026)
- Dashboard and KPI Analysis Reports Generated During Internship

Appendices:

- KPI Dashboard
- Monthly Patient Volume Analysis
- Revenue Trend Analysis

- Payment Mode Distribution Charts
- Payment Status Analysis
- Top Revenue-Generating Procedures
- Daily Revenue Trend Analysis
- Proposed Real-Time MIS Dashboard