MSc Digital Transformation for the Health and Care Professions BMDS7005

Evaluation of the 'Ward, Area and Service Projects Module' within a Digital Audit Management and Tracking System Implemented Throughout Swansea Bay University Health Boards (SBUHB) Wards and Areas

Dissertation submitted in partial fulfilment of the award of
Master of Science in Digital Transformation for the Health and Care Professions

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Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed……F.Holt……

Date……30/4/25……

I confirm that this submission is my original work and does not include text created by a generative artificial intelligence tool.

Abstract

Introduction: The AMaT (Audit Management and Tracking System) 'Ward, Area and Service Projects' module aims to centralise the management of all ward based audits digitally throughout Swansea Bay University Health Board (SBUHB). This post implementation evaluation explores how the module has impacted SBUHB including how well the module has integrated into existing workflows, module adoption, the accuracy and reliability of the data captured in the module, efficiency gains, impact on regulatory compliance, and patient care and safety.

Discussion: The implementation of the AMaT module has improved oversight, accountability, and audit compliance across clinical areas resulting in indirect improvements in patient care and safety. Evidence of high usage and staff reporting time savings indicate that the module has been widely adopted and enhances operational efficiency. Additionally, staff perceive its role in streamlining workflows and improving visibility of quality data to be of value.

Conclusion: The evaluation demonstrates that the module is a valuable tool for improving audit management, driving efficiency, and promoting quality improvement across clinical areas. By enabling improved data visibility and promoting staff accountability, the module contributes to improved governance, compliance and patient safety outcomes. Continued investment in user support and system optimisation will be key to sustaining adoption and user engagement. The findings underline the module's potential to drive a culture of continuous improvement, maximising the long term impact on patient care and safety.

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Chapter 1 - Introduction

1.1 - Background and Context

Swansea Bay University Health Board (SBUHB) is one of the major healthcare providers in Wales, responsible for delivering a wide range of healthcare services to communities across Swansea and Neath Port Talbot (Swansea Bay University Health Board, 2020). Anchored in its Quality Strategy, SBUHB is dedicated to providing safe, high quality, and patient centred care, underpinned by a quality assurance framework of continuous improvement and regulatory compliance (Swansea Bay University Health Board, 2023). With a strong commitment to excellence and accountability, the Health Board prioritises harm reduction and improved patient outcomes to ensure every facet of care meets the highest standards to enhance overall care, quality and safety (Swansea Bay University Health Board, 2023). Central to the quality assurance framework are quality assurance ward and area audits, acting as a foundation for ensuring adherence to quality and safety compliance, standards and protocols (Welsh Government, 2021). Quality assurance ward and area audits are systematic evaluations conducted on a regular basis to ensure compliance with established healthcare regulations (Underwood *et al*, 2021). Serving as a cornerstone of quality assurance in healthcare by identifying areas for improvement, monitoring compliance, and driving enhancements in patient safety, ward and area audits are essential to inform standards and identify areas for improvement while fostering continuous learning throughout the organisation (Hut-Mossel *et al*., 2021).

1.2 - Problem Statement

Recent inspections by Healthcare Inspectorate Wales (HIW) and Audit Wales highlighted concerns regarding the effective dissemination and implementation of the quality assurance framework across SBUHB’s service groups (Healthcare Inspectorate Wales, 2022; Audit Wales, 2022). These inspections identified inconsistencies in how quality assurance processes such as ward and area audits

were applied and documented across different service groups, leading to variability in compliance and established standards (Healthcare Inspectorate Wales, 2022; Audit Wales, 2022). With traditional, paper based audit systems often falling short due to inefficiencies, limited scalability, and challenges in governance and the inability to promptly address identified issues, the Health Board is deprived of valuable opportunities to monitor health care standards and utilise data driven insights to drive change and improvement (Soresi *et al*., 2021). Both reports emphasised the need for a more cohesive and standardised approach to quality assurance, highlighting opportunities for improvement through the adoption of digital tools (Healthcare Inspectorate Wales, 2022; Audit Wales, 2022). Recognising these limitations, SBUHB has embraced digital transformation as a key enabler of its most recent Quality Strategy to modernise its quality assurance processes and to align them with best practices (Swansea University Health Board, 2023).

Globally, many healthcare systems are increasingly adopting digital tools to address challenges in quality assurance, streamline workflows, and enhance patient safety (Alawiye, 2024). The COVID-19 pandemic underscored the speed and adaptability with which new working methods can be introduced and adopted, particularly in healthcare settings requiring flexibility and rapid responses to unprecedented challenges (Vargo *et al*., 2020). This period of disruption highlighted the pivotal role digital tools can play in facilitating continuous improvement and maintaining operational efficiency under challenging conditions (Hutchings, 2020).

During the pandemic, many healthcare organisations saw an accelerated shift towards digitalisation, which not only ensured continuity of care but also enabled the delivery of services in more innovative and efficient ways (Mesko, 2022). Local initiatives like the Welsh Nursing Care Record (WNCR) and Hospital Electronic Prescribing and Medicines Administration (HEPMA) system have already demonstrated the value of digitalisation in improving accuracy, efficiency and safety which has contributed to improved patient care (Church, 2024).

1.3 - Rational for the Study

Building on this momentum and acting on concerns raised regarding quality assurance within the Health Board, SBUHB has continued digitally transforming and implemented the Audit Management and Tracking (AMaT) system. This comprehensive digital platform is designed to streamline audit processes, enhance data accuracy and enable real time compliance monitoring across wards and services (AMaT – clinical audit assurance software for quality improvement, 2024). This strategic move not only supports SBUHB's Quality Strategy but also positions the organisation as a leader in leveraging technology for improved health care outcomes. Additionally, the integration of audit management systems, such as AMaT, aligns with international best practices in healthcare digitalisation, mirroring initiatives such as the NHS Digital Programme in England and similar advancements in countries such as Denmark and Australia (Sousa *et al*., 2024).

The AMaT system addresses key challenges associated with traditional audit practices by providing functionalities for scheduling clinical audits, recording findings, monitoring compliance and generating actionable insights (Figure 1.1).

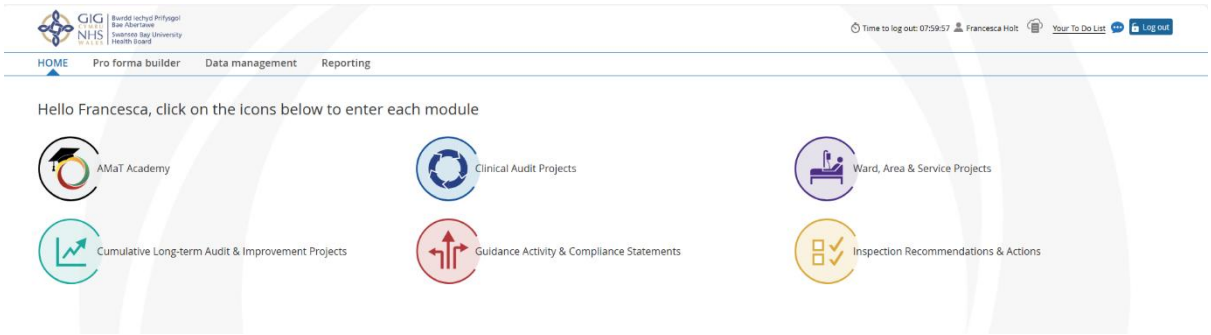

Figure 1.1 AMaT (Audit Management and Tracking) System Homepage

Within the AMaT system, there are five modules which all contain various key areas of functionality within the system (Table 1.1). However, the 'Ward, Area and Service Projects' module stands out as a specialised tool for ward level and service-based audits.

Table 1.1 Key Functionalities of AMaT's Modules

Module	Key Functionalities

Cumulative Long-term Audit & Improvement Projects	Ongoing audits to track trends, implement improvements and measure long term impact on patient care
Clinical Audit Projects	Assessment of clinical practice against standards to identify improvements
Guidance Activity & Compliance Statements	Monitoring adherence to policies and best practice guidelines
Ward, Area and Service Projects	Assurance ward-based audits to ensure compliance and improve efficiency, safety and care quality
Inspections Recommendations & Actions	External inspections recommended improvements and ensuring corrective actions are implemented

This module enables staff to conduct audits tailored to the unique workflows and needs of specific areas, create targeted actions plan for non-compliance and assign responsibilities to ensure improvements are achieved in subsequent audits. Its intuitive design integrates seamlessly with daily operations, allowing healthcare professionals to capture real time data, flag concerns, and document actions without creating additional administrative burdens.

While the module is anticipated to deliver significant benefits, such as enhanced efficiency and improved governance, its actual impact on healthcare delivery at SBUHB remains unexamined. Evaluating its effectiveness is essential to determine whether it aligns with the Health Board's aims of improving patient outcomes, streamlining workflows, and supporting continuous quality improvement. It is also particularly important as digital tools become increasingly integral to healthcare systems. By focusing on user adoption, data accuracy, efficiency gains, and compliance benefits, this evaluation will provide critical insights into the module's value. High adoption rates would indicate user-friendliness and perceived utility, while data accuracy would support reliable decision making. Furthermore, any efficiency gains could facilitate a reduction in administrative burdens, allowing more time for patient care, while enhanced compliance would foster regulatory adherence

and quality assurance. Insights from this evaluation will not only assess the modules value but also inform its future optimisation and broader applicability in healthcare settings.

1.4 - Research Questions

To guide this evaluation, the following research questions have been formulated to systematically explore the module's integration, adoption, data reliability, operational efficiency, compliances, and impact on patient care and safety.

Research Questions:

1. How effectively is the AMaT 'Ward, Area and Service Projects' module integrated into existing workflows within SBUHB?
2. What are the levels of adoption among healthcare professionals and administrative staff with the module?
3. How accurate and reliable is the data captured and stored within the module?
4. What efficiency gains and time savings does the module offer?
5. To what extent does the module enhance compliance with regulatory requirements and quality standards?
6. How does the module impact patient care and safety?

1.5 - Aims and Objectives of the Research

To gain a comprehensive understanding of the module's value and impact, this evaluation aims to evaluate its effectiveness, assess its influence on operational efficiency, and explore its contribution to improved healthcare service delivery within SBUHB. While previous research has explored the general benefits of healthcare digitalisation (Mesko, 2022; Vargo *et al*., 2020), limited studies have examined the practical impact of audit management systems on operational efficiency, data accuracy and patient safety within NHS Wales. This study addresses this gap by providing a detailed evaluation of the AMaT 'Ward, Area and Service Projects' module at SBUHB and seeks to provide insight into how the module supports staff, tracks audits, and ensures that outcomes are appropriately actioned, contributing to the Health Board's overarching Quality Strategy. The findings from this evaluation

will not only identify potential areas for refinement of the AMaT module but will also contribute to the growing body of evidence supporting digital transformation in healthcare. Insights gained could also influence policymaking and encourage the adoption of similar systems across other NHS Health Boards and similar health care organisations.

To achieve these aims, the following objectives have been established to ensure the key aspects of AMaT's 'Ward, Area and Service Projects' module are evaluated.

Key Objectives:

1. Evaluate the integration of the AMaT 'Ward, Area and Service Projects' module into existing workflows across SBUHB's wards and areas.
2. Examine the levels of user adoption of the module among healthcare professionals and administrative staff.
3. Assess the accuracy and reliability of data captured and stored within the module.
4. Analyse efficiency gains and potential time savings associated with the module's implementation.
5. Evaluate the module's effectiveness in ensuring compliance with regulatory requirements and maintaining quality standards within SBUHB.
6. Determine the impact of the module on patient care and safety.

1.6 - Structure of the Evaluation

By addressing existing gaps in knowledge regarding the practical benefits of digital audit management systems, this evaluation aims to generate actionable insights that will inform the future optimisation of the AMaT module as well as contribute to broader efforts in healthcare digitalisation. The findings will serve as a valuable resource for SBUHB and other healthcare organisations seeking to enhance quality assurance practices through digital transformation. This evaluation will conclude by offering recommendations to enhance the module's functionality and inform its potential replication in similar healthcare settings to drive improvements in healthcare delivery and patient outcomes.

Chapter 2 - Literature Review

2.1 Introduction

The purpose of this chapter is to critically review existing literature relevant to the evaluation of digital audit management and tracking systems in order to establish a theoretical and contextual framework for evaluating the 'Ward, Area and Service Projects Module' within the AMaT system throughout SBUHB. By exploring the existing body of knowledge on digital audit systems in healthcare, their integration into clinical workflows, and their impact on operational efficiency, regulatory compliance, and patient outcomes, this review will identify gaps in current knowledge and will position this evaluation within the context of ongoing developments in digital healthcare innovation. Additionally, by examining how digital systems are implemented, adopted and evaluated in healthcare settings, insights into the challenges and opportunities associated with such technologies can be gained, aligning closely with the evaluations objectives.

The significance of this literature review lies in the increased reliance on digital solutions to address the various complexities of modern healthcare. Audit management systems like AMaT offer a promising pathway to improve the quality and safety of care delivery through streamlined processes and data driven decision making (Sousa *et al*., 2024). By critically analysing existing studies, this review highlights the theoretical underpinnings and practical applications of these systems, setting the stage for a comprehensive evaluation of the AMaT module within SBUHB.

Digital audit management systems, such as the AMaT system, have transformed traditional approaches to quality assurance in healthcare (Sousa *et al*., 2024). By offering a centralised platform to plan, conduct, manage and analyse audits, healthcare organisations like SBUHB are able to monitor compliance and identify opportunities for quality improvement in real time. This functionality fosters more efficient and proactive decision-making processes. Furthermore, digital audit tools simplify data collection, reduce administrative workload, and promote transparency

by ensuring audit findings are readily accessible to relevant stakeholders (Keizer *et al.,* 2022).

2.2 Methodology

This literature review was conducted to evaluate existing research on the integration, adoption, data accuracy, efficiency, compliance, and patient care impact of digital audit management and tracking systems in healthcare. A systematic approach was used to identify, select, and analyse relevant literature, ensuring a comprehensive understanding of the research topic.

A search across the following electronic databases was conducted:

- PubMed
- Google Scholar
- ProQuest

Boolean operators (AND, OR) were used to refine the search. During the search, reference lists of the relevant articles were reviewed to identify additional studies that met the inclusion criteria. The search terms used to find relevant articles, reports and studies included:

- “Digital audit systems” AND “integration” AND “clinical workflows”
- “Digital audit systems” AND “data accuracy” OR “data reliability”
- “Digital audit management systems” OR “digital audit systems”
- “Digital audit management systems” AND “compliance”
- “Digital audit management systems” AND “patient safety” OR “patient care”

To ensure relevant, methodologically sound studies were considered to maintain the reliability and validity of the findings, the following criteria were applied as shown in Table 2.1.

Table 2.1 Inclusion and Exclusion Criteria of Literature

Inclusion Criteria	Exclusion Criteria

Full text available	Opinion sources
Peer reviewed	Non-English publication without available full text translations
Main language – English	
Published within the last 25 years	
Literature including key themes related to workflow integration, user adoption, data accuracy, efficiency, compliance, and patient outcomes	

2.3 Results

Literature was initially screened based on title and abstract relevance. Full-text articles were then reviewed to assess their alignment with the research objectives. This systematic approach informed the later discussion of literature.

Figure 2.1 utilises the PRISMA model (Page *et al*., 2020) to outline the systematic selection of literature, detailing the inclusion and exclusion process.

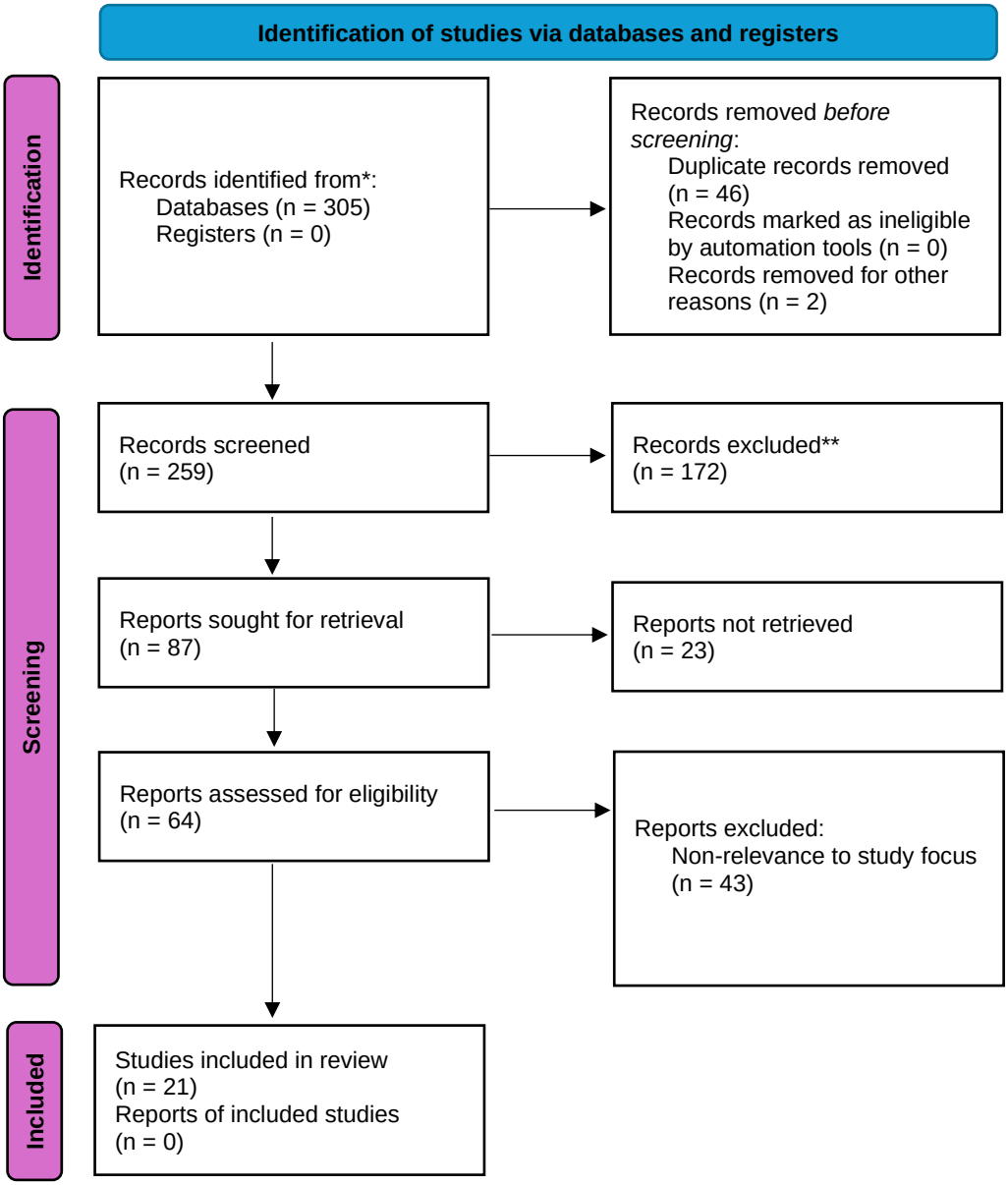

Figure 2.1 Results using PRISMA Flowchart

2.4 Evolution of Digital Audit Systems

Historically, audit and quality assurance systems in healthcare relied heavily on manual processes, including paper based records and fragmented data storage. While these methods provided a foundational framework for monitoring standards, they were burdened with challenges such as delayed reporting, data inaccuracies, and inconsistent follow up actions (Berwick, Nolan and Whittington, 2008). Such

inefficiencies limited the capacity for comprehensive oversight of compliance and quality improvement initiatives. The transition to digital solutions gained momentum in the early 2000s, beginning with advancements in electronic health records (EHRs) and the widespread adoption of hospital information systems including clinical portals (Cowie *et al*., 2017). These developments paved the way for the emergence of digital audit management systems, designed to address gaps in standardisation, streamline processes, and enable organisations to meet the growing demands of regulatory compliance (Tolf *et al*., 2020).

In the UK, the introduction of the Care Quality Commission (CQC) standards has created a need for robust and transparent systems to efficiently monitor compliance (CQC, 2025). Digital audit tools like AMaT have become essential for healthcare providers striving to meet these requirements efficiently and effectively. Beyond compliance, these systems support continuous quality improvement by facilitating root cause analysis, tracking corrective actions, and identifying trends across various services and specialities (CQC, 2025). It has been argued that digital tools could enhance the tracking of compliance metrics facilitating the acceleration of the adoption of corrective measures (Leape *et al*., 2019).

2.5 Integration of Digital Systems into Clinical Workflows

The integration of digital tools into healthcare workflows has become a critical focus for improving efficiency, accuracy, and patient care throughout healthcare settings (Auerbach, Neinstein and Khanna, 2018). As organisations seek to streamline operations and comply with regulatory standards, the adoption of digital systems, such as the AMaT ‘Ward, Area and Service Projects’ module, has presented both opportunities and challenges. While these systems have the potential to improve care delivery and operational efficiency, their integration into existing workflows can be complex, requiring extensive planning with significant adjustments to well-established practices often needing to be made.

Effective integration hinges on the alignment between digital tools and clinical processes. A qualitative systematic review by Wosny, Strasser, and Hastings (2023) explored the experiences of healthcare professionals using digital tools in hospital

settings. The study found that while digital systems enhanced care delivery by improving access to critical patient information which strengthened coordination among multidisciplinary teams, these benefits were only realised when the digital tools were seamlessly integrated into existing workflows. The study emphasised the importance of careful planning and effective change management to ensure that digital systems are sustained as well as adopted in practice to minimise disruption to clinical workflows and maximise their potential to improve patient outcomes (Wosny, Strasser, and Hastings, 2023).

In a further systematic review, Stoumpos, Kitsios and Talias (2023) investigated the impact of digital technologies on healthcare delivery and the factors influencing their acceptance among healthcare professionals. Despite the potential benefits, the review identified persistent barriers, including resistance to change, insufficient training, and concerns about system compatibility with existing workflows. These challenges highlight the need for robust implementation strategies that address both technical and behavioural aspects.

While such studies claim that digital integration invariably leads to improved patient care, it is important to acknowledge the potential limitations associated with findings derived from systematic reviews. Though systematic reviews are valuable for synthesizing evidence and providing comprehensive insights into specific research areas, there is the potential for publication bias (Dwan *et al*., 2013). Studies with significant or positive findings are more likely to be included in the review, skewing the overall conclusions. Additionally, the quality of a systematic review is fundamentally dependant on the quality of the included studies. If the primary studies have methodological flaws, the reviews findings may be compromised highlighting the importance of interpreting systematic review findings with a critical understanding of their inherent constraints (Petticrew and Roberts, 2006).

2.6 Barriers to Integration and Adoption

Resistance to change remains one of the most significant barriers to integrating digital systems in healthcare. Nascimento *et al*. (2023) conducted a systematic

review exploring factors influencing the adoption of digital health technologies by healthcare professionals. Their findings revealed that resistance was often rooted in a lack of engagement during the decision-making process and inadequate implementation support.

A further barrier to implementation is the financial investment required for software, hardware and training. Smaller NHS organisations, in particular, may find budget constraints a significant obstacle to adoption. Additionally, with healthcare professionals often facing high clinical demands, limited time for training and system familiarisation can further hinder successful implementation (Iyanna *et al*., 2022).

Interoperability issues with legacy systems presents another challenge. Many NHS organisations continue to use outdated systems that are incompatible with contemporary digital solutions. leading to complicated processes and data silos. While research indicates that middleware solutions can facilitate data exchange, these require additional financial and technical investment (Saripalle, Runyan and Russell, 2019). The complexity of interoperability issues highlights a fundamental flaw in the current digital landscape within healthcare. Rather than encouraging technology solutions in silo, there is a pressing need for strategic national guidance that promotes system compatibility and data standardisation. Without this, individual organisations risk being left with bespoke systems that limit scalability and broader data integration (Bezerra, de Araújo and Times, 2020).

Furthermore, given the sensitive nature of healthcare data, digital systems must possess stringent security standards to prevent breaches and ensure compliance with regulatory requirements. Failure to address these factors can fuel resistance to change and hinder adoption (Thapa and Camtepe, 2021).

2.7 Overcoming Integration Challenges

Numerous studies have identified strategies to overcome barriers to integration. Davis’s (1989) Technology Acceptance Model (TAM) provides a foundational framework for understanding how perceived ease of use and perceived usefulness shape attitudes toward technology adoption. In healthcare settings, this model has

demonstrated that professionals are more likely to adopt technologies that are intuitive and seamlessly fit into their current clinical workflows.

Nascimento *et al*. (2023) highlighted the importance of tailored training and practical demonstrations of the benefits of digital tools to reduce resistance. The study found that when healthcare professionals were actively involved in implementation and received ongoing support, adoption rates improved significantly. It was also argued that engaging users throughout the process fosters a sense of ownership and helps build trust in the system.

However, reliance on traditional training methods may be insufficient in complex healthcare environments where staff are often time constrained. Blended learning approaches, combining demonstrations and in house demonstrations with digital resources, may prove more effective in promoting long term adoption (Liu *et al*., 2016). Moreover, the lack of ongoing support post-implementation frequently undermines initial training efforts, suggesting that continuous professional development (CPD) is essential for sustained adoption (Liu *et al*., 2016).

Organisational readiness and strong leadership are also critical. Greenhalgh *et al*. (2017) found that healthcare organisations with strong leadership support and a culture of innovation were more successful in achieving widespread adoption of EHR systems. Leaders played a pivotal role in addressing staff concerns, allocating resources, and creating an environment conducive to change.

However, leadership support alone is not an independent problem. In hierarchical healthcare structures, middle management often act as gatekeepers to change. Without their buy-in, even well supported digital initiatives risk failing (Daley and Lovrich, 2007). Therefore, a fully inclusive engagement strategy that involves both senior leaders and frontline managers is critical.

Moreover, co-design with end users has proven essential for successful integration. Booth *et al*. (2021) examined the adoption of digital health technologies and emphasised that technologies designed with user input were more likely to align with clinical needs and preferences. The researchers also stressed the importance of tailored, ongoing training and technical support to sustain adoption rates over time. Cresswell *et al*. (2020) further suggested that phased rollouts combined with regular

feedback mechanisms can help healthcare organisations address challenges incrementally, ensuring a smoother transition for staff. This approach allows organisations to adapt workflows gradually and provides opportunities for improvement.

Nevertheless, phased rollouts require sustained recourse allocation, which may not always be feasible given budget constraints. While incremental improvements are ideal, healthcare organisations may be forced into abrupt transitions due to policy changes or financial pressures, creating additional risks for staff and patients (Golinelli *et al*., 2020).

2.8 Data Accuracy and Reliability in Digital Systems

The accuracy and reliability of data captured and stored within digital audit tools are paramount to their effectiveness in supporting healthcare decision making and ensuring compliance with regulatory standards. Accurate data collection underpins the ability to generate actionable insights, enhance patient safety and streamline clinical workflows (Alubaie *et al.,* 2024). The transition from traditional paper based methods to digital systems presents an opportunity to minimise human errors associated with manual data entry and ensure consistency in data reporting. However, achieving high data accuracy and reliability in digital systems requires robust design, seamless integration into clinical workflows, and rigorous data validation processes (Alubaie *et al*., 2024).

Research has demonstrated the potential of digital audit tools to enhance data accuracy. In 2024, Ofori Issah, Samuel and Eric investigated how digitalisation impacts the operational performance of the audit service at the Ghana Revenue Authority (GRA). The study aimed to evaluate the effect of digital tools on improving the efficiency, accuracy, and reliability of audit operations within the GRA. The study found that the introduction of digital audit tools significantly reduced manual errors, ensuring a higher level of data accuracy. Similarly, automated processes within the digital audit tools streamlined data validation, improving the reliability of audit outcomes. The study also highlighted how digital tools promoted consistency in data reporting and reduced duplication through automated workflows, further enhancing data integrity.

While Ofori Issah, Samuel and Eric's (2024) study provides valuable insights into the benefits of digital audit tools in enhancing data accuracy and reliability, it is important to critically evaluate the study's broader applicability within healthcare contexts. Unlike tax auditing in the GRA, healthcare involves complex and diverse data types, ranging from patient records to compliance audits, which present unique challenges in data management. For instance, healthcare data is often sourced from multiple systems, leading to potential issues with data integration and interoperability (Li *et al*., 2021). This complexity necessitates advanced data validation mechanisms and robust system design to ensure data consistency and accuracy across platforms (Sharma *et al.*, 2023). Therefore, caution must be exercised when generalising findings from non-healthcare sectors to clinical environments.

Moreover, while digital audit management systems can minimise human errors associated with manual audit data entry, they are not immune to technical challenges. Studies have highlighted risks such as data duplication, system downtimes and cyber security threats, which can compromise data integrity and reliability (Cresswell *et al*., 2020). In healthcare, such inaccuracies could have serious implications for patient safety and clinical decision making. Therefore, implementing stringent data governance frameworks and regular system audits is essential to maintain data accuracy and reliability in digital healthcare systems (Paparova *et al.,* 2023).

Further research in healthcare specific settings is needed to explore the long-term impact of digital audit tools on data accuracy and reliability, considering the sector's unique data complexities and regulatory requirements. Additionally, comparative studies evaluating different digital system could provide insights into best practices for optimising data integrity and ensuring reliable healthcare audits.

2.9 Benefits of Digital Audit Management Systems

Digital audit management systems offer significant efficiency gains and time savings within healthcare environments, streamlining administrative processes and enabling healthcare professionals to allocate their time more effectively (Papamalis *et al*., 2023). By automating scheduling, reminders, and tracking, these systems minimise

the risk of missed audits and reduce the need for manual follow-ups. Additionally, they provide comprehensive reporting functionalities, with pre-configured analytics and dashboards that eliminate the difficult task of manually compiling data from disparate sources. This not only saves considerable time but also reduces human errors associated with traditional paper based methods, ultimately leading to improved decision making and operational efficiency (Papamalis *et al*., 2023).

In 2022, Tsang *et al*. conducted a systematic review on the effectiveness of computerised audit and feedback (A&F) systems in healthcare settings. The study combined findings from various healthcare contexts to evaluate how these systems improve clinical practice and contribute to efficiency gains, including time savings and streamlined workflows. The review highlighted that computerised A&F systems reduce the administrative burden associated with traditional paper based audits. Automation of data collection, analysis and feedback dissemination significantly decreased the time required to complete these tasks, allowing healthcare staff to redirect their focus from administrative duties to clinical care. Furthermore, the review highlighted measurable reductions in the time required to conduct audits, formulate reports, and implement improvement plans. It was found that the automation of these processes not only enhanced productivity but also contributed to resource optimisation within healthcare organisations (Tsang *et al*., 2022).

These findings align with the growing demand for efficient healthcare delivery, particularly in high-pressure environments where timely decision making is crucial. By minimising manual processes and streamlining workflows, digital audit tools can enhance clinical efficiency and improve patient safety (Soresi *et al.,* 2025). However, while the reviews findings are grounded in empirical data and presents compelling evidence of efficiency gains, it is important to consider the broader context of these findings as the extent of efficiency improvements may vary depending on organisation size, staff's own digital literacy, and the complexity of existing workflows.

Additionally, Tsang *et al*. (2022) review relies heavily on previously published studies (Tuti *et al*., 2017, Dowding *et al*., 2015), some of which may have been conducted by developers or advocates of A&F systems. This raises the potential for bias, which could lead to an exaggeration of the systems' benefits. Additionally, Owens (2021)

notes that while systematic reviews are considered a rigorous method for evidence synthesis, they are susceptible to selection bias, heterogeneity in study designs, and inconsistencies in reported outcomes. These challenges can complicate the interpretation of combined data and potentially lead to misleading conclusions, particularly when there are significant clinical or methodological differences within the included studies.

Although the benefits that a digital audit management system can offer are clear, the real-world impact on healthcare settings remain dependant on successful integration and staff adaptability (Aila Naderbagi *et al.,* 2024). Therefore, implementation strategies which include user engagement and change management must be adopted to maximise adoption and mitigate resistance. Furthermore, these benefits will only be realised if the organisation and stakeholders are open to change (Aila Naderbagi *et al.,* 2024).

2.10 Importance of Compliance in Healthcare

The healthcare sector operates within a highly regulated environment, where adherence to compliance and regulatory standards is essential to ensure patient safety, maintain service quality and uphold public trust (Oikonomou *et al*., 2019). Digital audit management systems, such as the ‘Ward, Area and Service Projects’ module within the AMaT system play a critical role in helping healthcare organisations meet these regulatory obligations by incorporating action planning functionalities that streamline compliance monitoring and reporting.

According to the Health and Social Care Act (2012), healthcare providers are required to maintain high standards of care, conduct regular audits and demonstrate accountability in service delivery (CQC, 2025). Non-compliance can result in legal repercussions, financial penalties, and reputational damage. As a result, healthcare organisations require robust systems to track and manage compliance activities effectively. By digitising audit processes, timely reporting can be facilitated, and data accuracy can be ensured. Conversely, digital audit management systems offer an automated approach to compliance monitoring that reduces administrative burdens and ensures accurate reporting of performance indicators, quality priorities and areas for improvement (Courage Oko-Odion and Onyenum Ruth Udoh, 2024).

2.11 Impact of Digital Audit Management Systems on Compliance

Studies have shown that the adoption of digital tools have significantly improved compliance rates in healthcare organisations. In a study by Nadia *et al*. (2020) titled “Building confidence in digital health through metrology” metrology, the science of measurement is explored in the context of enhancing the reliability and integrity of healthcare data. The study highlights that applying metrological principles to healthcare data compliance rates can be significantly improved. By ensuring traceability, calibration, and uncertainty quantification, healthcare organisations can enhance the accuracy and reliability of their data. This approach not only aids in meeting regulatory requirements but also supports better clinical decision making and supports better governance and accountability (Nadia *et al*., 2020).

Additionally, Nadia et al. (2020) discusses the benefits of metrology in enhancing data transparency and supporting regulatory reporting. It is argued that accurate and well-curated data is essential for demonstrating compliance during inspections and audits conducted by regulatory bodies. The study suggests that a metrological approach can help address emerging challenges in utilising healthcare data effectively.

While Nadia *et al.* (2020) provides compelling evidence on the advantages of metrology in healthcare data organisation, several limitations should be considered. The study is predominantly theoretical, relying on conceptual models rather than empirical data collected from actual healthcare settings. Consequently, the findings may not fully account for the practical challenges of implementing metrological principles in complex healthcare environments. Additionally, the study assumes that healthcare organisations possess the necessary technical expertise and infrastructure to support advanced data management techniques, which may not be universally applicable.

Moreover, although digital systems have been shown to enhance compliance rates, concerns regarding data privacy can hinder the successful adoption of digital audit management systems (Abouelmehdi *et al*., 2017). Therefore, healthcare organisations must consider these contextual factors and ensure adequate digital infrastructure to maximise the benefits of digital compliance tools.

As regulatory requirements evolve, digital audit management systems must be adaptable and scalable to ensure sustained compliance (Bahmani *et al*., 2021). Additionally, the growing emphasis on data driven decision making highlights the importance of maintaining high standards of data accuracy, integrity and security (Ibrahim *et al.*, 2024). Future research could consider focusing on evaluating the long-term impact of digital audit management systems on compliance outcomes and exploring the potential of advanced technologies such as artificial intelligence and machine learning to further enhance compliance monitoring and reporting.

2.12 Impact on Patient Care and Safety

One key benefit of digital tools is their ability to reduce adverse events and enhance patient safety through improved documentation and communication (Barbieri *et al.,* 2023). Digital systems, such as audit management tools, enable accurate and real-time recording of compliance data, allowing remedial actions to be implemented promptly. This reduces the risk of delays in addressing issues and ensures timely interventions (Sousa *et al.,* 2024). Furthermore, these tools enhance communication and facilitate multidisciplinary collaboration. By facilitating seamless information sharing among multidisciplinary teams to access, analyse and action on data, relevant stakeholders and healthcare professionals are informed about safety priorities (Papamalis *et al.,* 2023).

In 2020, Kidd, Rankin and Gillman conducted a mixed methods study evaluating the implementation of the Combined Bedside and Risk Assessment (CoBRA) tool as an innovative electronic clinical auditing system designed to enhance patient safety and compliance monitoring in healthcare settings. The CoBRA tool was developed to streamline the identification and management of patient safety risks, such as falls, pressure injuries, and infections, through real-time data collection and reporting. The study concluded that the tool demonstrated significant improvements in the identification of patient safety risks and enabled healthcare professionals to take timely and appropriate preventative actions to prevent poor outcomes. Through increased accuracy and consistency in clinical audits along with the enhanced ability to monitor and mitigate risks effectively, a culture of continuous quality improvement throughout multidisciplinary teams proved beneficial on the impact to patient safety.

Kidd, Rankin and Gillman's (2020) study represent a significant step forward in leveraging digital systems to enhance clinical auditing processes and patient safety. With the tool's potential to improve compliance rates and facilitate evidence-based decision making, patient safety and quality assurance is advanced. However, it is critical to consider the study's limitations. The study took an incremental approach to develop the CoBRA tool with a cross-sectional survey used for evaluation. While a progressive approach ensured the tool was tailored to user needs and improved based on practical feedback, the cross-sectional survey evaluated the tool at a specific point in time, meaning the study may not have captured long-term outcomes or ongoing usability issues. Seita (2016) argues that while cross-sectional surveys are valuable for assessing prevalence, since exposure and outcomes are measured simultaneously, establishing a cause-and-effect relationship is problematic and can make it difficult to determine whether the exposure preceded the outcome or vice versa. Athey, Chetty and Imbens (2020) suggest that to validate findings through multiple perspectives, cross sectional data should be combined with other methodologies such as cohort studies or experimental designs.

2.13 Limitations

While a comprehensive analysis of existing research related to the impact of digital systems including audit systems and their impact on patient safety and compliance as well as the benefits and challenges of implementation has been provided, several limitations must be acknowledged.

Firstly, the review aimed to focus specially on digital audit management systems. However, there was limited availability, possibly due to the nature of the topic. Therefore, broader research on digital health interventions such as general audit systems was included to provide contextual insights. This may have introduced relevance issues, as findings from these broader studies may not fully capture the specific functionalities and challenges associated directly with digital audit management systems in healthcare.

Additionally, the potential for publication bias must be considered. Studies that demonstrate positive outcomes of digital systems for health are more likely to be published and included, whereas research highlighting negative findings may be

underrepresented. Therefore, the balance of perspectives in this review, could make it more difficult to assess potential challenges and barriers associated with a digital intervention such as audit management systems in healthcare comprehensively.

2.14 Conclusion

The findings highlight that successful implementation of digital audit management systems is influenced by factors such as organisational readiness, staff engagement, and the usability of the technology. Adoption among healthcare professionals varies, with barriers such as resistance to change, workflow disruptions, and training needs being commonly cited challenges. Furthermore, while digital systems improve data accuracy and efficiency, issues surrounding interoperability, data governance, and user trust remain important considerations.

Chapter 3 – Research Design and Methodology

3.1 Introduction

This chapter outlines the methodology used to evaluate the ‘Ward, Area and Service Projects’ module within the AMaT system implemented throughout SBUHB. It details the research design, data collection strategies, and analytical techniques used to systematically assess the integration of the module within existing workflows, adoption by healthcare professionals and administrative staff, and overall impact on regulatory compliance, efficiency, and patient care. By detailing the research design, study setting, participant selection, data collection methods, and analytical strategies, this chapter outlines how transparency and rigor was achieved in the research process. The methodology aligns closely with the study objectives, facilitating an in-depth exploration of the module’s role in enhancing quality assurance and patient safety across SBUHB’s wards and areas.

3.2 Data Collection Design: Mixed Methods

This evaluation employed a mixed-methods approach to comprehensively evaluate the AMaT module and address the research objectives. The methodology integrated both quantitative and qualitative methods, enabling a multifaceted analysis of the module's impact. This design was particularly advantageous for addressing complex research questions, as it allowed for the integration of numerical data with in-depth qualitative insights, facilitating a more comprehensive understanding of the modules value and impact (Bastian, Munoz and Ventura, 2016).

Due to the need to address diverse research objectives, it was decided to adopt a mixed methods approach to ensure a thorough evaluation was undertaken. As quantitative data captured measurable aspects of the module, such as efficiency gains and compliance with regulatory standards and qualitative data delved into user experiences and the contextual factors influencing adoption and effectiveness, the methodological choice reflected the complexity of evaluating digital healthcare tools, where outcomes depend on both technical performance and user engagement (Creswell and Plano Clark, 2017).

Palinkas, Mendon and Hamilton (2019) suggest that a mixed methods approach bridges the gap between positivist and interpretivist paradigms, enabling research to generate findings that are both generalisable and contextually rich. Throughout this evaluation, the mixed methods approach ensured that the findings were not only grounded in measurable outcomes but also informed by the lived experiences of healthcare professionals who interact with the module daily (Curry *et al.,* 2013).

Quantitative data was collected through staff surveys and system usage metrics, with a focus on key areas such as user adoption, data accuracy, and efficiency gains. Complimenting this, the qualitative component involved semi structured interviews to gain deeper insights into user experiences, the module's integration into existing workflows, and its perceived impact on patient care and safety.

Through a mixed methods approach, a holistic understanding of the module's effectiveness, combining measurable outcomes with rich, contextualised perspectives are provided. In addition, evidence-based recommendations are explored to refine the module's functionality and support the potential replication in similar healthcare settings.

Throughout this evaluation, quantitative and qualitative data was collected simultaneously and analysed independently before being triangulated to generate detailed insights. This allowed the evaluation to address the research objectives from multiple perspectives, ensuring a balanced evaluation of the module's technical performance and its impact on end users. Tariq and Woodman (2013) also suggest that this approach would facilitate the discovery of subtle insights in instances where discrepancies arise.

The integration of findings involved comparing and contrasting quantitative trends with qualitative narratives to identify areas of similarity and divergence. For instance, survey data on user adoption levels was compared with interview findings to uncover potential barriers to engagement and areas for improvement. Similarly, system usage metrics were analysed alongside qualitative feedback to evaluate the module's integration into existing workflows and its perceived contribution to patient care and safety.

3.3 Quantitative Methods

3.3.1 Data Collection Tools

To evaluate AMaT's 'Ward, Area and Service Projects' module comprehensively, quantitative data was gathered using staff surveys and system usage metrics. The survey was designed based on established frameworks for assessing user adoption, system usability and operational efficiency in healthcare settings. An adapted version of the System Usability Scale (SUS) was used to ensure relevance to the AMaT module. Principles from the Technology Acceptance Model (TAM) informed questions on perceived ease of use and usefulness, while elements from the System Usability Scale (SUS) assessed navigation and interface design (Venkatesh and Davis, 2000; Brooke, 1996). Questions included Likert-scale items to gauge satisfaction, ease of user, and perceived impact on workflows, as well as closed-ended questions addressing specific metrics such as time savings and audit completion rates (Joshi *et al.,* 2015). Using these frameworks provided a validated and structured approach to ensure consistency, reliability and comparability of findings while aligning the study with best practices in healthcare technology research (McPeake, Bateson and O'Neill, 2014).

The survey was pre-tested with a small pilot group of staff to ensure clarity and relevance to refine wording and enhance the overall structure of the survey. This process increased the reliability and validity of the data collected (Benson and Fragkiskos Filippaios, 2016). System usage metrics, including module completion rates, and audit tracking data was extracted directly from the AMaT platform to provide objective, real time insights into adoption and system functionality to eliminate the reliance on self-reported data and reduce bias.

3.3.2 Sampling Strategy

Participants for the quantitative component of the evaluation were selected using purposive sampling to ensure representation across various professional roles and levels of interaction with the AMaT module (Tongco, 2007). Inclusion criteria included healthcare professionals and administrative staff who have attended SBUHB's AMaT 'Ward, Area and Service Projects' module training session via TEAMs and had used the module for at least once month to ensure familiarity with the module's functionalities. Exclusion criteria encompassed staff with no direct experience with the module or those on leave during the study period. A sample size of approximately 40-50 participants were targeted, based on the expected staff population size within SBUHB and the need for statistical validity (Shieh, 2013).

3.3.3 Data Collection

Data was collected over a six-week period to ensure sufficient participation while minimising disruptions to operational workflows. The surveys were disseminated electronically via e-mail with reminders sent weekly to encourage responses. Respondents were assured of anonymity to promote honesty and minimise response bias. System usage metrics were retrieved from the AMaT platform during the same period, ensuring alignment with survey timelines. Data extraction from the AMaT system followed a standardised procedure in collaboration with the digital support team to ensure consistency and reliability of the data extracted to ensure its suitability for analysis.

Table 3.1 outlines the key variables assessed in this evaluation to ensure uniform understanding and interpretation across the data set.

Table 3.1 Key Variables and Measurement Methods

Variable	Measurement
User Adoption	Survey responses on frequency of use and perceived ease of navigation
Data Accuracy	Audit completion rates and the frequency of reported errors or discrepancies
Efficiency Gains	Survey responses on perceived time savings and system metrics (e.g. average time taken to complete an audit)

3.3.4 Data Analysis

Descriptive statistics were employed to summarise survey responses and system usage metrics to offer insights into patterns of user adoption, data accuracy and efficiency gains (Field ,2018). Measures such as frequencies, percentages, means and standard deviations were calculated to illustrate central tendencies and variations in responses.

To enhance data interpretability, quantitative data trends were visualised using bar charts and pivot charts. These provided a clear and accessible representation of key findings, facilitating comparisons and communication of results. Through this structured approach, robust and reliable analysis of the quantitative impact of the module grounded in statistical rigour was achieved (Andrew and Halcomb, 2009).

3.4 Qualitative Methods

3.4.1 Data Collection Tools

Semi structured interviews were employed to gather rich, in-depth qualitative insights into user experiences within the AMaT module to allow for a balance between consistency and flexibility, ensuring key topics were covered while enabling

participants to elaborate on their unique perspectives (Kallio *et al.,* 2016). An interview guide was developed to maintain alignment with the evaluation's objectives while accommodating the emergence of new themes during discussions. As suggested by Davis's TAM framework (1989) for evaluating digital tools in healthcare, the guide included open ended questions focusing on key areas such as the modules integration into existing workflows, perceived impact on patient care, and barriers or facilitators to adoption. Further questions were informed by existing literature on digital tool adoption in healthcare and tailored to align with the evaluation's objectives (Holden and Karsh, 2010). For example, participants were asked "Can you describe how the AMaT module has influenced your daily workflow?" and "What challenges have you encountered when using the module?" which encouraged detailed narratives and reflections. Tailoring questions in this manner facilitated open dialogue exploring contextual factors affecting digital adoption of the AMaT module.

The guide underwent pilot testing with two healthcare professionals outside of the study sample to ensure clarity, relevance, and appropriateness of the questions. Feedback from the pilot informed minor revisions, such as rephrasing of ambiguous questions and improving the flow of topics.

3.4.2. Participant Recruitment

Participants for the qualitative component of the evaluation were recruited using purposive sampling to ensure diverse representation across roles, departments, and levels of interaction within the AMaT module (Tongco, 2007). Healthcare professionals and administrative staff who had a minimum of one month's experience using the module were invited to participate. Inclusion criteria prioritised staff directly involved in audit process such as ward managers or those with broader operational insights, such as matrons and service group directors.

Recruitment was facilitated through targeted e-mail invitations, supported by service managers who assisted in identifying suitable participants, a strategy that is suggested to enhance engagement and response rate in organisational research (Creswell and Poth, 2018). Efforts were made to ensure a balanced sample across professional roles (e.g nurses, administrators, and managers) and geographic

diversity across SBUHB sites. A final target of 10-12 participants was established, reflecting sufficient diversity to achieve data saturation while ensuring manageability for analysis (Guest, Bunce and Johnson, 2006).

3.4.3 Data Collection Process

Interviews were conducted over a four-week period, either in person or via secure virtual platforms such as Microsoft TEAMs, depending on participant preferences and availability. Archibald *et al.* (2019) suggests that virtual platforms are becoming increasingly recognised as effective tools for qualitative data collection, offering flexibility and reducing logistical barriers while maintaining data quality. Each interview lasted approximately 30-45 minutes and was recorded with participants consent to ensure accuracy in data capture and transcription (Halcomb and Davidson, 2006).

Before commencing the interview, a brief overview of the study objectives and ethical considerations was provided to participants via a participant information sheet, including assurances of confidentiality and anonymity, and their right to withdraw at any time which align with best practices in qualitative research (Holloway and Galvin, 2017) (See Appendix 1).

The interviews followed a flexible format, beginning with general, open-ended questions to establish rapport and ease participants into the discussion. Specific topics were explored using probing questions, which are suggested to elicit rich and detailed responses by encouraging participants to elaborate on their experiences (Gill *et al*., 2008). Field notes were also taken during the interviews to capture non-verbal cues and contextual information and provided supplementary insights to participant perspectives (Patton, 2015).

3.4.4 Data Analysis

Thematic analysis was employed to identify patterns and insights within the qualitative data collected using NVivo software. Widely acknowledged for its flexibility, this method allows the researcher to move beyond descriptive accounts to reveal meaningful insights relevant to the evaluation’s objectives (Braun and Clarke,

2006). The process followed Braun and Clarke's (2006) six-phases approach, including data familiarisation, initial coding, theme development and refinement.

Audio recordings were transcribed verbatim, and transcripts were reviewed before analysis to ensure data accuracy. The coding process began by reviewing the transcripts line by line in NVivo to identify initial key phrases, concepts, and emerging themes. NVivo was used to facilitate this process by highlighting and tagging the relevant text, organise codes into nodes, and visualise thematic relationships through a sunburst chart. These codes were then subsequently refined into broader categories through a structured process of theme development to ensure alignment with the evaluation's objectives (Corbin and Strauss, 2014).

To enhance credibility, member checking was employed by sharing initial findings with a subset of participants for verification and feedback. Member checking provided an opportunity to confirm that the analysis was accurately reflecting participants perspectives and experiences (Motulsky, 2021). This approach improved the validity of the qualitative insights into the AMaT module's integration and impact.

3.4.5 Summary of Data Collection and Analysis Methods

Table 3.2 provides a concise summary of the data collection and analysis methods employed in this evaluation.

Table 3.2 Summary of Data Collection and Analysis Methods

Methodology	Approach
Quantitative Data Collection Tools	Staff Surveys and System Usage Metrics
Quantitative Data Analysis Techniques	Descriptive Statistics
Qualitative Data Collection Methods	Semi Structured Interviews
Qualitative Data Analysis Techniques	Thematic Analysis using NVivo Software

3.5 Triangulation and Integration

As part of this evaluation, both quantitative and qualitative data were collected and analysed separately but integrated during the data interpretation phase. Quantitative data, including survey responses, system usage metrics, and efficiency measures were analysed to identify measurable trends and outcomes (Tashakkori and Creswell, 2007). Simultaneously, qualitative insights derived from semi-structured interviews provided an in-depth understanding of user experiences, contextual factors, and perceived impacts of the AMaT module (Carter and Little, 2007).

Integration was achieved through a triangulation process, whereby findings from both data sets were compared and contrasted to identify areas of similarity and is a widely recognised strategy for enhancing research credibility (Graham, 2005). For example, adoption patterns identified in quantitative metrics were cross referenced with qualitative themes related to user barriers and facilitators to adoption. This approach allowed the evaluation to validate quantitative findings with contextual explanations while using qualitative insights to explore complexities that numerical data alone could not capture (Gibson, 2017).

Through combining objective metrics with subjective experiences, it ensured findings were not only statistically robust but also grounded in the realities of healthcare professionals experiences. Such, a mixed methods approach addresses the research questions holistically, allowing for a nuanced understanding of both the measurable outcomes (e.g. efficiency gains and data accuracy) and the underlying mechanisms driving these results (Heale and Forbes, 2013). Triangulation further ensured the credibility and reliability of the evaluation by corroborating findings across data types, making conclusions more compelling and actionable (Torrance, 2012). For instance, evidence of improved compliance in audit metrics is more compelling when supported by qualitative accounts describing how the module facilitates adherence to regulatory standards. By integrating diverse data sources, this evaluation provided a richer and more actionable evaluation of the AMaT module and its potential for broader application in healthcare settings.

3.6 Ethical Considerations

3.6.1. Ethical Approval

Ethical approval for this study was obtained from University Wales Trinity St. David (UWTSD) following a formal review process. The project brief was assessed to

ensure compliance with ethical guidelines, particularly concerning participant welfare, confidentiality, data protection, and research integrity. Approval was granted prior to the commencement of any data collection, ensuring that all data collection procedures met the required ethical standards and safeguarding participants rights and well-being. UWSTD's ethics form can be found in Appendix 2.

3.6.2 Informed Consent

Participants were fully informed about the study's objectives, procedures, and any potential risks prior to their involvement. Written consent was obtained via a standardised consent form, which outlined their right to withdraw at any time without consequence. To ensure transparency, participants were also provided with an information sheet detailing the study's purpose, how their data would be used, and measures in place to maintain confidentiality and anonymity. The participant consent form used can be found in Appendix 3.

3.6.3 Confidentiality and Data Protection

To safeguard participant anonymity, all identifiable information was either removed or pseudonymised during data processing, ensuring that individual responses could not be tracked back to participants. Both quantitative and qualitative data was stored securely on a password-protected system, accessible only to the researcher in line with General Data Protection Regulation (GDPR) standards (GOV.UK, 2018).

Additionally, participants were informed about the storage and use of their data, including its retention for a limited period in line with GDPR standards (GOV.UK, 2018). After this period, all data will be securely deleted to prevent unauthorised access or breaches, ensuring compliance with ethical and legal requirements in line with the Data Protection Act 2018 (GOV.UK, 2018).

3.6.4 Risks

The risks associated with this study were minimal; however, potential discomfort and stress during interviews was acknowledged particularly when discussing challenges related to the AMaT module. To mitigate this, participants were reassured of their autonomy and informed they could skip any question or withdraw at any time without providing justification. Measures such as debriefing sessions were offered to ensure participants felt comfortable and supported throughout the process. This debriefing

also provided an opportunity to clarify questions, address any concerns, and reiterate the availability of support should participants have experienced any residual discomfort.

3.7 Limitations

3.7.1. Acknowledgement of Constraints

This evaluation identified several limitations that could influence the interpretation of findings. The sample size for both quantitative and qualitative components, while sufficient to achieve data saturation, may limit the generalisability of the results (Malterud, Siersma and Guassora, 2016). The reliance on self-reported data in surveys and interviews also introduced the potential for response bias, including social desirability or recall bias (Althubaiti, 2016). Additionally, variability in participants' familiarity with the AMaT module, may have influenced the depth and breadth of the feedback provided.

3.7.2 Mitigation Strategies

To address these constraints, purposive sampling ensured a diverse participant pool that is representative of various professional roles and departments and levels of interaction with the AMaT module, thereby enhancing credibility of the findings (Etikan, Musa and Alkassim, 2016). Pilot testing was also conducted to refine data collection tools and minimise ambiguity and improve clarity (Etchegaray and Fischer, 2011). Furthermore, triangulation of methods aided to mitigate biases by cross validating findings across data sets. This method strengthened the validity of the findings by corroborating insights and reduced over reliance on one single data source (Carter *et al.,* 2014).

These strategies are collectively aimed to enhance the robustness and reliability of the evaluation while acknowledging its inherent limitations. By adopting a transparent and systematic approach, the evaluation balanced constraints with opportunities for actionable insights into the AMaT module's impact.

3.8 Project Planning and Management

Effective planning and time management were integral to the successful completion of this evaluation. A project brief was developed (see Appendix 4) to outline key milestones and to allocate sufficient time for each phase, including literature review,

data collection, analysis, and writing. While the project largely followed the initial timeline, there were minor delays during the data analysis phase due to the extended time required for interview transcription and NVivo coding due to unfamiliarity with the system. These delays were managed by adjusting the writing schedule. By regularly reviewing progress against the project brief, it was possible to remain on schedule.

Chapter 4 - Results and Data Analysis

4.1 - Introduction

This chapter presents the findings from the evaluation of the ‘Ward, Area and Service Projects’ module within the AMaT system, implemented across SBUHB. The findings are derived from survey responses and interviews, providing quantitative and qualitative insights into the module’s effectiveness. Descriptive statistics are used to highlight key trends, while qualitative responses offer further context to user experiences and perceptions.

4.2 Quantitative Results

Quantitative data was collected through surveys which included the System Usability Scale (SUS) and Likert scales as well as system usage metrics. The survey was live for a period of 6 weeks and shared via e-mail to all users that had attended the health board wide TEAMs training session on the Ward, Area and Service Projects module. Demographic questions including job role were included in the survey allowing for deeper analysis.

4.2.1 Participant Demographics

A total of 40 staff members participated in the survey, representing a diverse range of roles across SBUHB. Figure 4.1 illustrates the distribution of job titles among respondents.

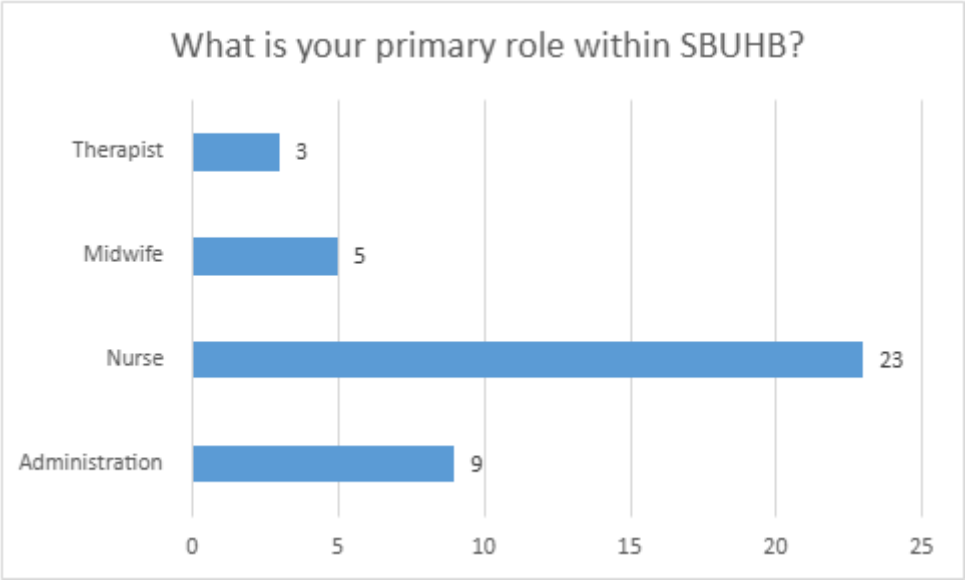

Figure 4.1 Distribution of Participants by Job Titles

The most represented primary job role was ‘Nurse’, accounting for 57.5% of respondents, followed by ‘Administration’ at 22.5% while other roles included therapist and midwife.

This variation in job roles ensures that feedback on the Ward, Area and Service Projects module is gathered from a broad range of users, capturing perspectives from both clinical and non-clinical staff.

Notably, different professional groups engage with the module in varied ways. Nurses and midwives primary utilise the module to manage and input audit data and monitor compliance to provide assurances while administrative staff play a role in extracting reports and ensuring data accuracy. This range of job roles highlights the module’s adaptability and its role in supporting diverse healthcare functions across SBUHB.

4.2.2 User Adoption Findings

User adoption of the Ward, Area and Service Projects module was evaluated through survey responses measuring frequency of use and perceived ease of navigation. The findings provide insights into how regularly staff engage with the module and their experiences with its usability.

As shown in Figure 4.2, the majority of respondent (50%) reported using the module monthly, followed by 35% who use it weekly. A smaller proportion stated that they use the module daily and rarely.

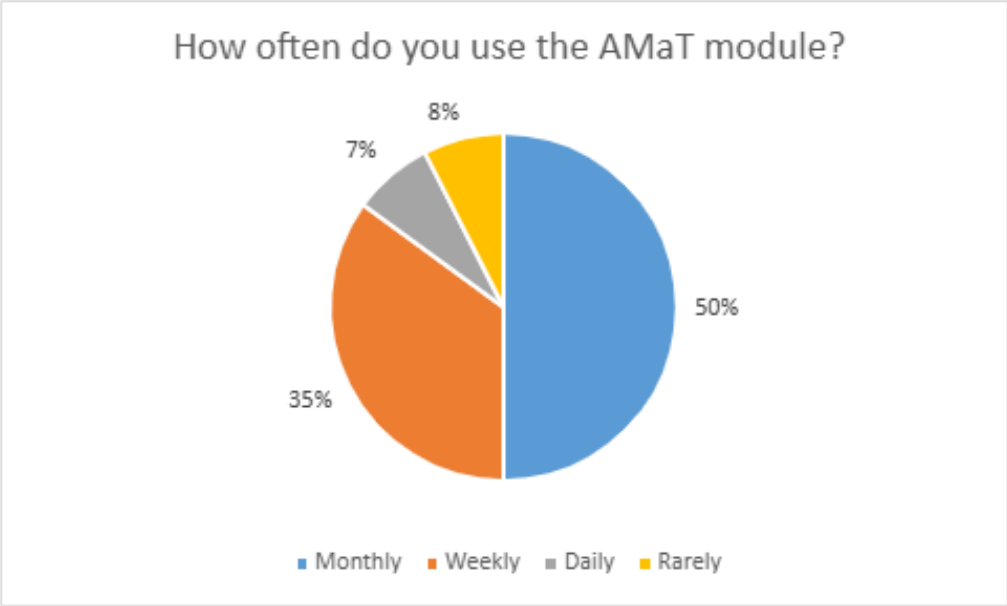

Figure 4.2 Frequency of System Usage Among Participants

A further breakdown of job roles as shown in Figure 4.3 indicates that nurses were the most frequent users with 43.48% using it weekly and 52.17% monthly, suggesting regular engagement for audit data input, action planning and compliance tracking. Administrative staff primarily use the module monthly (55.56%), though 33.33% access it daily or weekly, likely for report extraction. Midwives showed users were mostly accessing the module on a monthly basis (60%). Therapists have the lowest engagement, with a majority using it monthly. These patterns reflect role-specific interactions and requirements within the module, emphasising the need for tailored training and support for the module specific to its various functionalities.

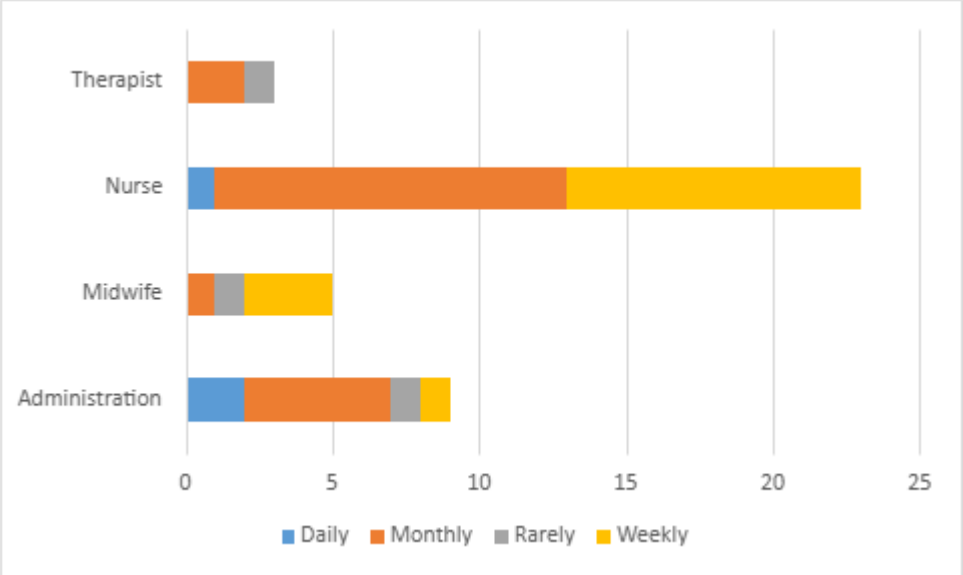

Figure 4.3 Frequency of System Usage by Job Role

The perceived ease of use of the AMaT module was evaluated using a System Usability Scale (SUS) questionnaire. Participants rated their experience on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 4.1 provides an overview of the mean scores, standard deviations, and response distributions for each survey item. The percentage agreement reflects the proportion of respondents selecting agree or strongly agree (4-5), while the percentage disagreement indicates those selecting Disagree or Strongly Disagree (1-2).

Table 4.1 System Usability Scale (SUS) Results for AMaT's Ward, Area and Service Projects Module

Question	Mean Score	SD	% Agree (4-5)	% Neutral (3)	% Disagree (1-2)
Using the AMaT module enhances my ability to complete audits effectively	4.675	0.615504796	92.50%	7.50%	0%

I find the AMaT module unnecessarily complex	1.6	0.871191345	5%	10%	85%
The AMaT module is easy to learn and use	4.475	0.933356227	80%	15%	5%
I need assistance to use the AMaT module	1.725	1.037440143	8%	12.50%	80.00%
I find the various functions and features within the AMaT module well-integrated	4.625	0.774182778	87.50%	10%	2.50%
I find inconsistencies in the AMaT module's interface	1.775	1.143263435	12.50%	10%	77.50%
I feel the AMaT module is built with users in mind	4.35	1.026570092	77.50%	17.50%	5%
I find the AMaT module difficult to navigate	1.75	1.103607139	15%	5%	80%
I feel I wouldn't need additional training to use the AMaT effectively	3.45	1.663329993	60%	5%	35%
I found it difficult registering for an AMaT account	1.5	0.847318546	3%	7.50%	90.00%

4.2.3 Interpretation of Results

The findings suggest a strong overall perception of usability for the AMaT module, with users highlighting its ease of use and user-friendly design.

Users reported high confidence in the module's ability to facilitate audit completion, with 92.5% agreeing that "Using the AMaT module enhances my ability to complete audits effectively" (Mean = 4.675, SD = 0.615504796). Similarly, the ease of use was well received, with 80% agreeing that "The AMaT module is easy to learn and use" (Mean = 4.475, SD = 0.933356227). Additionally, the module's interface integration

was rated highly (Mean = 4.625, SD = 0.774182778), with 87.5% of respondents finding it intuitive and cohesive.

Despite the positive feedback, some areas for improvement were noted. While 60% of respondents felt confident using the system without additional training, 35% felt they would require additional support (Mean = 3.45, SD = 1.663329993), indicating potential gaps in user confidence. Additionally, while most users (77.5%) disagreed with the statement “I find inconsistencies in the AMaT module’s interface” (Mean = 1.775, SD = 1.143263435), a small number of participants reported interface inconsistencies, suggesting there is an opportunity for refinement to ensure a fully streamlined experience.

Figure 4.4 represents these findings showing the mean usability scores alongside their variability.

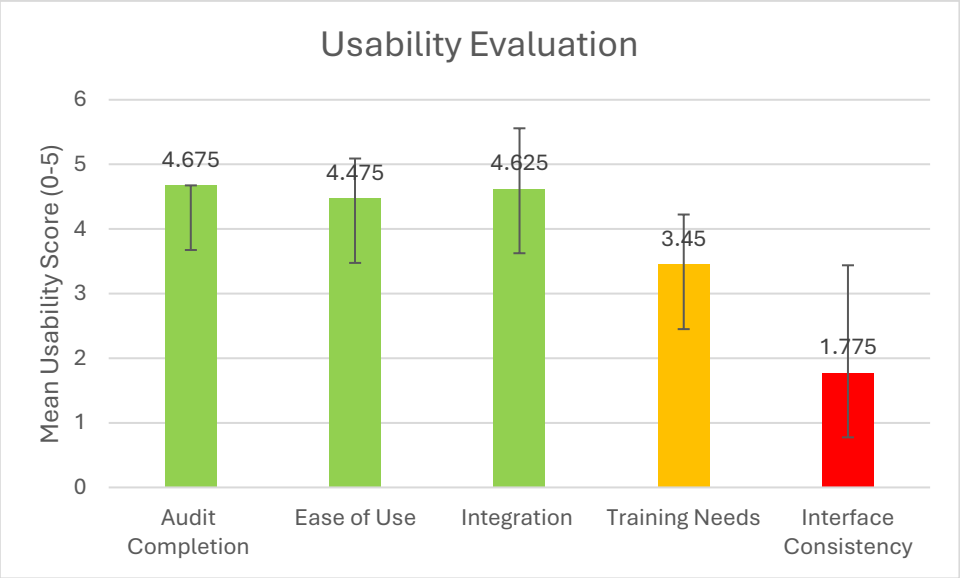

Figure 4.4 AMaT Module Usability Evaluation

The SUS score was calculated based on the standard scoring method, whereby positive statements contribute positively (score = response – 1), and negative statements contribute inversely (score = 5 – response).

As shown in table 4.2 the average SUS score for the AMaT module was 83.0625, which when compared to the standard SUS benchmark (68 = average usability), suggests above-average usability. This aligns with the high agreement percentages observed in the descriptive analysis.

Table 4.2 SUS scores for AMaT Module Usability Evaluation

Adjusted Scores	Sum	SUS Score
Participant 1	40	100
Participant 2	40	100
Participant 3	21	52.5
Participant 4	37	92.5
Participant 5	30	75
Participant 6	34	85
Participant 7	38	95
Participant 8	31	77.5
Participant 9	16	40
Participant 10	32	80
Participant 11	35	87.5
Participant 12	40	100
Participant 13	39	97.5
Participant 14	39	97.5
Participant 15	38	95
Participant 16	33	82.5
Participant 17	33	82.5
Participant 18	29	72.5
Participant 19	40	100
Participant 20	32	80
Participant 21	31	77.5
Participant 22	36	90
Participant 23	36	90

Participant 24	29	72.5
Participant 25	40	100
Participant 26	40	100
Participant 27	36	90
Participant 28	35	87.5
Participant 29	22	55
Participant 30	38	95
Participant 31	34	85
Participant 32	36	90
Participant 33	40	100
Participant 34	25	62.5
Participant 35	38	95
Participant 36	19	47.5
Participant 37	40	100
Participant 38	12	30
Participant 39	32	80
Participant 40	33	82.5

Additionally, figure 4.5 presents the distribution of SUS ratings categorised from ‘Excellent (>80.3%)’ to Awful (<51%), providing a visual representation of participants perceptions of the AMaT module’s usability. The majority of participants rated the system as ‘Excellent (80.3%)’ aligning with the calculated average SUS score of 83.06. This again reinforces the findings from the descriptive analysis, indicating strong overall usability and positive user experience.

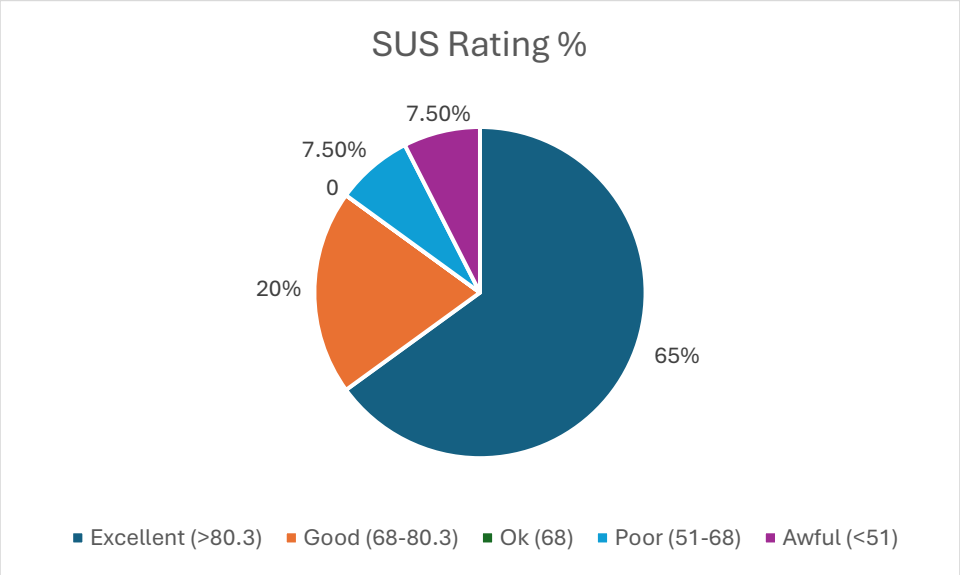

Figure 4.5 SUS Rating Distribution for AMaT Module

Figure 4.6 highlights a general trend of high usability scores on a scatter graph, with most participants rating the AMaT module above the industry benchmark of 68. However, a few outliers are present, with some participants scoring significantly lower. These lower scores may indicate individual usability challenges, variability in user experience or differing levels of familiarity with digital systems. Further qualitative feedback from these participants could help identify specific areas for improvement.

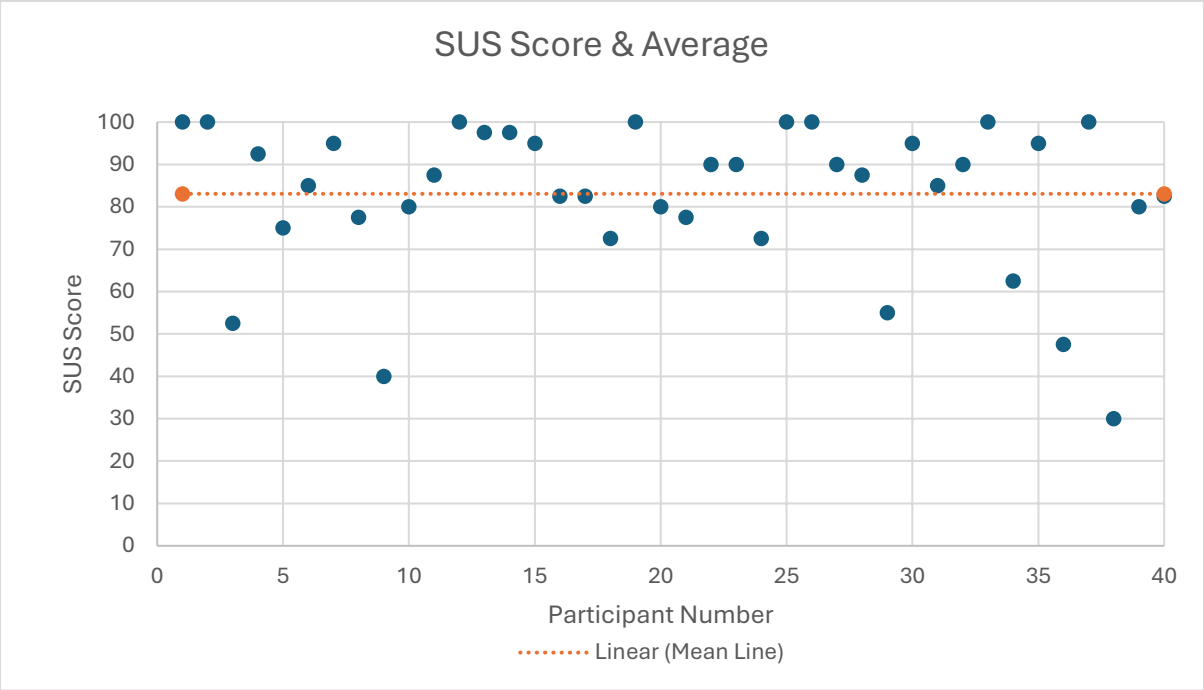

Figure 4.6 SUS Scores and Mean

Table 4.3 presents the descriptive statistics for the SUS scores along with the mean line. The minimum score of 30 and maximum score of 100 indicate some variation in user experience, with a SD of 17.59 showing a moderate spread of scores. The 95% confidence interval (77.44-88.51) suggests that, if the study were repeated, the true mean SUS score would likely fall within this range, further reinforcing the system's strong usability rating.

Table 4.3 Descriptive Statistics for SUS Scores

	N	Minimum	Maximum	Mean	SD	Std Error	Lower Confidence Limit	Upper Confidence Limit

Participant	40	30	100	83.062	17.591	2.781	77.436	88.514

4.2.4 Data Accuracy Findings

To evaluate data accuracy within the AMaT module, audit completion rates and reported discrepancies were analysed. Table 4.4 provides an overview of audit completion statistics across 4 audits over the previous 6 month period with an average of 61.23% of audits successfully completed and submitted with notable variability between months and across different audits.

Table 4.4 Audit Completion Rates

Month	**Audit 1 (%)**	**Audit 2 (%)**	**Audit 3 (%)**	**Audit 4 (%)**	**Overall Completion Rate (%)**
1	74.80%	71.20%	75.00%	65.50%	70.15%
2	74.80%	73.90%	100%	66.70%	70.75%
3	56.50%	58.40%	50%	55.40%	55.95%
4	59.70%	65.30%	75%	56.00%	57.85%
5	61.10%	62.60%	87.50%	60.20%	60.65%
6	50.30%	53.10%	50%	54.30%	52.30%
Average	**62.55%**	**62.15%**	**62.50%**	**59.90%**	**61.23%**

Figure 4.7 presents a line chart illustrating audit completion rates over the 6-month period including a trendline representing the overall average completion rate (61.23%) to provide a benchmark for performance across all audits.

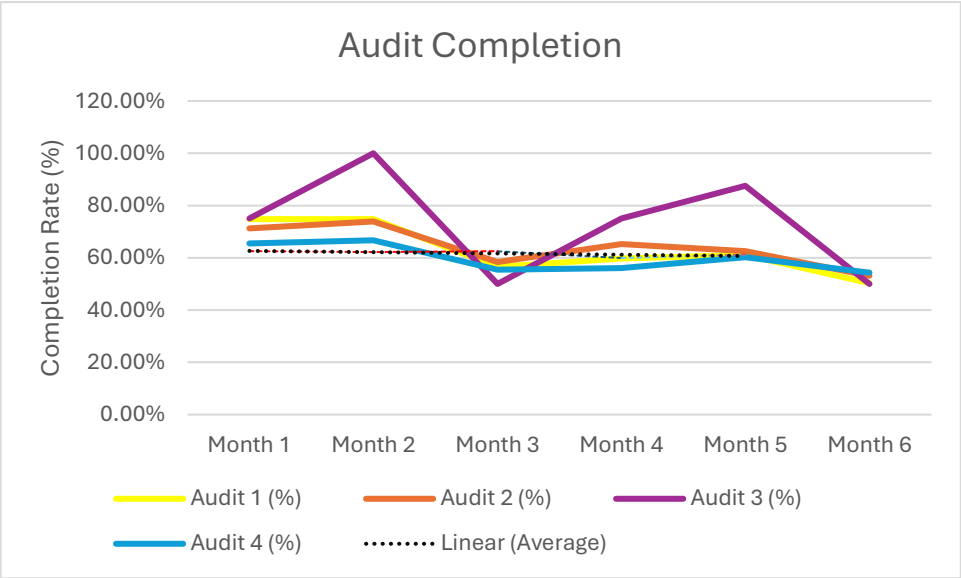

Figure 4.7 Audit Completion Rates Over 6 Months

The highest completion rate was observed in Month 2 (70.75%), driven by Audit 3, which achieved 100% completion rate. Similarly, Month 1 demonstrated strong early engagement, with a completion rate of 70.15%.

However, a gradual decline in audit submissions was noted over time, resulting in the lowest completion rate of 52.3% in Month 6. Notably, Audit 3, which initially recorded full completion in Month 2, experienced a significant drop to 50% by Month 6. This downward trend suggests potential engagement issues with the module or operational challenges that have impacted the ability to submit audits.

Figure 4.8 presents a comparison bar chart illustrating the percentage of audits successfully completed and submitted alongside the percentage of audits containing errors.

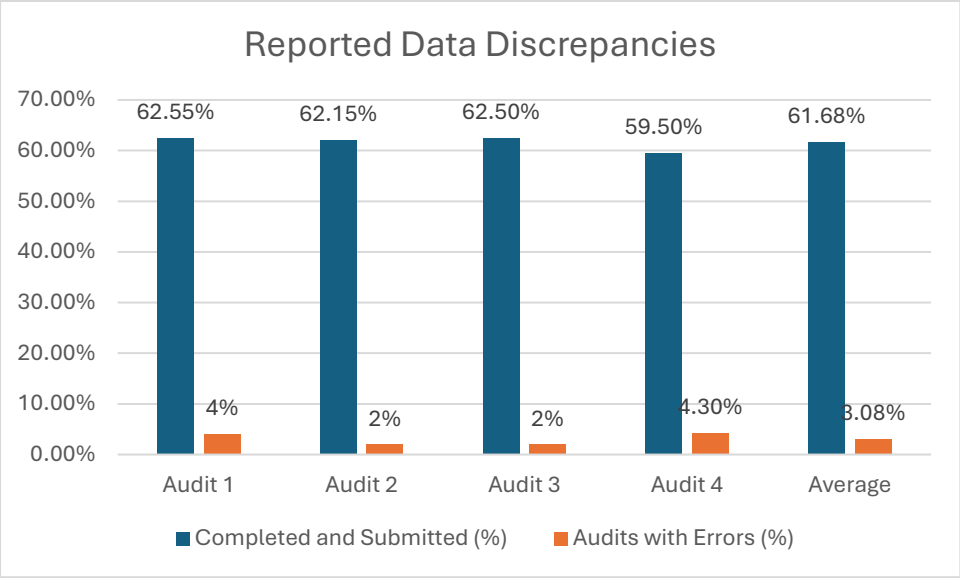

Figure 4.8 Percentage of Completed and Submitted Audits vs. Audits with Errors

The data reveals that while audit completion rates remain consistent, there is a noticeable variation in error rates, ranging from 2% to 4.30%. Audit 4 recorded the highest error rate (4.30%), while audits 2 and 3 had the lowest (2%), indicating better data accuracy in these cases.

Table 4.4 shows the most common error type to be incorrect data entry accounting for 10.30% of all errors which may be a key factor affecting data reliability. While the average error rate (3.08%) is low compared to the completion rate, it highlights potential areas for improvement in data validation processes within the AMaT module.

Table 4.5 Audit Completion Rates, Error Rates, and Most Common Error Types

Audit Name	Completed and Submitted (%)	Audits with Errors (%)	Most Common Error Type
Audit 1	62.55%	4%	Incorrect Data Entry
Audit 2	62.15%	2%	Incorrect Data Entry
Audit 3	62.50%	2%	Wrong Audit Completed
Audit 4	59.50%	4.30%	Incorrect Data Entry
Average	**61.68%**	**3.08%**	

4.2.5 Efficiency Gains Findings

Efficiency gains were assessed through two key measures:

- User perceptions of time savings, gathered via survey responses.
- System generated metrics including the average time taken to complete an audit.

Efficiency gains from the AMaT module were assessed through self-reported survey responses regarding perceived time savings. Participants were asked:

"How much time do you estimate the AMaT module saves you compared to previous audit methods?"

Table 4.5 summarises the responses, highlighting the extent to which users perceive the module as improving efficiency and reducing administrative burden.

Table 4.6 Perceived Time Savings from AMaT Module Compared to Previous Audit Methods

Time Savings	Count	Percentage
10-30 minutes per audit	14	35%
Less than 10 minutes per audit	5	12.50%
More than 30 minutes per audit	15	37.50%
No time savings	6	15.00%

Figure 4.9 visually presents participants perceptions of time savings when using the AMaT module compared to previous audit methods.

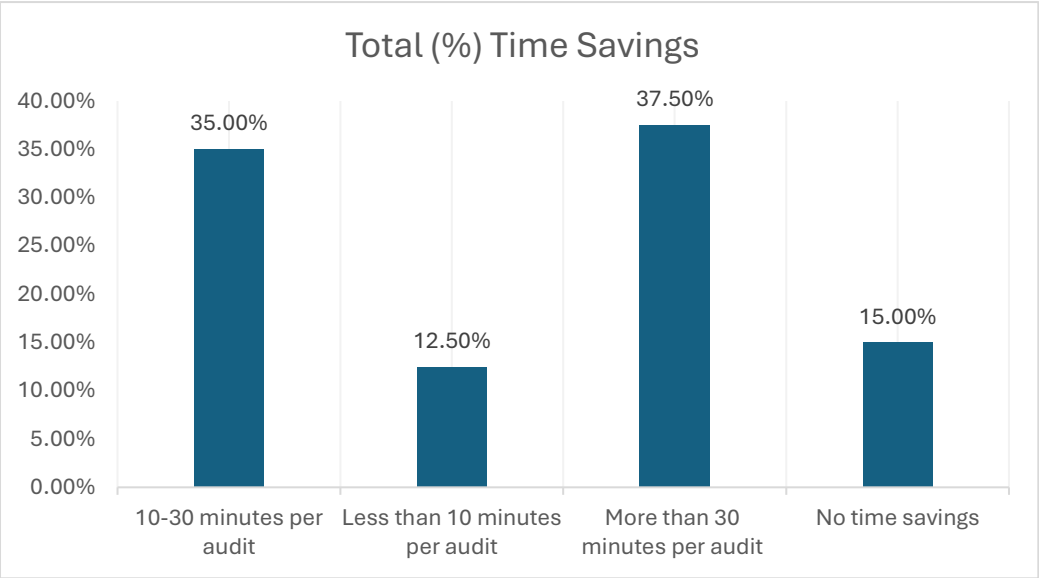

Figure 4.9 Bar Chart Representing Self-Reported Time Savings from the AMaT Module

The majority (85%) reported experiencing time savings, with 37.5% indicating savings of more than 30 minutes per audit. This suggests that the system has contributed to increased efficiency for most users. However, 15% of participants reported no time savings, which may indicate variability in how different users interact with the system or differences in prior audit methods.

In addition to self-reported time savings, system generated metrics were analysed to assess actual audit completion times. Table 4.6 presents the completion times for five audits, with an average of 37 minutes per audit. These objective metrics provide further insight into the efficiency of the AMaT module.

Table 4.7 System Metrics for Audit Completion Times

Audit Name	**Completion Time (minutes)**
General Matrons Monthly Assurance Audit	47
Unscheduled Matrons Monthly Assurance Audit	46
Maternity Matrons Monthly Assurance Audit	23
IPC Validation Audit	27

Additionally, Figure 4.10 visually represents completion times, highlighting variations between different audits. The General Matrons Monthly Assurance Audit (47 minutes) and Unscheduled Matrons Monthly Assurance Audit (46 minutes) had the longest completion times, whereas the Maternity Matrons Monthly Assurance Audit (23 minutes) and IPC Validation Audit (27 minutes) were completed quicker.

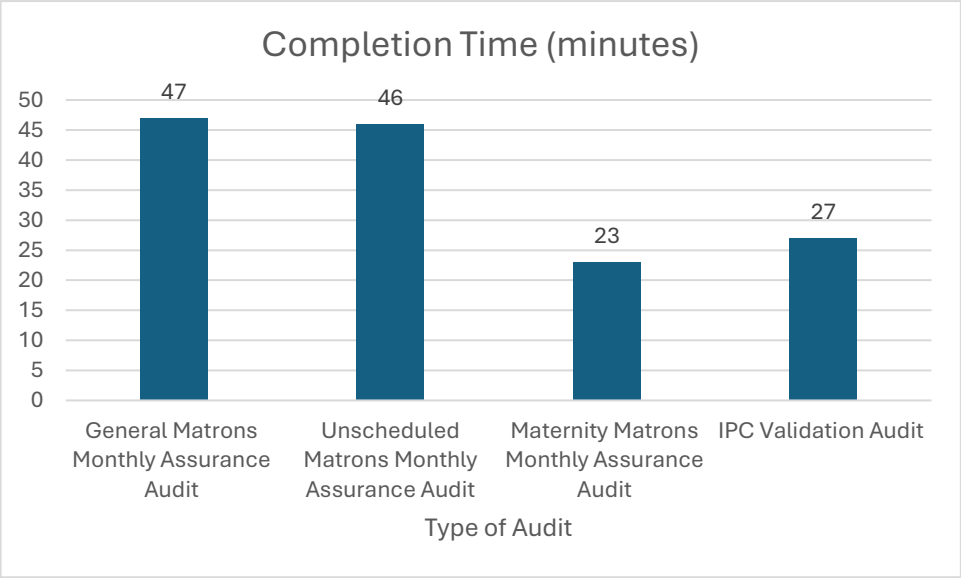

Figure 4.10 Bar Chart Representing System Generated Completion Times

While direct comparisons between perceived and actual time savings are not possible, the system generated data supports the perception of time savings using the module that most participants reported (72.5%) by demonstrating consistent audit completion times, suggesting that the AMaT module facilitates a structured and efficient audit process.

It is also important to note that variability in completion times may be influenced by factors such as audit complexity and length, user familiarity with the system and audit, and the nature of the data being collected.

Further investigation is needed to explore whether perceived time savings align with actual workflow improvement across different audit types and user groups.

4.3 Qualitative Data

To complement the quantitative findings, qualitative data was analysed to gain deeper insights into user experience related to the six research questions:

1. Integration into Existing Workflows
2. User Adoption
3. Data Accuracy and Reliability
4. Efficiency and Time Savings
5. Compliance and Quality Standards
6. Impact on Patient Care and Safety.

Additional insights were also gathered regarding barriers and facilitators to adoption.

Thematic analysis was conducted using NVivo software to systematically identify and categorise recurring themes from interviews. Figure 4.11 visually represents the process undertaken.

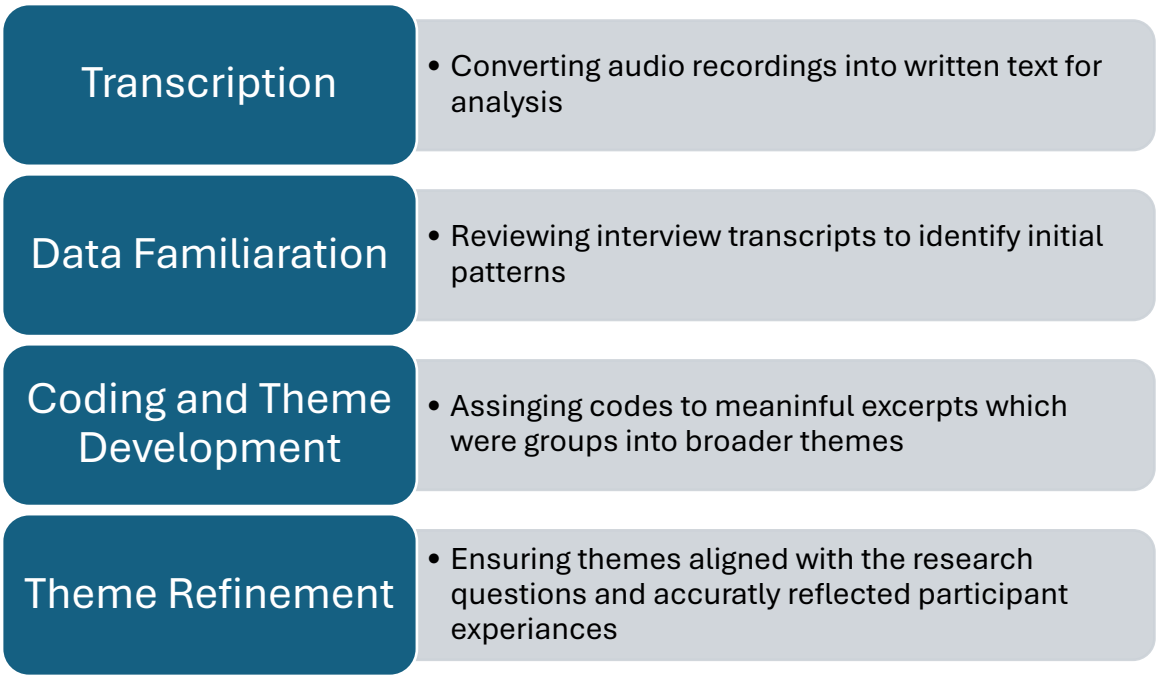

Figure 4.11 Process of Thematic Analysis

Table 4.7 presents key interview questions aligned with thematic categories for evaluating the AMaT module to effectively structure the inquiry process.

Table 4.8 Interview Structure

Thematic Categories	Interview Questions
Integration into Existing Workflows	Can you describe how the AMaT module has influences your daily workflows? How well does the module fit within your existing processes? What changes have you and your team made to adapt to the module? Can you share an example of how the module has streamlined a specific task?
User Adoption	What were your initial impressions of the AMaT module? How easy or difficult did you find it to start using the module? What support or training did you receive to use the system? What motivates you or discourages you to continue using the module?
Data Accuracy and Reliability	How confident are you in the accuracy of the data captured by the AMaT module? Have you noticed any discrepancies or challenges with data input or output? How does the module support or hinder data validation?
Efficiency and Time Savings	Have you noticed any changes in the time it takes to complete audits or action plans? Can you describe any specific examples where the module has made your work more efficient? Are there any aspects of the module that slow down your workflow?

Compliance and Quality Standards	How does the AMaT module help you meet compliance and regulatory standards? Have there been any instances where the module highlighted gaps in compliance? What features of the module are most useful for maintaining quality standards?
Impact on Patient Care and Safety	In what ways has the module influenced patient care or safety? Can you think of any examples where the module directly or indirectly impacted patient **outcomes?** Are there any limitations in the module that you feel might impact patient safety?
Barriers and Facilitators to Adoption	What challenges have you encountered when using the module? What factors have helped you or your team adopt the module more effectively? Are there any improvements or changes you would recommend to enhance the modules usability?

Figure 4.12 was generated to visualise the most frequently mentioned terms from staff interviews, providing insight into the recurring themes in participant responses.

Figure 4.12 Word cloud of Most Frequently Mentioned Terms

Key terms such as “compliance”, “patient”, “action”, “safety”, “workflow”, and “quality” were among the most prominent, reflecting the central concerns of staff regarding the implementation of the AMaT ‘Ward, Area and Service Projects’ module.

The frequent occurrence of “compliance,” “assurance” and “standards” suggests that staff perceive the module as a valuable tool for ensuring regulatory adherence and maintaining quality standards. Additionally, words like “workflow,” “process”, and “efficient” indicates that participants have considered how the module integrates into existing practices, aligning with findings from the literature on digital tool adoption in healthcare settings. Furthermore, the prominence of “patient,” “safety,” and “action” reinforces the perception that the module contributes to improving patient care and ensuring timely interventions.

Figure 4.13 generated from NVivo, highlights key themes from staff interviews, categorised into Adoption of the System, Compliance with Regulations, Data Accuracy, Efficiency Gains, General Perceptions, Patient Care and Safety and Integration into Workflows.

Figure 4.13 Sunburst Chart Derived from NVivo System

The prominence of adoption and workflow integration suggests that usability and implementation are primary concerns for staff. These themes indicate that the success of the system is heavily dependent on how well it integrates into daily operations and whether users find it accessible and efficient.

Patient Care and Safety was also a major theme, indicating that the system is perceived as contributing to care quality. This suggests that digital audit management can directly affect clinical outcomes.

Efficiency gains and time savings was frequently mentioned, reinforcing the view that the module has the potential to streamline processes and reduce administrative burdens. Additionally, the emergence of data accuracy and reliability as a theme underscores the importance of ensuring the system provides high quality information to support decision making.

4.3.1 Key Themes

A part of this evaluation, key themes emerged from staff feedback, providing valuable insights into the real world impact the AMaT module has. While the module has introduced positive changes such as improved visibility and centralised data management, staff identified challenges that affect usability and integration. By

understanding staff perspectives, areas for refinement can be identified and the module's benefits can be maximised.

Theme: Streamlining vs. Disrupting Workflows

The integration of the AMaT module into existing workflows elicited mixed responses from participants. While some staff found that the system streamlined their audit processes by centralising management of audits and simplifying action planning, others highlighted disruptions to their workflow, particularly where audits had become mandatory for areas where they were not previously conducted due to limited relevance of the audit as shown in table 4.8

Table 4.9 Staff Perspectives on Workflow Integration

Theme	**Participant Quote**
Streamlining Workflows	*"I think it's streamlined the way in which I do the audits because it's all in one place whereas I used to save all the audits in random places on my desktop before so that's definitely made it easier."*
Disrupting Workflows	*"It has impacted my daily workflow because I wasn't previously auditing my area but now it's mandatory even though some audits are not applicable to my area."*

The streamlining effect was particularly noticeable among staff who had previously used fragmented methods. As shown in figure 4.14, prior to the implementation of the AMaT module, the audit process relied on a series of manual steps, including paper based documentation, data transcription, and separate communication methods. The process was time-consuming, prone to human error and lacked real-time oversight.

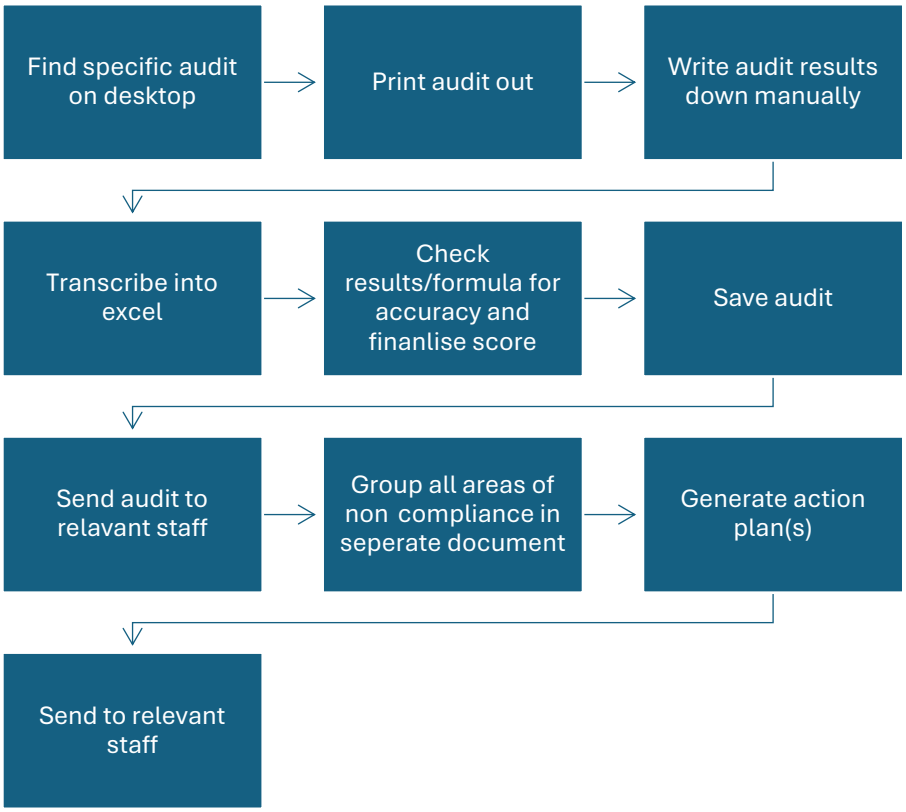

Figure 4.14 Process Map of Audit Process Pre-Implementation of AMaT Module

With the introduction of the AMaT module, staff experienced significant improvements in workflow efficiency, automate data handling, and enhance compliance tracking. Figure 4.15 illustrates how users feel the AMaT module has transformed the audit process.

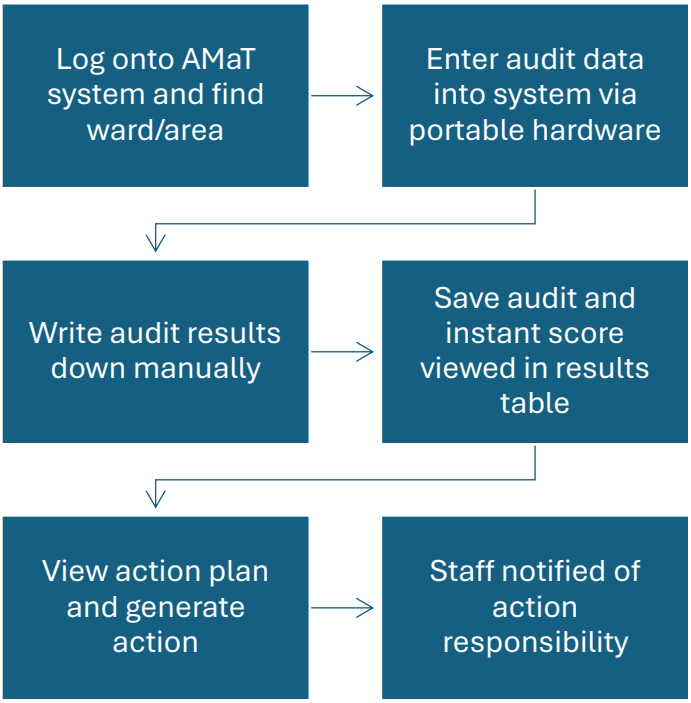

Figure 4.15 Process Map of Audit Process Post implementation of AMaT Module

However, some staff felt that the mandatory nature of audits in certain areas had resulted in an increase in their workflow, even when the audits were not directly applicable to their specific work environment. This has led to frustrations among some staff, as they felt they were required to complete assessments that did not align with their ward or areas unique operational needs. As a result, some participants questioned the relevance and necessity of certain audits for their specific areas, suggesting that greater flexibility and customisation within the module could enhance its overall effectiveness to benchmark while minimising unnecessary administrative burden.

Theme: Initial Hesitation and Gradual Acceptance

Table 4.9 showcases that the adoption of the AMaT module came with some initial hesitation among some staff as some users were reluctant to transition from the familiar process, they had previously been comfortable with. Once users felt comfortable with the system, gradual acceptance became a pattern. While staff expressed nervousness about the transition from Excel-based audits to a digital

module, many found that AMaT's user friendly interface and simplistic navigation aided in their overall adoption.

Table 4.10 Staff Perspectives on Adoption

Theme	Participant Quote
Initial Hesitation	*"We did all feel a little bit nervous about using a new system because we were used to using the Excel."*
Gradual Acceptance	*"I didn't really want to stop doing my audits on Excel because I had my own folder with all of the audits in there, but once I logged on and saw how user friendly it was and easy to navigate, I felt more confident undertaking the tasks I needed to."*

However, staff felt there were several key factors that influenced their adoption of the AMaT module including training availability and hardware access. Table 4.10 represents the significant role these factors played in shaping user confidence and ease of use.

Table 4.11 Key Factors Influencing Adoption of AMaT Module

Key Factor	Impact on Adoption
 Training Availability	 Increased confidence in using the AMaT module
 Hardware Availability	 Improved ease of use and real time audits

Staff who had attended the Health Board's AMaT Data Entry and Action Planning TEAMs training session reported feeling more confident with navigating the system. Staff reported that the training provided them with a clear understanding of the module's various functionalities including action planning and extracting reports, which was a process many staff were not familiar with prior to the implementation. Through accessing training, initial apprehension was reduced enabling staff to use it more effectively to complete the tasks required.

In addition to training, hardware availability significantly impacted adoption. Users who had access to portable devices such as laptops or tablets, found the module easier to integrate into their working environment compared to those relying solely on fixed desktop computers. Some felt, however, felt inclined to delay completing audits until the end of the month due to limited portable device availability as shown in Figure 4.16. Additionally, the flexibility that portable devices offer to conduct real time audits at patient locations streamlined the processes and enhanced engagement with the system, leading to higher adoption rates.

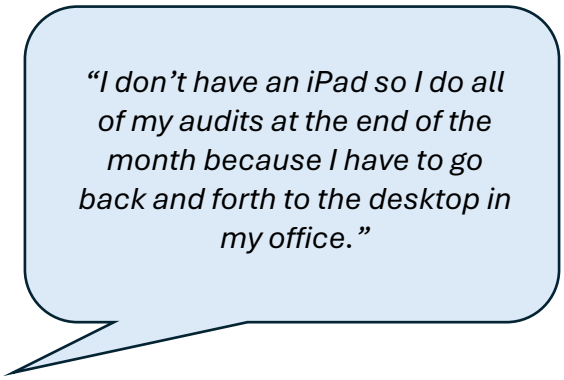

Figure 4.16 Challenges Faced Due to Limited Portable Devices

Theme: Trust in Digital Data

Data accuracy is a critical factor in ensuring the reliability of audit outcomes within the AMaT module. Most staff expressed confidence in the accuracy of data within the AMaT module, reporting its ability to standardise input and maintain consistency across audits as shown in Figure 4.17.

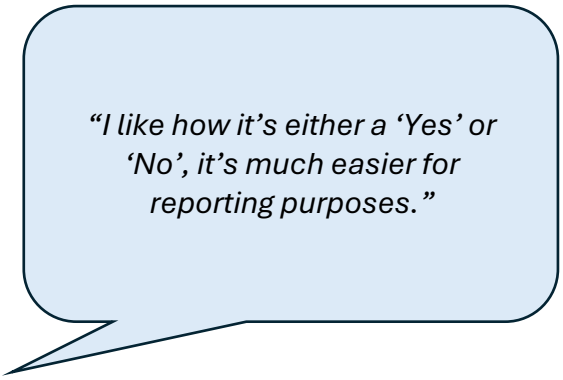

Figure 4.17 Benefits of AMaT Module's Standardised Data Input

However, some noted concerns about user error in data entry as shown in Figure 4.18.

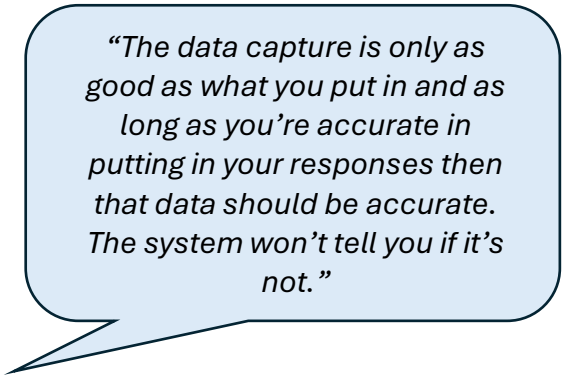

Figure 4.18 Risks of User-Dependency Accuracy

This highlights that while the AMaT module supports a structured data entry approach, it does not automatically verify the accuracy of inputs. A number of staff emphasised that the absence of built in validation checks could impact data integrity, allowing for potential errors to go unnoticed.

Theme: Time savings in audit management but concerns about action plan generation

Staff generally reported that the AMaT module had streamlined the audit process by eliminating the need for double data entry which led to a reduction in time spent inputting audit data, providing assurances and retrieving historical data. Previously, audits required a two-step process, where scores were first recorded on paper and then manually inputted into an Excel sheet. Now, audits can be entered directly into the system, making the process faster and more efficient as seen in Figure 4.19.

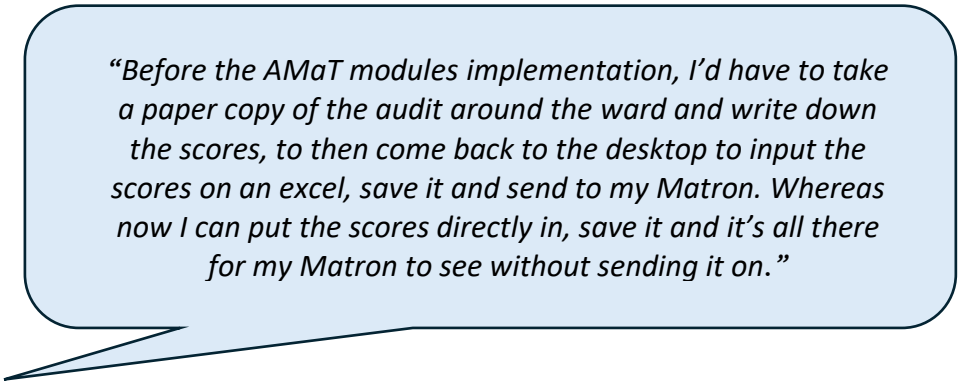

Figure 4.19 Efficiency gains due to Implementation of AMaT Module

However, while the system improved audit data input, some staff noted that creating actions plans for areas of non-compliance remained a time-consuming process. Since every area of non-compliance required a specific action plan, some staff found the extra workload challenging, particularly when managing multiple audits.

Table 4.11 highlights staff feedback regarding the action plans as well as staff feedback on how to system refinements.

Table 4.12 Staff Feedback on Action Plan Generation and Suggested Improvements

Staff Feedback	Staff Improvement Suggestions
"Its great that everything is in one place now, but generating actions plans for each non-compliant answer takes longer than expected."	*"It would be good if action plans could be suggested for different questions based on if they've shown improvement on other wards."*
"The audit itself is much quicker, but the system doesn't let you add multiple staff to be made responsible for an action, so I have to repeat the process."	*"I'd like it if I could make multiple members of my staff responsible for one action, so I don't have to add similar actions for all of my ward sisters because they are all responsible for improvement ultimately."*
"I like the action planning functionality but sometimes I'd like to just make a	*"A place where I can make an action plan attached to just the overall audit*

more generic action plan that isn't attributed to one question in particular"	*not specific to one area of non-compliance."*

Theme: Improved Compliance Monitoring

Many staff highlighted the positive impact the AMaT module has on ensuring audits are completed on time and are aligned with regulatory requirements as shown in figure 4.20.

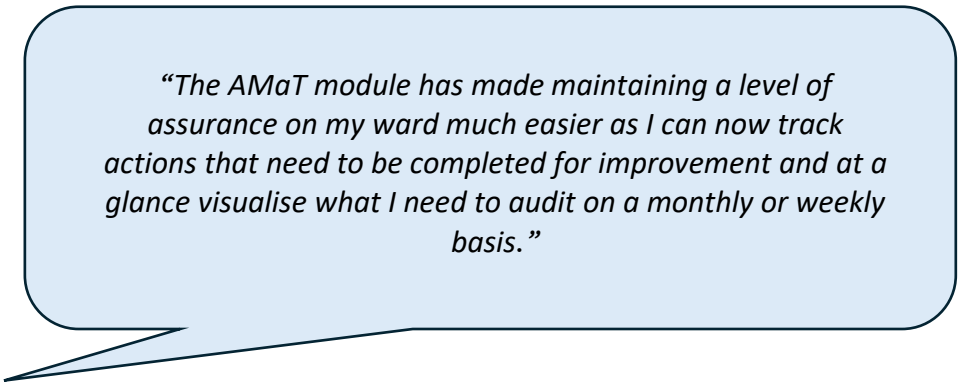

Figure 4.20 Benefits of AMaT Module on Compliance and Monitoring

Staff felt that the modules various functionalities helped users stay on track with audit schedules and action plans due to be completed, reducing the risk of overdue or missed audits or actions as shown in Table 4.12.

Table 4.13 Key AMaT Module Features Supporting Compliance

Feature	Impact on Compliance
Automated Action Plan Reminders	Ensures actions plans are completed within the required timeframe
Visibility of Due Dates	Allows better planning and prioritisation of audits
Data Collection Period Audit Tracking	Enables teams to monitor areas of good practice and improvements required over time

Theme: Indirect but Meaningful Impact on Patient Safety

While most staff acknowledged that the AMaT module does not directly impact patient care, it plays a crucial role enhancing oversight and accountability. Participants highlighted that the increased visibility of audits enabled service managers and corporate teams to respond quickly to issues with support and improvement initiatives, reducing the risk to patients and ensuring compliance as shown in Figure 4.21.

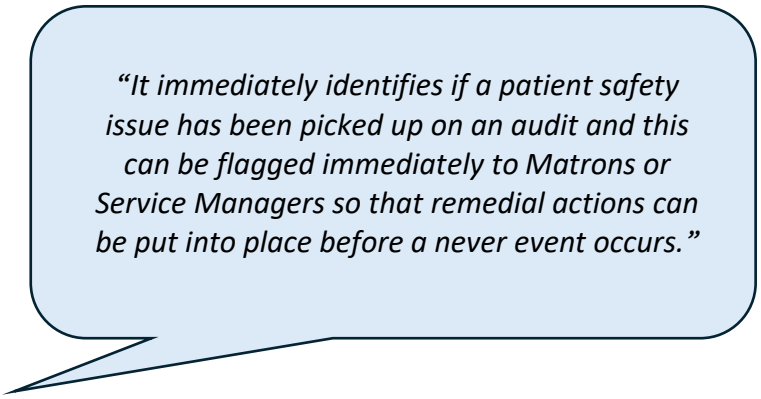

Figure 4.21 Impact AMaT Module has on Patient Safety

However, staff suggested that AMaT could enhance its impact on patient care and safety by leveraging existing action planning data to recommend effective actions plans as shown in Table 4.13.

Table 4.14 Potential Enhancements to AMaT Module for Improved Patient Safety and Care Impact

Challenge	Suggested Enhancement
Manually generated action plans	Automated recommendations based on previous successful interventions
Lack of shared learning and visible best practice guidelines	Implement a best practice guide that highlights effective solutions based on best practice

If the module could automatically suggest action plans that have been successful for similar areas of non-compliance or from best practice guidelines, it would accelerate improvements in patient safety. Additionally, if the module could host a guide of best

practices to inspire action generation, actions could become more meaningful leading to improved compliance.

5. Chapter 5 – Discussion

5.1 Introduction

This chapter critically examines the findings from the evaluation, exploring how the AMaT 'Ward, Area and Service Projects' module implementation has impacted SBUHB. The discussion is structured around the study's research questions with links to existing literature while considering the opportunities and limitations linked to digital audit management systems in a healthcare setting.

5.2 How effectively has the AMaT 'Ward, Area and Service Projects' module integrated into existing workflows within SBUHB?

The integration of the AMaT module into SBUHB's workflows has had a number of positive impacts. Firstly, the module has streamlined the audit process by decreasing the steps needed to access an audit, input the data, and report on findings. Equally, it has streamlined process surrounding action planning, whereby actions can be generated, and responsibility can be given to the relevant staff members with immediate notifications sent. Table 5.1 provides a comparative breakdown of the manual audit process compared to the AMaT module and how it has enabled audit workflows to become more streamlined while highlighting the specific advantages gains through digital integration.

Table 5.1 Streamlined Audit Process Highlighting Key Improvements

Process	**Manual Audit Process**	**AMaT Module Audit Process**	**Key Improvements**
Locating Audit	Search for audit copy on desktop	Log into AMaT and find relevant ward/area	Faster access and centralised location
Data Entry	Print audit manually record results	Enter data via portable hardware	No printing, real time data entry

Data Processing	Transcribe data into Excel	Data automatically saved in AMaT	Eliminates transcription errors
Score Calculation	Check formulas and finalise score manually	Instant score displayed in results table	Immediate feedback and improved data accuracy
Identifying Non-Compliance	Group non-compliant areas into separate document	Automated issue flagging	Reduces admin workload
Communication	Email relevant staff manually	Staff notified automatically	Immediate notifications

This improved audit process was backed up by quantitative data showing that most staff had found some time savings in audit management due to the implementation the AMaT module. Additionally, the qualitative data has emphasised that the module's audit visibility and real-time access to audit results has been pivotal in enabling managers to identify gaps in compliance without having to gather various data from many disparate data sources and systems. This is backed up by the existing literature surrounding integration of digital systems into clinical workflows whereby digital systems that provided critical information regarding health care delivery were integrated better into existing clinical workflows (Wosny, Strasser, and Hastings, 2023).

However, despite these benefits, there are some limitations that hinder the AMaT module's full potential. One significant drawback is its rigidity. Staff highlighted that the mandatory audits on the module are not customisable enough to suit the specific needs of different wards or services. This lack of flexibility means that certain specialities may struggle to adapt the module's requirements to the unique services that they deliver. This could attribute to the quantitative findings of a gradual decline in audit completion over time and the limited use of the module by some job roles due to their perceived relevance of mandatory audits.

5.2.1 Opportunities and Limitations

There are several opportunities to improve the AMaT module and its integration into SBUHB's existing workflows. One key area of improvement is enhancing functionality to allow greater audit customisation, while still maintaining the ability to benchmark quality indicators across the organisation. Research on the effective integration of digital systems highlights the important of co-design with end users, as this approach has been shown to significantly improve alignment with staff needs and improve integration into workflows (Booth *et al*., 2021).

There are also a number of limitations that could undermine the system's integration into current workflows. One of the primary concerns is resistance to change. Qualitative findings highlighted that many staff felt hesitant to fully adopt a new system as they had felt comfortable with their current process, particularly those accustomed to traditional, paper based processes. This could impede the module's full integration and impact the realisation of its benefits. Research suggests that a phased rollout along with open feedback channels and consistent support mechanisms can help organisations address resistance to change (Cresswell *et al*., 2020).

5.3 What are the levels of adoption among healthcare professionals and administrative staff?

The adoption of the AMaT module among healthcare professionals and administrative staff has been largely positive, with 85% of staff reporting to use the module on either a monthly or weekly basis. Additionally, staff felt that having access to training had a positive impact on their adoption as they were more confident in understanding the module's functionalities. Importantly, the AMaT module received a high SUS score (83.06), indicating that users found the system intuitive, user friendly, and effective in meeting their needs. The strong usability rating suggests, despite some initial hesitance, the module is well designed and accessible, reinforcing its long-term potential for wider adoption across SBUHB. The ease of real-time data entry has also been a key factor driving adoption as suggested by the qualitative data along with the reduction in the time staff feel it requires them to complete audits. The quantitative data further supports this, showing an increase in some audit completion rates immediately after implementation.

Despite strong adoption, some challenges remain. The SUS revealed some staff found inconsistencies in the AMaT interface and experienced navigation challenges which could have affected the percentage of audit submissions over time. Additionally, research has suggested that a barrier to adoption can be financial investment that is required for the sufficient hardware (Cresswell *et al*., 2020). Some staff reported limited access to laptops or tablets on the ward, which made it difficult to complete audits in real time. This often led to audits taking longer to complete, partially negating the time saving benefits or being completed in retrospect potentially leading to data inaccuracies. Figure 5.1 illustrates the contrasting outcomes of the AMaT modules adoption in healthcare settings, highlighting how limited hardware led to inefficiencies, while access to portable devices from the offset let to full system integration, streamlined processes and improved compliance tracking quicker.

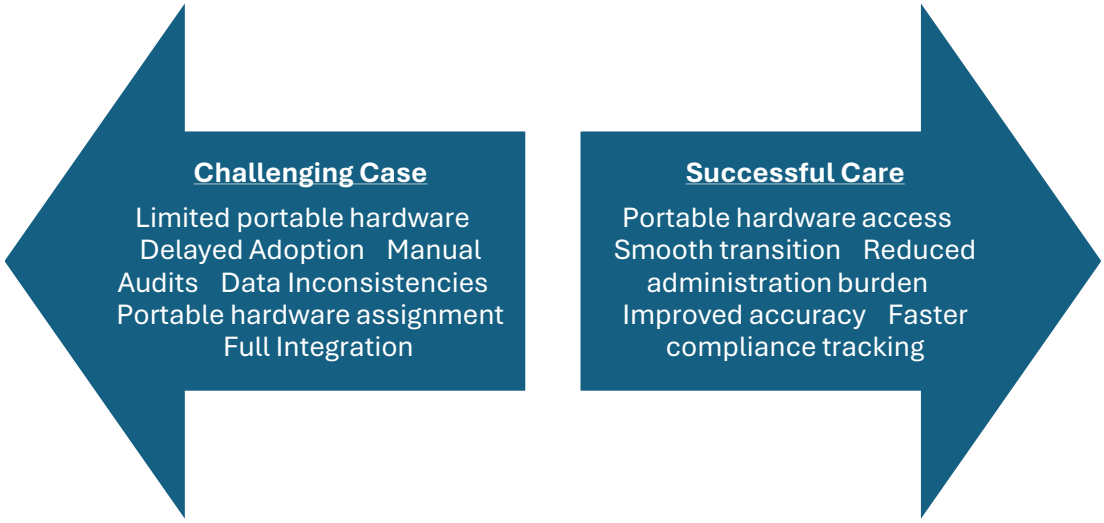

Figure 5.1 Impact of Accessible Portable Hardware on AMaT Module Adoption

5.3.1 Opportunities and Limitations

There are several opportunities to increase adoption and engagement among healthcare professionals and administrative staff. Improving hardware availability by ensuring sufficient tablets or mobile devices across wards and areas could significantly enhance adoption. If staff can input data immediately, rather than relying on retrospective information could drive adoption even further. Additionally, while qualitative data suggested that users felt more confident after receiving training, the SUS revealed that some users felt they required further training. Therefore, by

implementing continued training and support for users to access, further adoption gains could be made. Research suggests that incorporating blending learning approaches which include in house demonstration may prove more effective in the long-term adoption of the module (Liu *et al*., 2016). Further, implementing post implementation support could have a positive impact on sustained adoption, leading to improved audit submission percentages (Liu *et al*., 2016).

While adoption has been successful with the AMaT module, several factors could hinder further adoption. A lack of available hardware may could lead to inconsistent use of the system and the potential for some users to return to the old audit process. Addressing this issue requires investment in digital infrastructure to ensure equitable distribution of devices across wards and areas to facilitate optimised use of the module for staff.

5.4 How accurate and reliable is the data captured and stored within the module?

Findings from this evaluation suggest that the AMaT module has significantly improved the accuracy and reliability of audit data within SBUHB by streamlining data entry and minimising human error. One of the key strengths to note is the module's ability to capture real time data, reducing the risk of outdated, incomplete or retrospective data. Current research has shown that the introduction of digital audit tools has ensured a higher level of data accuracy. Additionally, structured data was a benefit that staff felt promoted consistency in data reporting which is reinforced by the literature (Ofori Issah, Samuel and Eric, 2024). On average, 3.08% of audits submitted had data inaccuracies, demonstrating a generally high level of data accuracy.

However, the system currently lacks advanced data validation checks, meaning that errors or inconsistencies in user inputs may not be automatically flagged. The reliance on user dependant accuracy introduces the possibility of human error, particularly if staff are unfamiliar with the system or do not follow standardised data entry procedures. Table 4.11 compares the benefits of structured data entry with the risks associated with user-dependency accuracy.

Table 5.2 Benefits and Risks of Audit Data Entry Approaches

Factor	Benefits of Structured Data Entry	Risks of User-Dependant Accuracy
Consistency	Ensures audits follow a uniform format	Variability in responses based on individual input
Standardisation	Reduction in discrepancies in audit data	Potential for inconsistent data across users
Data Integrity	Improved reliability of reports	Lack of built in validation check to flag inaccuracies
Decision Making	Supports evidence-based decision making	Incorrect data can lead to misinformed actions

5.4.1 Opportunities and Limitations

Despite these challenges, there are several opportunities to enhance the reliability of data captured through the AMaT module. Implementing automated validation checks could help detect anomalies and reduce errors, ensuring that high-quality data is captured. Additionally, offering further training to staff on data entry best practices and standardising procedures could also contribute to error reduction leading to improved accuracy and user trust in the module as illustrated in Figure 5.4.

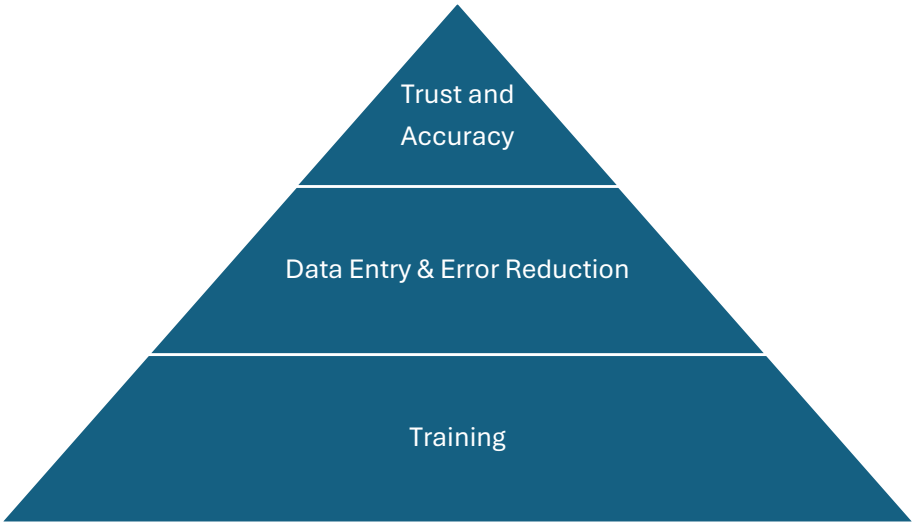

Figure 5.2 Improving Data Accuracy in AMaT Module

However, there are potential threats that could undermine the reliability of the data within the module. While the module is designed to improve audit management and streamline data capture, studies have highlighted that data integrity can be affected by system downtime or cyber security issues (Cresswell *et al*., 2020). This could lead to gaps or inaccuracies in recorded information. Additionally, cyber security threats such as unauthorised access could pose a risk to data integrity. In a healthcare environment, breaches and data consistencies can have serious implications for compliance with standards and patient safety. Therefore, is in imperative that there is ongoing investment in robust cyber security measures and contingency plans for downtime to maintain the reliability of the data stored within the module.

5.5 What efficiency gains and time savings does the module offer?

The implementation of the Ward, Area and Service Projects module within the AMaT system has presented several benefits related to efficiency and time savings. One of the most significant is the improvement in audit efficiency, with 85% of staff reporting a time saving. The module has removed the need for double data entry as users can now input into the module and easily retrieve historical information when required. Additionally, by automating action completion reminders and providing real-time visibility of audit status and dashboards the administrative burden surrounding audit completion has reduced and allowed staff to focus more time on clinical and quality improvement tasks attributed with the outcomes of the audits.

This aligns with previous findings, which highlight that module such as the AMaT module that offer pre-configured analysis and dashboard eliminate the task of manually compiling data from various different sources (Papamalis *et al*., 2023). This is further backed up by system generated data showing consistent audit durations, indicating a structure and efficient process overall. Figure 5.5 visually represents the features of the module that contribute to efficiency gains and time savings.

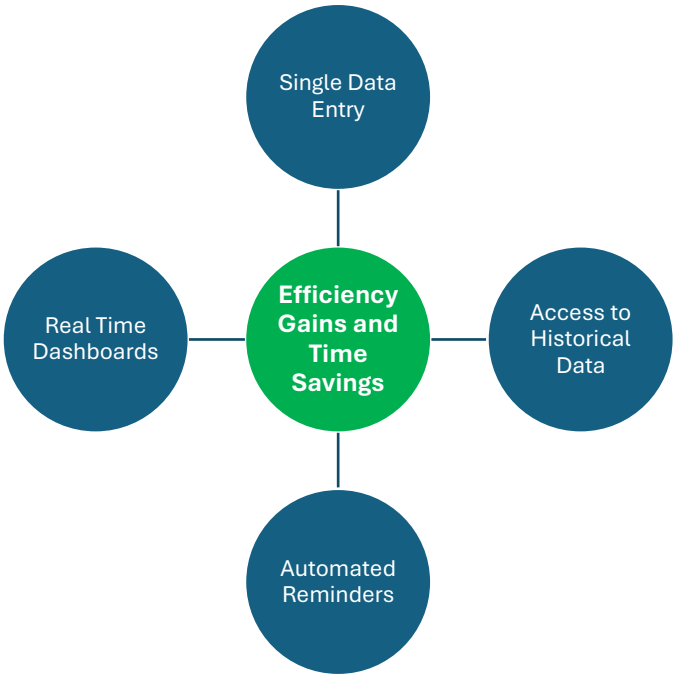

Figure 5.3 Key Enablers Contributing to Efficiency Gains and Time Savings

Despite these benefits, the full extent of these efficiency gains can be limited by certain factors, particularly surrounding the action planning element of the module. While users acknowledged that there were time savings during data entry, many reported that creating action plans for each non-compliant question was time-consuming. This was especially problematic for staff managing multiple audits simultaneously. A recurring theme was the lack of flexibility within the module as users were unable to assign one action to multiple individuals, leading to repetitive tasks and inefficiencies. Others expressed the desire for the ability to generate general or overarching actions plans not specifically link to audit questions, as the current structure feels too rigid for broader strategic planning. These issues suggest

that while there have been improvements to efficiency, issues still persist, limiting the full realisation of potential efficiency gains and time savings.

5.4.1 Opportunities and Limitations

However, there are opportunities for enhancement throughout the module. Refinements based on user feedback such as enabling assignment of actions to multiple staff members and allowing for general action planning for improvement could reduce the time spent on action planning. Additionally, incorporating automated or AI-generated recommendations based on historical data or trends from other wards for action plans could help further reduce the administrative burden and reduce planning time.

Nevertheless, limitations must be considered. While 85% of staff reported a time saving, a minority (15%) of users reported no time savings, suggesting inconsistent experiences that may stem from user familiarity. Additionally, there could be a potential impact to perceived time savings due to audit complexity. Naturally, more complex or longer audits will take longer to complete therefore users undertaking more detailed audits may perceive fewer efficiency gains.

5.6 To what extent does the module enhance compliance with regulatory requirements and quality standards?

The implementation of the Ward, Area and Service Projects module within the AMaT system has significantly contributed to strengthening compliance with regulatory requirements and quality standards. A key strength of the module as reported by staff is its ability to centralise and standardise audit processes, ensuring documentation is consistent across services and aligned with expected frameworks. Staff highlighted that the structured audit process, supported by pre-configured audit templates, promotes alignment with both local and national quality standards.

Many staff reported that the module improved their ability to stay on track with audit schedules and actions plans. The visibility of upcoming due dates and real time status of audits enabled staff to plan and prioritise more effectively, reducing the likelihood of missed or overdue audits. Furthermore, the module’s ability to track audits across the current and previous data collections periods allowed for the identification of areas of good practice as well as improvement over time, enabling a

more proactive and data driven approach to compliance monitoring. This ability to better track audits and action plans aligns with previous research, which highlights the importance of centralised and accurate data to demonstrate compliance during inspections and audits conducted by regulatory bodies (Smith *et al.*, 2020).

However, compliance with regulatory requirements and quality standards will be highly influenced by adoption of the module. While an average of 61.68% of audits are currently being completed on the module, this suggests there is still a notable proportion of audits not being completed. This fragmented use of the module could weaken the module's ability to improve compliance with regulatory standards. Additionally, if audits are being conducted through an alternative process, this will pose a challenge when demonstrating compliance to external regulatory bodies, who often require clear audit trail and comprehensive evidence of evidence actions plans. Without full embedment of the module, there is a risk that critical information may be missed, deadlines for audit completion or action planning may be overlooked, and the visibility of organisation wide compliance be compromised. This could impact the organisation's ability to confidently evidence that it meets required quality standards during inspections as demonstrated in Figure 5.6.

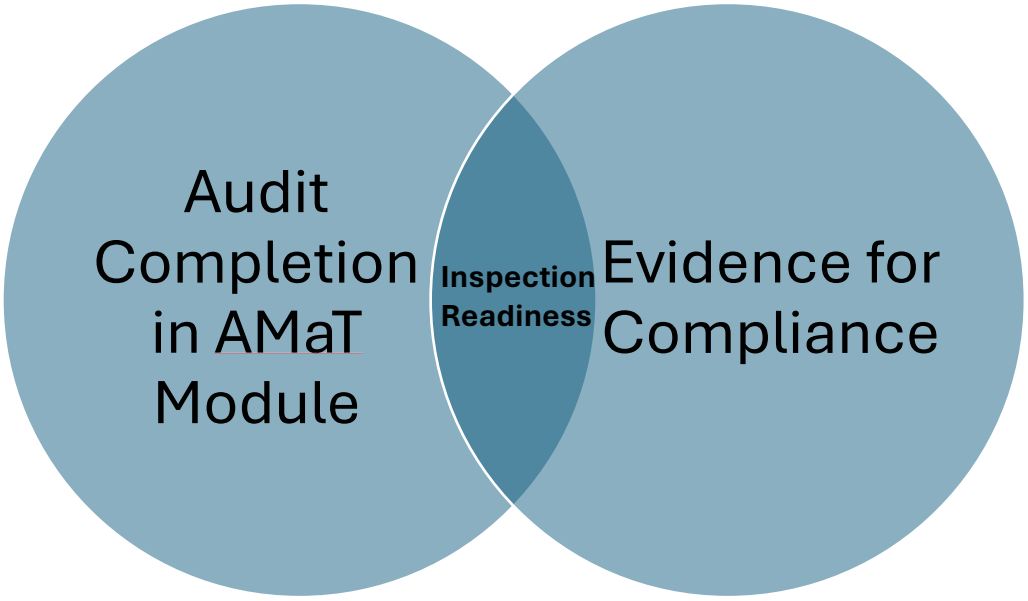

Figure 5.4 Venn Diagram of Compliance Factors in the AMaT Module

5.6.1 Opportunities and Limitations

There are several opportunities to further enhance compliance through the AMaT module. Increasing engagement and support through accessible training could boost module adoption and ensure that more audits are being completed through the module. By embedding the module deeper into daily workflows and outlining the mandatory expectations in terms of audit and action plan completion via the module, the organisation can improve oversight and create a more complete and accessible view of assurance.

Additionally, by refining the module features based on staff feedback presents a chance to improve functionality and encourage wider use. Furthermore, automated benchmarking tools that align with national standards could help service groups exceed regulatory expectations as opposed to meeting them.

Despite these opportunities, reliance on the modules automation functionality to remind staff of audit due dates and submission compliance dashboard may create a false sense of security if users become overly dependent on it without actively engaging with the content and quality of audits. Furthermore, technical issues such as system downtime could compromise the availability or accuracy of data needed for demonstrating compliance.

5.7 How does the module impact patient care and safety?

The implementation of the AMaT ‘Ward, Area and Service Projects’ module has introduced a centralised platform for tracking ward and area based assurance audits and improvement actions, strengthening the Health Board’s overall approach to patient care and safety. While it is acknowledged that the module does not directly influence clinical decision making at the point of care, findings from qualitative data indicate it has a meaningful but indirect impact on patient safety. Staff reported that increased audit visibility has significantly improved oversight and accountability across the Health Board which has now equipped service managers to identify patterns, respond promptly to risks, and implement appropriate support and improvement strategies. This has enhanced responsiveness and reduces potential harm to patients and ensures greater compliance with regulatory and quality standards as visualised in Figure 5.5. By enabling real time tracking of audit actions

and centralising actions plans, the module has fostered a more co-ordinated and transparent approach to managing quality assurance efforts, in hand strengthening the safety net around patient care. These findings are consistent with Kidd, Rankin, and Gillman's (2020) study, which reported that enhanced monitoring and risk mitigation capabilities positively impact patient safety and care.

Figure 5.5 AMaT module's indirect impact on patient care and safety

Despite these positive outcomes, some staff viewed the module's impact on patient care as an administrative and monitoring tool rather than a driver of direct clinical change. As highlighted by staff, action plans within the module are manually generated, which may introduce variation in what strategies generate improvement. This could delay the implementation of effective solutions. There were also concerns around how easily shared learning was utilised within the module, with staff expressing a desire for greater access to examples of effective practice. These limitations suggest that the current structure of the module may not fully leverage its potential to influence patient outcomes in a proactive or consistent manner.

5.7.1 Opportunities and Limitations

Staff suggested several enhancements that could amplify the module's contribution to patient safety and care. The implementation of automated action plan recommendations inclusion of a centralised best practice guides. Currently, action

plans are manually created by staff, which can introduce inconsistency in the quality and speed of improvements. Incorporating semi-automated or templated options could support a more uniform and timely development of improvement actions, ultimately reducing delays in addressing risks and enhancing the consistency of quality assurance and improvement practices. Additionally, feedback from staff suggested that there was an appetite for improved shared learning functionalities. Embedding a dashboard showcasing actions that led to successful qualitative improvement initiatives and examples of effective practice could facilitate wider Health Board learning. This could help teams to benchmark their progress and adopt strategies that have been demonstrated to be effective in similar areas.

While these opportunities are apparent, in feedback from staff the module was widely perceived as an administrative and monitoring tool rather than a mechanism that directly shapes clinical decision making. While supports improved governance and oversight, the translation of data insights into direct care improvements relies heavily on actions created by staff and manual processes, rather than being directly facilitated through the system itself.

5.8 Limitations

While this evaluation provides valuable insights into the implementation and impact of the AMaT ‘Ward, Area and Service Projects’ module within SBUHB, there are limitations that must be acknowledged.

Firstly, the evaluation has relied heavily on qualitative data that was derived from semi-structured interviewed with a relatively small sample of staff. While the participants represented a diverse range of roles and responsibilities, their views may not fully reflect the experiences of users across all wards and areas. Therefore, there may be perspectives from other users that remain underrepresented. Additionally, participants were recruited on a voluntary basis which may have introduced a degree of selection bias, with staff more positively or negatively inclined towards the module potentially being more motivated to contribute.

Another limitation is the timing of data collection. As the module was still undergoing phased implementation during the evaluation period, many of the reported benefits and challenges may reflect a snapshot in time rather than long term perceptions.

Some themes, in particular module usability, may evolve as staff become more familiar with the module.

5.9 Recommendations

Based on the findings from this evaluation, several recommendations are proposed to enhance the impact of the AMaT 'Ward, Area and Service Projects' module as shown in Table 5.3.

Table 5.3 Improvement Recommendations Based on Findings

Recommendation	Intended Outcome
Standardise action planning templates	Improve consistency and quality of action plans across wards and areas.
Introduce a shared learning dashboard	Foster cross-site learning and uptake of effective improvement strategies.
Offer targeted training and ongoing support	Sustain user engagement and confidence in using the module effectively.

5.10 Future Research

While this evaluation has provided important insights into the early adoption and perceived impact of the AMaT module, further research to strengthen the evidence based and inform wider module development is required as shown in Table 5.4.

Table 5.4 Areas for Further Research

Future Research Focus	Intended Outcome
Longitudinal studies on module impact	Understand the module's long-term effect on service delivery, patient care and safety and staff engagement.
Quantitative Assessment of patient outcomes	Establish a measurable link between module use and improvements in patient care, quality and safety.

7. Chapter 6 - Conclusion

This study aimed to evaluate the impact of the ‘Ward, Area and Service Projects’ module with the AMaT system across SBUHB. Through a combination of literature review and qualitative and quantitative data collection and analysis, this study explored how effectively the module has been integrated into existing workflows, the level of adoption among nursing and administrative staff, the reliability of the data captured and stored, potential efficiency gains, the module’s contribution to compliance and assurance and its impact on patient care and safety.

Findings from the evaluation indicate that the module has had a largely positive impact on audit governance and the wider quality assurance culture throughout the Health Board. By offering a centralised digital platform to manage audits and related actions for improvement, the module has strengthened oversight, enabled more timely responses to emerging patient safety risks, and supported a more transparent approach to service improvement. Staff reported greater accountability and improved visibility of audit activity, which has helped foster a more proactive and responsive safety culture.

While staff did not perceive the module to have directly influenced clinical care, it was seen to contribute meaningfully to patient safety by reinforcing governance, supporting regulatory compliance and facilitating a structured follow up of actions for improvement. In particular, the ability to track and monitor actions in real time and document progress centrally via the module was highlighted as a key enabler of consistency and collaboration across staff and wards.

However, the evaluation also identified areas where the module could be further developed. The manual nature of some functionalities, in particular the generation of action plans, was seen to limit the module’s ability to ensure consistency in improvement strategies. In addition, the perceived lack of integrated shared learning was reported commonly as a barrier, with several staff members calling for greater visibility of good practice examples to maximise the module’s impact in improving compliance. These findings highlight opportunities to improve the module to make it a more dynamic learning tool that facilitates sustained service improvement.

In conclusion, the AMaT ‘Ward, Area and Service Projects’ module offers a valuable foundation for structured quality assurance and service improvement throughout SBUHB. While its current functionality enhances monitoring and accountability functions, it holds further potential to support transformational change in patient care and safety. If the module was further developed with a stronger focus on shared learning, usability, and clinical integration further benefits could be realised. Continued investment in module refinement, stakeholder engagement, and staff training will be essential to realise the module’s full potential and embed the module deeper within organisational quality improvement and assurance processes.

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Appendices

Appendix 1 – Participant Information Sheet

Participant Information Sheet

Study Title: Evaluation of the 'Ward, Area and Service Projects' module within a Digital Audit Management and Tracking System Implemented Throughout Swansea Bay University Health Board (SBUHB) Wards and Areas

Introduction

You are being invited to participate in a research study evaluating the AMaT 'Ward, Area and Service Projects' module. It is important that you understand the purpose

of the research and how your data will be used as well as your right to withdraw and optional debriefing session post participation.

Purpose of the Study

The study aims to explore how the AMaT ‘Ward, Area and Service Projects’ module has been integrated into existing workflows within SBUHB, the impact it has on patient care and safety, as well as the challenges and successes experienced by users. Insights from this research will inform future enhancements to the AMaT module and other digital tools for healthcare.

Participation

- A TEAMs session will be arranged whereby a semi structured interview will take place lasting approximately 30-45 minutes.
- The interview will include open-ended questions about your experience using the AMaT module, including its impact on your work and any challenges or benefits you have encountered since using it.
- The interview will be recorded to ensure accurate transcription.

All identifiable information will be removed or pseudonymised during data processing. Your name and any other identifying details will not be included in the study findings.

Data will be securely stored on a password-protected system accessible only to the researcher, in compliance with the General Data Protection Regulation (GDPR) and the Data Protection Act 2018.

Your data will be retained for a limited period for analysis purposes. After this time, all data will be securely deleted.

Your participation is entirely voluntary, and you may withdraw at any time without providing a reason.

Debriefing Session

At the end of the interview, you will have the option to attend a follow up debriefing session to:

1. Address any questions or concerns you may have about the study or your participation.
2. Provide an opportunity for you to share any additional thoughts or feedback.
3. Offer support if discussing certain topics caused any discomfort.

Appendix 2 – Ethics Form

APPLICATION FOR ETHICAL APPROVAL
ADAPTED FOR MSC DIGITAL TRANSFORMATION DISSERTATIONS

STUDENTS should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate

research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the “principal researcher”.

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity.
Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:		Francesca Jeanette Holt			
2	Tick all boxes that apply:		Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☐	Taught Postgraduate Student	☒	Postgraduate Research Student	☐

3	Institute/Academic Discipline/Centre:	University of Wales Trinity Saint David
4	Campus:	Distance learning
5	E-mail address:	2217792@student.uwtsd.ac.uk
6	Contact Telephone Number:	
	For students:	
7	Student Number:	2217792
8	Programme of Study:	MSc Digital Transformation for the Health & Care Professions
9	Director of Studies/Supervisor:	Dr L Simona Ferraraccio

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)		**YES**	☒	**NO**	☐
					Date	
2	If Yes, please indicate source of approval (and date where known): ***Approval in principle must be obtained from the relevant source prior to seeking ethical approval***	Research Degrees Committee	☐		**N/A**	
		Institute Research Committee	☐		**N/A**	
		Other (write in)	☒		Data Analysis Plan Submitted 24/5/24	

SECTION C: Internal and External Ethical Guidance Materials

	Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	**UWTSD Research Ethics & Integrity Code of Practice**	☒
2	**UWTSD Research Data Management Policy**	☒
3	*[List any other relevant documents here]*	☐

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution					
2	Contact person name					
3	Contact person e-mail address					
4	Is your research externally funded?		**YES**	☐	**NO**	☐
5	Are you in receipt of a KESS scholarship?		**YES**	☐	**NO**	☐
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	**YES**	☐	**NO**	☐
7		Employed	**YES**	☐	**NO**	☐
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered.	**YES**	☐	**NO**	☐
9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue	**YES**	☐	**NO**	☐

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	**YES**	☐	**NO**	☐
	If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).				

SECTION E: Details of Research Activity

1	Indicative title:	Evaluation of the 'Ward, Area and Service Projects Module' within a Digital Audit Management and Tracking System Implemented Throughout Swansea Bay University Health Boards (SBUHB) Wards and Areas		
2	Proposed start date:	October 2024	Proposed end date:	May 2025
	Introduction to the Research (maximum 300 words per section) **Ensure that you write for a <u>Non-Specialist Audience</u> when outlining your response to the points below:** *Purpose of Research Activity* *Proposed Research Question* *Aims of Research Activity* *Objectives of Research Activity* Demonstrate, briefly, how **<u>Existing Research</u>** has informed the proposed activity and explain *What the research activity will add to the body of knowledge* *How it addresses an area of importance.*			
3	**Purpose of Research Activity** The purpose of the research activity is to evaluate the effectiveness of the AMaT 'Ward, Area and Service Projects' module in addressing inefficiencies with the audit management and subsequent action planning processes across SBUHB. By assessing how well the system integrated into existing workflows, the levels of user adoption, and its impact on audit accuracy, efficiency, compliance, and patient care, this research aims to identify both the benefits and improvements that could be made to the module to guide future improvements, ensuring that it optimises audit management, enhances patient safety, and supports regulatory compliance within SBUHB. (this box should expand as you type)			
4	**Research Question** 1. How effectively has the AMaT 'Ward, Area and Service Projects' module been integrated into existing workflows across SBUHB's wards and areas? 2. What are the levels of user adoption of the AMaT module among healthcare professionals and administrative staff, and what factors influence adoption rates? 3. How accurate and reliable is the data captured and stored within the AMaT module compared to previous manual processes?			

	4. What efficiency gains and time savings have been reliaed following the implementation of the AMaT module within SBUHB? 5. How effective is the AMaT module in ensuring compliance with regulatory requirements and maintaining quality standards across SBUHB wards and areas? 6. What impact has the AMaT module had on patient care and safety within SBUHB's wards and areas? (this box should expand as you type)
5	**Aims of Research Activity** To evaluate the effectiveness and impact of the AMaT 'Ward, Area and Service Projects' module in improving audit management processes across SBUHB. Specifically, the research seeks to determine how well the module integrated into existing workflows, the level of user adoption, its ability to enhance audit accuracy and efficiency, its role in ensuring compliance with regulatory standards, and its overall effect on patient care and safety. The findings will provide insights into whether the system meets its intended objectives and identify any areas for improvement. (this box should expand as you type)
6	**Objectives of Research Activity** 7. Evaluate the integration of the AMaT 'Ward, Area and Service Projects' module into existing workflows across SBUHB's wards and areas. 8. Examine the levels of user adoption of the module among healthcare professionals and administrative staff. 9. Assess the accuracy and reliability of data captured and stored within the module. 10. Analyse efficiency gains potential time savings associated with the module's implementation. 11. Evaluate the module's effectiveness in ensuring compliance with regulatory requirements and maintaining quality standards within SBUHB. 12. Determine the impact of the module on patient care and safety. (this box should expand as you type)
	Proposed methods (maximum 600 words) Provide a brief summary of all the methods that **may** be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. You do not need to justify the methods here, but should instead describe how you intend to collect the data necessary for you to complete your project.
7	Mixed methods data collection 1. Observational studies Direct observation of how healthcare professionals and administrative staff interact with the AMaT 'Ward, Area and Service Projects' module in real time. This will involve shadowing users in their daily workflows to understand system integration and usage patterns. 2. Workflow/process mapping

	Mapping current audit management processes both before and after the implementation of the AMaT module. This will help visualise any changes in workflows, identify issues, and analyse how the system is incorporated into existing processes. 3. Collection of system usage metrics Gathering data on how often the AMaT module is accessed, frequency of audit completions, and the time taken for tasks within the system. These metrics will help quantify the efficiency gains and system adoption. 4. Collection of user adoption metrics Measuring the number of users regularly using the AMaT module, the frequency of use per user, and gathering information on training completion and competency. Surveys and system generated reports will be utilised to track these metrics. 5. Collection of data accuracy metrics Comparing data recorded within the AMaT module against actual audit outcomes to assess accuracy and reliability. This will involve auditing a sample of data points to evaluate errors or inconsistencies. 6. Retrospective qualitative case studies Conducting interviews or focus groups groups with staff members who have used both the manual and digital audit systems. These case studies will explore user experiences, perceived challenges, and benefits of the AMaT module. 7. Collection of compliance metrics Monitoring how well the AMaT system supports regulatory compliance by tracking completed audits, timely follow-up actions, and adherence to quality standards. This data will be gathered from system reports. 8. Collection of clinical outcome metrics Analysing any impact of the AMaT module on patient care and safety, including the effect of timely audit actions on clinical outcomes. This will involve correlating system usage with patient safety incident reports or quality improvement initiatives. (this box should expand as you type)
	Location of research activity Identify all locations where research activity will take place.
8	Swansea Bay University Health Board (SBUHB) (this box should expand as you type)
	Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the research then please state this.

9	N/A *(this box should expand as you type)*

10	Use of documentation not in the public domain: Are any documents **NOT** publicly available?	**NO**	☒
		YES	☐
11	If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales. *(this box should expand as you type)*		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	**YES**	**NO**
12	A prosperous Wales	☒	☐
13	A resilient Wales	☒	☐
14	A healthier Wales	☒	☐
15	A more equal Wales	☒	☐
16	A Wales of cohesive communities	☒	☐
17	A Wales of vibrant culture and thriving Welsh language	☐	☒
18	A globally responsible Wales	☒	☐
19	If YES to any of the above, please give details:		
	Through the AMaT 'Ward, Area and Service Projects' module implementation SBUHB fosters a more efficient, resilient, and equitable healthcare system. By streamlining audit processes, improving data accuracy, and ensuring timely corrective actions, the work contributes to a Prosperous Wales and a Healthier Wales. Evaluating the system's user adoption promotes inclusivity, supporting a More Equal Wales, while enhancing collaborative working environments fosters Cohesive Communities. Additionally, by reducing reliance on paper and administrative waste, the research contributes to A Globally Responsible Wales. It also supports A Resilient Wales by reinforcing healthcare's capacity to adapt to challenges through digital transformation. (this box should expand as you type)		

SECTION F: Scope of Research Activity

	Will the research activity include:	**YES**	**NO**
1	Use of a questionnaire or similar research instrument?	☐	☒
2	Use of interviews?	☐	☒
3	Use of focus groups?	☒	☐
4	Use of participant diaries?	☐	☒
5	Use of video or audio recording?	☐	☒
6	Use of computer-generated log files?	☒	☐
7	Participant observation with their knowledge?	☒	☐
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☐	☒
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.	☒	☐
	Details of any other primary data collection method: 1. Observational studies 2. Workflow/process mapping 3. Collection of system usage metrics 4. Collection of user adoption metrics 5. Collection of data accuracy metrics 6. Retrospective qualitative case studies 7. Collection of compliance metrics 8. Collection of clinical outcome metrics (this box should expand as you type)		

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

	Who are the intended participants:	**YES**	**NO**
1	Students or staff at the University?	☐	☒
2	Adults (over the age of 18 and competent to give consent)?	☒	☐
3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☐	☒
5	Prisoners?	☐	☒
6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.		
	Details of any other participant groups: (this box should expand as you type)	☐	☒

	Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?	
10	How many participants are expected?	60 *(this box should expand as you type)*
11	Who will the participants be?	Clinical and administrative staff of SBUHB *(this box should expand as you type)*
12	How will you identify the participants?	Those who are required to use the AMaT 'Ward, Area and Service Projects' module as part of their daily workflow. *(this box should expand as you type)*

	Information for participants:	**YES**	**NO**	**N/A**
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☒	☐	☐
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
17	If the research is observational, will you ask participants for their consent to being observed?	☒	☐	☐
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
22	If NO to any of above questions, please give an explanation			
	(this box should expand as you type)			
24	Will participants be paid?	☐	☒	☐
25	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
28	If YES to any question, please provide full details			
	(this box should expand as you type)			

SECTION H: Anticipated Risks

	Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.		
1	**Full risk assessment completed and appended?**	**Yes**	☐
		No	☒
2	**Risks to participants** For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information		
	Risk to participants: Stress/anxiety by impact on workload *(this box should expand as you type)*	*How you will mitigate the risk to participants:* Fully explain the research activity to all participants and make them aware that they can withdraw from the research at any point. *(this box should expand as you type)*	
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities		
	(this box should expand as you type)		
4	**Risks to the investigator** For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest		
	Risk to the investigator: *(this box should expand as you type)*	*How you will mitigate the risk to the investigator:* *(this box should expand as you type)*	
5	**University/institutional risks** For example: adverse publicity, financial loss, data protection		
	Risk to the University: *(this box should expand as you type)*	*How you will mitigate the risk to the University:* *(this box should expand as you type)*	
6	**Environmental risks** For example: accidental spillage of pollutants, damage to local ecosystems		
	Risk to the environment: *(this box should expand as you type)*	*How you will mitigate the risk to environment:* *(this box should expand as you type)*	

	Disclosure and Barring Service			
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	**YES**	**NO**	**N/A**
7	Does your research require you to hold a current DBS Certificate?	☐	☒	☐
8	If YES, please give the certificate number. If the certificate number is not available please write “Pending”; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	**Feedback** What de-briefing and feedback will be provided to participants, how will this be done and when?
	Participants will receive a summary on the research purpose, key findings, and how their contributions informed the study. Feedback will be provided through written reports detailing the outcomes. Additionally, optional individual or group feedback sessions will be offered, allowing participants to ask questions and provide further input. *(this box should expand as you type)*
2	**Informed consent** Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.
	1)Information sheet to provide comprehensive information detailing the evaluation's purpose, procedures, duration and potential risks and benefits. 2)Information session to explain the evaluation in detail and allow for Q&A 3)Written consent forms which contain detailed information about the evaluation, confidentiality assurances, data usage, voluntary participation with the participant's signature *(this box should expand as you type)*
3	**Confidentiality / Anonymity** Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.
	1)Anonymised Data Collection – no personal identifiable information will be included 2)De identification – any information that could potentially identify participants will be removed 3)Access controls – Only those directly involved in the evaluation will have access to the information *(this box should expand as you type)*

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	**YES**	**NO**
1	***"Personal data"*** *means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.*	☐	☐X
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	*(this box should expand as you type)*		

	Does it involve special category data (as defined by the GDPR)?	**YES**	**NO**
3	***"Special category data"*** *means sensitive personal data consisting of information as to the data subjects' –* *(a) racial or ethnic origin,* *(b) political opinions,* *(c) religious beliefs or other beliefs of a similar nature,* *(d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992),* *(e) physical or mental health or condition,* *(f) sexual life,* *(g) genetics,* *(h) biometric data (as used for ID purposes),*	☐	☐X
	If YES, provide a description of the special category data and explain why this data needs to be collected:		
4	*(this box should expand as you type)*		

	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	**YES**	**NO**
5	Manual files (i.e. in paper form)?	☐	☒
6	University computers?	☐	☒
7	Private company computers?	☐	☒
8	Home or other personal computers?	☒	☐
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	"Cloud" storage or websites?	☒	☐
11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:		
	Password Protection *(this box should expand as you type)*		

	Data Protection		
	Will the research activity involve any of the following activities:	**YES**	**NO**
13	Electronic transfer of data in any form?	☐	☒
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☐	☒
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☐	☒
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☐	☒

20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	(this box should expand as you type)		
22	List all who will have access to the data generated by the research activity:		
	(this box should expand as you type)		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	(this box should expand as you type)		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	(this box should expand as you type)		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. (*Most relevant to academic staff)*		
	(this box should expand as you type)		
26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	**YES**	☒
27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	**YES**	☒

SECTION K: Declaration

	The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants**.** In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/		
1	**Signature of applicant:**	F.Holt	**Date:** 15/10/24

For STUDENT Submissions:

2	Director of Studies/Supervisor:	Dr L Simona Ferraraccio	**Date:** 17/10/2024
3	Signature:		

For STAFF Submissions:

4	Academic Director/ Assistant Dean:		**Date:**
5	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed **ALL RELEVANT** sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☐	I have attached a copy of final/interim approval from external organisation (**where appropriate**)
☐	I have attached a full risk assessment (where appropriate) *ONLY TICK IF YOU HAVE **ATTACHED A FULL RISK ASSESSMENT***
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be approved by the Supervisor and the Programme Director.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

Appendix 3 – Participant Consent Form

Participant Consent Form

Study Title: Evaluation of the 'Ward, Area and Service Projects' module with a Digital Audit Management and Tracking System Implemented Throughout Swansea Bay University Health Board (SBUHB) Wards and Areas

Researcher Information

Researcher: Francesca Holt

Contact Information: Francesca.holt@wales.nhs.uk

Purpose of the Study

The purpose of this study is to evaluate the integration, adoption, and impact of the AMaT 'Ward, Area and Service Projects' module on existing workflows, patient care, and compliance within SBUHB.

Consent Declaration

By signing below, you acknowledge the following:

- I have read and understood the Participant Information Sheet.
- I have had the opportunity to ask questions and received answers.
- I understand that my participation is voluntary and that I may withdraw at any time without giving a reason.
- I consent to the anonymised use of my data for the purposes of this research.
- I agree to the interview being video and audio recorded for data transcription purposes.

Participant Name (Printed): _____

Participant Signature: _____

Date: _____

Researcher Name (Printed): _____

Researcher Signature: _____

Date: _____

Appendix 4 – Project Brief

Project Brief - Evaluation of the 'Ward, Area and Service Projects Module' within a Digital Audit Management and Tracking System Implemented Throughout Swansea Bay University Health Boards (SBUHB) Wards and Areas

Introduction

The effective management of audits is critical in maintaining high-quality healthcare services. To support this, Swansea Bay University Health Board (SBUHB) implemented a digital audit management system named 'AMaT'. AMaT is an innovative system designed to make auditing easier, faster, and more effective. AMaT has 5 different modules which all contain various key areas of functionality within the system to manage Clinical Audits, Ward and Area audits, QI, service evaluation, patient/staff surveys, and NICE compliance through real-time data and action control. AMaT's 'Ward, Area and Service Projects Module' has been implemented throughout all wards and clinical areas throughout SBUHB to conduct and manage ward based audits. This system and use of the module aims to streamline and automate the management of audit processes, improve compliance tracking, and enhance overall performance monitoring.

The aim of this project is to evaluate the effectiveness of AMaT 'Ward, Area and Service Projects' module, assess its impact on operational efficiency, and explore its contribution to improved healthcare service delivery within SBUHB. This evaluation will provide insight into how the AMaT module supports staff, tracks audits, and ensures that outcomes are actioned appropriately across the Health Board.

This evaluation will assess the module's effectiveness, highlight areas of improvement, and explore its contribution toward achieving the strategic goals of SBUHB, specifically in improving patient safety and care quality. The findings will provide recommendations to inform future system enhancements and better integration across departments.

Scope

Problem Summary

Prior to the implementation of the AMaT 'Ward, Area and Service Projects' module, audit management across SBUHB relied on manual, paper based audits, with processes prone to human error, duplication and delays leading to delays in implementing corrective actions. The reliance on manual tracking led to challenges

in ensuring timely completion of audits and follow up on audit actions. Moreover, the lack of real time reporting makes it difficult to achieve transparency and accountability across departments.

The introduction of the AMaT module was designed to address these inefficiencies by enabling a digital, streamlined approach to audit tracking and management. However, it is crucial to evaluate whether the system is meeting these intended objectives and to identify any remaining challenges or opportunities for further improvement.

Study Objectives

13. Evaluate the integration of the AMaT 'Ward, Area and Service Projects' module into existing workflows across SBUHB's wards and areas.
14. Examine the levels of user adoption of the module among healthcare professionals and administrative staff.
15. Assess the accuracy and reliability of data captured and stored within the module.
16. Analyse efficiency gains potential time savings associated with the module's implementation.
17. Evaluate the module's effectiveness in ensuring compliance with regulatory requirements and maintaining quality standards within SBUHB.
18. Determine the impact of the module on patient care and safety.

Methods

This evaluation will adopt a mixed-methods approach, combining quantitative data analysis and qualitative research to provide a comprehensive assessment of the AMaT module. The primary research methods will include:

Surveys: Online questionnaires will be distributed to staff across different wards and departments who use the module. This will assess user satisfaction, perceived ease of user, and the impact on workflow efficiency.

Interviews: Semi-structured interviews will be conducted with key stakeholders, including ward managers, clinical staff, and administrative personnel. These interviews will gather in-depth insights into their experiences with the system, challenges faced, and suggestions for improvements.

Audit Data Analysis: Pre-and post-implementation audit data will be analysed to assess changes in audit completion rates, timeliness of follow up actions, and compliance with regulatory standards.

Observational Study: On site visits will allow for direct observation of system usage and interaction between staff and the module during real-time operations. This will help identify any usability issues and procedural inefficiencies.

Period	**Activities**
September to October	• Finalise project brief and scope of work • Conduct literature review on digital audit management systems • Select and justify research methods • Sumit ethics application for approval • Draft incomplete sections of the Introduction chapter Background & context – why? Introduce AMaT – define modules and reason why we're talking about ward, area and service **projects** module. (Aim, scope, goal, objective. Research questions. End introduction with what reader is to expect – data collection, mixed methods, comparison nationwide (one paragraph)) • Start thinking re. table of contents
November to December	• Begin primary data collection (subject to ethics approval) Start primary data collection (subject to favourable ethical opinion) • Complete draft chapters for Literature Review and Methods
January to February	• Hold progress review meeting with supervisor and moderator • Finish primary data collection • Begin primary data analysis

	• Draft Results chapter based on initial analysis • Finalise Literature Review and Methods chapters
March to April	• Finish primary data analysis • Continue work on the Results chapter • Draft Discussion chapter • Outline Conclusions chapter
May	• Complete full dissertation and make final revisions • Deliver final student presentation to supervisor • Submit final draft dissertation