Methodology Chapter

Case Study: Adoption of Electronic Health Records (EHR) in a UK NHS Trust

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1. Research Design

This study adopted a **qualitative single-case study design** to explore how a UK NHS Trust implemented and integrated an Electronic Health Records (EHR) system into routine clinical practice. Case study research is particularly suited to complex healthcare interventions because it allows an in-depth exploration of organisational processes, staff experiences, contextual challenges and real-world outcomes.

The qualitative orientation enabled the researcher to investigate **perceptions, behaviours, and decision-making** associated with EHR use, rather than quantify effects. Given that EHR adoption involves changes to workflows, communication, documentation and clinical decision-making, the case study design was considered the most appropriate approach to capture these multi-layered dynamics.

This design aligns with the aims of the study, which are:

1. To examine how frontline NHS staff experienced the introduction of an EHR system.
2. To explore organisational facilitators and barriers during implementation.
3. To understand the perceived impact of EHR use on documentation quality, workflow and patient care.

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2. Case Selection

A single NHS Trust was selected using **criterion-based purposive sampling**, guided by the following criteria:

- The Trust introduced a major EHR system within the past 3–5 years.
- It provides publicly available information on digital transformation initiatives.
- The Trust includes multiple departments (e.g., emergency, acute medicine, outpatients) affected by EHR implementation.
- Access to staff willing to participate in interviews was feasible.

Selecting one organisation allowed for deep contextual insight and alignment with the principles of focused, information-rich case study design. NHS Trusts differ in size, structure, workforce and digital maturity; therefore, the chosen setting offered a realistic and authentic environment to understand EHR adoption within the UK public health system.

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3. Participants and Data Sources

The study employed multiple data sources to strengthen credibility through triangulation.

3.1 Semi-Structured Interviews (Primary Data)

A purposive sample of **clinical and non-clinical staff** involved in EHR use was recruited. Participants included:

- 3 senior nurses
- 2 junior nurses
- 2 administrative staff members (e.g., ward clerks)
- 1 clinical informatics officer
- 1 EHR project support officer

This mix ensured representation from both frontline users and individuals involved in the implementation process. Participants were invited via email and professional networks. All interviews lasted 30–50 minutes and were conducted via Microsoft Teams.

The interview guide covered:

- Initial reactions to EHR implementation
- Training and support experiences
- Workflow changes
- Documentation quality
- Technical challenges and system usability
- Perceived impact on patient care
- Communication shifts amongst staff

3.2 Documentary and Policy Review (Secondary Data)

Secondary data sources were reviewed to contextualise findings:

- NHS Trust digital strategy documents
- EHR training manuals
- Publicly available implementation reports
- NHS Digital policy guidance
- Academic literature on EHR adoption and digital transformation in healthcare

These documents helped validate interview findings and provided insight into organisational priorities and national policy frameworks.

3.3 Observational Notes (Supplementary Data)

Although no direct clinical observations were conducted due to ethical constraints, participants were asked to describe typical EHR-related workflows. The researcher also recorded reflexive notes during interviews to enrich contextual understanding.

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4. Data Collection Procedure

Data collection followed three stages:

Stage 1: Preparation

Key organisational documents were reviewed to identify background information on:

- timeline of EHR implementation
- staff training models
- digital transformation objectives
- expected benefits and challenges

This helped refine interview questions and focus on practical, real-world experiences.

Stage 2: Semi-Structured Interviews

All interviews were conducted remotely and audio-recorded with consent. The semi-structured approach ensured:

- consistent coverage of core topics
- flexibility to explore emerging themes
- space for staff to describe experiences in depth

Interviews were transcribed manually by the researcher to ensure familiarity with the data.

Stage 3: Data Management

All transcripts, notes and documents were stored in encrypted, password-protected files. Transcripts were anonymised by removing names, job titles, and identifiable department information.

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5. Data Analysis

The study used **thematic analysis**, following Braun and Clarke's (2006) six-step approach.

5.1 Familiarisation

The researcher read all transcripts several times, taking initial notes on patterns such as:

- workflow disruption
- documentation improvement
- navigation challenges
- communication changes
- perceived training gaps

5.2 Generating Codes

Transcripts were coded line-by-line using inductive coding. Examples of codes include:

- “system freezes slow workflow”
- “improved legibility and accuracy”
- “lack of hands-on training”
- “alerts can be overwhelming”
- “interdepartmental data sharing improved”

5.3 Theme Development

Codes were categorised into early themes:

1. **Impact on Workflow**
2. **Training and Support Experiences**
3. **Usability and Technical Constraints**
4. **Clinical Documentation Quality**
5. **Perceived Effect on Patient Care**
6. **Organisational Readiness and Change Management**

5.4 Reviewing Themes

Themes were checked for coherence and assessed against the entire dataset.

5.5 Defining Themes

Themes were refined to ensure each:

- captured a distinct aspect of EHR adoption
- related directly to the research aims
- included clear illustrative evidence

5.6 Producing the Analysis

Themes were synthesised in narrative form, integrating both primary interview data and secondary documentary evidence.

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6. Ethical Considerations

Given the sensitivity of healthcare-related information, robust ethical procedures were followed.

- Ethical approval was obtained from the researcher’s university.
- NHS Health Research Authority (HRA) guidelines were consulted to ensure compliance with national research governance.
- Participation was voluntary, with informed consent obtained electronically.

- Interview data were anonymised and securely stored.
- No patient information or confidential clinical data were accessed.
- Participants were reminded they could withdraw at any time.

To maintain confidentiality, staff roles were generalised (e.g., “senior nurse” rather than specific ward positions).

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7. Ensuring Rigour and Trustworthiness

Several strategies were used to strengthen the reliability and validity of the findings:

7.1 Triangulation

Multiple sources (interviews, documents, policy) were combined to validate themes.

7.2 Member Checking

Participants reviewed a short summary of preliminary themes to ensure accuracy of interpretation.

7.3 Reflexivity

The researcher maintained a reflexive journal noting assumptions, interpretations and possible biases.

7.4 Audit Trail

Codebooks, theme maps and analytic memos were systematically documented.

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8. Limitations

Three limitations were acknowledged:

- The study involved one NHS Trust; findings may not reflect variations across the NHS.
- Access to system performance data was limited to staff descriptions and public reports.
- Interviews took place after initial implementation, meaning recollections may be influenced by time.

Although these limitations affect generalisability, the case study design focuses on depth rather than representativeness, making these constraints appropriate for the research aim.

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9. Summary

This methodology provided a rigorous qualitative approach for exploring EHR adoption within a UK NHS Trust. By combining semi-structured interviews, documentary analysis and thematic analysis, the study produced a detailed, contextualised understanding of how staff experience digital transformation in healthcare settings. The approach aligns with established case study methodology principles and offers a strong foundation for the subsequent presentation of findings.