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Transforming Public Sector Auditing from Tradition to Agility with Scrum: A Case for the Indonesian Public Sector

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Abstract

The conventional audit methodology in the public sector faces escalating challenges in addressing the increasing complexity of governmental functions and the demand for prompt, relevant audit results. This study addresses the critical research problem of enhancing audit efficiency and stakeholder engagement in public sector auditing while maintaining professional standards and regulatory compliance. The research objective is to develop a novel framework for implementing Agile methodology, specifically Scrum, in BPK's public sector audit process. The study employs a qualitative research methodology, including a comprehensive literature review, document analysis, interviews with thirteen key stakeholders—comprising senior auditors and Agile practitioners—and a limited pilot implementation. The research identifies eight critical areas for framework development and establishes Quality Control Integration Points (QCIP) to ensure continuous quality monitoring while preserving agile flexibility. The findings demonstrate that Agile principles can be successfully adapted to public sector auditing through a modified Scrum framework that incorporates iterative planning, daily coordination, and consistent stakeholder feedback. The study provides a structured implementation roadmap spanning 3 to 18 months and addresses varying levels of stakeholder impact. The developed framework enhances audit efficiency and effectiveness while upholding essential compliance standards. This research contributes both to the theoretical understanding and practical application of Agile methodology in public sector auditing, establishing a foundation for future adoption in similar institutions.

Keywords: Agile methodology; audit innovation; audit transformation; BPK; public sector audit; Scrum framework

INTRODUCTION

The public sector audit environment is under mounting pressure as government operations grow in complexity and stakeholders demand faster, more relevant audit outcomes. Conventional audit methodologies, particularly the linear, waterfall-style processes typically employed by Supreme Audit Institutions (SAIs), are increasingly challenged by the rapid pace of technological innovation and evolving regulatory landscapes. Many SAIs, including the Supreme Audit Institution of Indonesia (BPK), still adhere to rigid sequential audit stages—from planning to reporting—which, although structured and comprehensive, often result in lengthy audit cycles, limited stakeholder engagement, and reduced agility in responding to emerging risks or shifting conditions (Otia, 2022). The slow digital transformation within SAIs accentuates these limitations, as they lag behind the digital transition dominating the broader public sector (Volodina, 2025). Moreover, the integration of advanced technologies such as artificial intelligence (AI) and continuous auditing threatens to render traditional methods obsolete, exposing gaps in technical capacity, governance frameworks, and ethical oversight (Genaro-Moya, 2025; Ceki & Moloi, 2025). Research highlights that SAIs must adapt through more responsive audit standards and agile methodologies to maintain audit relevance and effectiveness in the Fourth Industrial Revolution (Grossi et al., 2023). Without such adaptation, these institutions may continue experiencing delays, reduced stakeholder trust, and suboptimal audit impact in increasingly dynamic environments.

The existing audit technique utilized by BPK embodies a traditional approach that is progressively inadequate in addressing contemporary requirements, as noted by Chan and Vasarhelyi (2011) in their examination of audit innovation. Their research finds that traditional

techniques, often comprising detailed upfront planning, sequential execution phases, and end-of-audit evaluations, are struggling to manage the complexities of modern government operations efficiently. Catlin and Watkins (2021) assert that conventional audit methodologies, while guaranteeing comprehensiveness and adherence to standards through their linear trajectory of planning, execution, and reporting, face significant limitations. Their inflexible framework and sequential nature impose considerable constraints in the contemporary dynamic landscape, leading to prolonged intervals between audit commencement and reporting. Furthermore, diminished stakeholder involvement during the process often results in findings that may lose relevance or significance due to extended delivery timeframes.

BPK's present audit approach issues exemplify a global trend in public sector auditing, as noted by DeRoche (2022) in his examination of audit reform. The escalating digitalization of governmental functions, alongside rising expectations for transparency and accountability, has necessitated the development of more responsive and adaptive auditing procedures. Mkoba and Marnewick (2020) notice that traditional audit procedures, created for a more stable and predictable environment, are struggling to manage modern challenges successfully. This predicament is exacerbated by the necessity to uphold stringent quality and compliance requirements while enhancing efficiency and responsiveness, especially with public sector accountability.

Previous research in this area has primarily focused on Agile implementation in private sector contexts and software development environments. Studies by Pinto and Leme (2024) examined Agile applications in non-IT environments, while Maqbool et al. (2018) explored Scrum implementations in various organizational settings. However, limited research exists on systematic Agile methodology adaptation specifically for public sector auditing environments. Most existing studies address either Agile methodology in general organizational contexts or audit methodology improvements independently, creating a significant research gap in the intersection of these two domains.

This research gap is particularly evident in the lack of comprehensive frameworks that address the unique challenges of public sector auditing, including regulatory compliance requirements, stakeholder diversity, and quality assurance mechanisms. While some studies have explored audit innovation and process improvement, none have provided systematic guidance for implementing Scrum-based Agile methodology in Supreme Audit Institution contexts while maintaining professional audit standards.

The research novelty of this study lies in its systematic approach to adapting Scrum methodology specifically for public sector audit environments, developing Quality Control Integration Points (QCIP) that maintain audit rigor while enabling agile flexibility, and creating a comprehensive implementation framework tailored to Supreme Audit Institution requirements. Although Agile approaches have demonstrated efficacy across multiple sectors, their implementation in public sector auditing is predominantly unexamined, as highlighted by Pinto and Leme (2024) in their latest research. Their research illustrates effective adaptations of Agile principles in non-IT environments, indicating potential relevance to public sector auditing. Maqbool et al. (2018) assert that the distinctive demands and limitations of public sector auditing, especially regarding compliance and stakeholder expectations, require meticulous evaluation of the appropriate adaptation of Agile principles to this context. The disparity between the demonstrated advantages of Agile techniques in many industries and their restricted implementation in public sector auditing poses both an opportunity and a challenge for organizations such as BPK.

The Agile methodology, formalized in 2001 through the Agile Manifesto, represents a fundamental shift in project management philosophy, emphasizing adaptability, iterative progress, and continuous stakeholder collaboration (Beck et al., 2001). Within this methodology, Scrum has emerged as the most widely adopted framework, providing structured

yet flexible approaches to complex project management. Scrum's emphasis on empirical process control through transparency, inspection, and adaptation (Schwaber & Sutherland, 2020) offers significant potential for enhancing traditional processes, including auditing. The Scrum framework defines specific roles (Product Owner, Scrum Master, Development Team), events (Sprint Planning, Daily Scrum, Sprint Review, Sprint Retrospective), and artifacts (Product Backlog, Sprint Backlog, Increment) that work in concert to deliver value iteratively. While originally designed for software development, organizations across various sectors have successfully adapted these elements to their specific contexts, demonstrating Scrum's versatility in managing complex work (Pinto & Leme, 2024). In the context of public sector auditing, the potential application of Scrum principles presents both opportunities and challenges. The framework's emphasis on regular inspection and adaptation aligns well with audit requirements for thorough review and quality control. However, the adaptation must carefully consider the unique requirements of public sector auditing, including regulatory compliance, documentation standards, and stakeholder expectations.

The progression of audit procedures in recent decades illustrates the profession's adaptation to evolving corporate landscapes and technological innovations. Chan and Vasarhelyi (2011) elucidate that conventional audit approaches were designed for a period marked by annual cycles and manual procedures, emphasizing compliance and control. Their research illustrates the evolution of these strategies from basic verification processes to more advanced techniques that integrate risk assessment and control evaluation. Newmark et al. (2018) underscore that the contemporary business landscape, characterized by swift transformations and intricate operations, needs more agile and effective strategies that provide prompt insights while upholding rigorous standards of quality and compliance. This transition has been especially difficult in the public sector, as legislative mandates and stakeholder expectations introduce further complexity.

The divergence between traditional and Agile audit methodologies signifies a pivotal transformation in the conception and execution of audit engagements. DeRoche (2022) notes that the systematic framework of conventional audits, although offering clarity and uniformity, may result in inflexible procedures that find it challenging to adjust to evolving circumstances. These limits are especially apparent in the public sector, where operational complexity and stakeholder demands are always escalating. Agile approaches provide a more adaptable and iterative framework for project management and execution, as well documented in contemporary literature. Mkoba and Marnewick (2020) examine how these techniques, initially designed for software development, prioritize adaptability, ongoing enhancement, and consistent stakeholder involvement.

Their research indicates that the Scrum framework, a particular application of Agile methodology, offers a systematic yet adaptable approach that has demonstrated success across several situations. Maqbool et al. (2018) illustrate that Scrum's focus on iterative advancement, consistent communication, and ongoing feedback renders it especially appropriate for intricate projects necessitating elevated collaboration and quality management. These attributes correspond effectively with the demands of public sector auditing, where quality, compliance, and stakeholder involvement are essential.

The adoption of Agile techniques in public sector organizations poses distinct obstacles and opportunities, as examined by Pinto and Leme (2024) in their thorough study. Their research reveals numerous important impediments to Agile adoption in public sector environments, including organizational opposition, structural challenges, and talent shortfalls. Motubatse et al. (2015) elucidate that public sector organizations, characterized by hierarchical structures and regulatory mandates, frequently encounter difficulties in adapting to the flexible and collaborative methodology advocated by Agile practices. While these challenges are significant, successful implementations in diverse public sector contexts demonstrate that these

hurdles can be overcome through careful adaptation and robust change management approaches.

This research aims to develop a comprehensive framework for transforming BPK's audit methodology through the integration of Scrum-based Agile principles while ensuring adherence to professional standards and regulatory compliance. The benefits and implications of this research extend to multiple stakeholder groups. For audit institutions, the research provides enhanced audit efficiency through improved resource allocation and stakeholder engagement, reduced audit cycle times while maintaining quality standards, and increased adaptability to dynamic risk environments. For audited entities, the framework offers more collaborative audit experiences with regular feedback opportunities and faster resolution of audit issues. For the broader public sector, the research contributes to improved transparency and accountability through more responsive audit processes. The theoretical implications include advancing understanding of Agile methodology adaptation in regulated professional environments and contributing to audit innovation literature, while practical implications provide implementation guidance for similar Supreme Audit Institutions globally.

RESEARCH METHOD

Employing a qualitative technique within a constructivist paradigm, this study establishes a comprehensive framework for implementing Agile in public sector audits at Indonesia's BPK (Newmark et al., 2018). The research design, which spanned seven months from July 2024 to January 2025, was centered at BPK's Jakarta headquarters and included a pilot implementation with an audit team in the final quarter (Mkoba & Marnewick, 2020). Primary data was gathered through semi-structured interviews with thirteen key stakeholders, including senior auditors, certified Agile practitioners, academic specialists, and public sector managers, all selected to provide diverse perspectives on audit innovation and methodology adaptation (Pinto & Leme, 2024). These interviews, conducted over three months, were meticulously transcribed and analyzed to elucidate existing audit difficulties and potential Agile applications.

This qualitative data was further enriched through a thorough document analysis of BPK's internal standards, such as the SPKN and PMP, and international best practices, aiming to identify implementation challenges rather than standard deficiencies (Chan & Vasarhelyi, 2011). To validate the emerging concepts, a limited three-month pilot was conducted on a single audit assignment, testing the adaptability of basic Scrum ceremonies and providing crucial practical insights (Motubatse et al., 2015). The subsequent analytical phase utilized NVivo software for systematic coding and theme identification, with preliminary findings undergoing rigorous validation through member checking and peer review to ensure analytical rigor (Maqbool et al., 2018).

The framework development itself was an intensely iterative process, integrating continuous feedback from stakeholders and repeated rounds of expert consultation to refine its theoretical integrity and practical usefulness (DeRoche, 2022). Throughout the entire eighteen-month research timetable, stringent quality assurance protocols were maintained, including data triangulation, regular peer debriefing sessions, and comprehensive audit trails to guarantee the reliability, validity, and transparency of the methodology (Catlin & Watkins, 2021). This prolonged engagement and iterative validation ensured the final framework was both relevant to the BPK's unique environment and robust enough to potentially impact broader public sector audit practices.

RESULT AND DISCUSSION

The research findings indicate substantial opportunities and challenges in the use of Agile methodology within BPK's audit process. Through a combination of document analysis,

interviews, and limited pilot implementation in selected audit assignments, the study has produced eight critical areas that guide the creation of an Agile audit framework tailored for public sector environments. These findings encompass the current state analysis, framework adaptation and design, implementation considerations, and lessons learned from both theoretical analysis and initial practical applications. This thorough examination offers insights into both theoretical principles and practical consequences of Agile implementation in public sector audits.

Current State Analysis and Gap Identification

An evaluation of BPK's current audit implementation through stakeholder interviews revealed several practical challenges in the audit process, as detailed in Table 1. While BPK's audit standards are comprehensive and align with professional requirements, the interviews highlighted implementation challenges particularly in areas of stakeholder engagement, risk response agility, and resource utilization efficiency. These implementation challenges align with observations by Chan and Vasarhelyi (2011), who identified similar practical difficulties in other public sector audit agencies. The conventional audit methodology implementation, although demonstrating strengths in compliance and documentation, faces practical challenges in achieving optimal stakeholder engagement, timely risk response, and efficient resource allocation.

Table 1. Gap Analysis of Current Audit Methodology

Dimension	Current State	Required State	Gap Analysis	Impact Level
Audit Planning	Annual, fixed	Dynamic, adaptive	High divergence	Critical
Risk Assessment	Initial phase only	Continuous	Significant gap	High
Stakeholder Engagement	Limited, formal	Regular, collaborative	Major gap	Critical
Quality Control	End-phase review	Continuous monitoring	Moderate gap	Medium
Resource Utilization	Fixed allocation	Flexible deployment	Significant gap	High
Documentation	End-loaded	Progressive	Moderate gap	Medium
Technology Integration	Limited	Comprehensive	Major gap	High

Table 1's analysis highlights significant implementation challenges in BPK's current audit practices, based on stakeholder interviews. In Audit Planning, interview participants identified practical difficulties in implementing dynamic approaches within the annual planning framework. For example, interview participants reported implementation challenges where emerging risks during the year required resource reallocation. A senior auditor described this implementation challenge: "We frequently encounter difficulties in reallocating our resources to tackle emerging risks due to our commitment to the annual plan."

The implementation challenges in Risk Assessment stem from practical limitations in conducting continuous risk evaluation throughout the audit process. While BPK's standards acknowledge the importance of ongoing risk assessment, interview data revealed practical difficulties in modifying risk responses during audit execution. This implementation challenge is particularly evident in technology-intensive audits, where risk environments evolve rapidly and require more agile responses.

Regarding Stakeholder Engagement, interviews revealed practical challenges in maintaining consistent communication throughout the audit process. While BPK's standards emphasize the importance of stakeholder engagement, the current implementation practices often result in limited interaction patterns. The research indicated that stakeholders, especially auditees, experienced practical challenges in maintaining continuous engagement throughout the audit process. An auditee described this implementation challenge: "We only receive communication from the audit team at the commencement and conclusion of the process, which hinders our ability to offer timely input or clarifications.

Adaptation of Agile and Scrum Framework for Public Sector Audit

The transformation of BPK's audit methodology required careful adaptation of Scrum practices to meet the specific demands of public sector auditing. This adaptation focused on preserving audit quality and compliance while incorporating agile benefits of flexibility and stakeholder engagement.

The Scrum framework, as defined by Schwaber and Sutherland (2020), consists of three key components: roles, events, and artifacts, each serving specific functions in delivering value iteratively:

a. Scrum Roles
- Product Owner: Responsible for maximizing value, managing product backlog, and representing stakeholder interests.
- Scrum Master: Facilitates Scrum practices, removes impediments, and promotes team effectiveness.
- Development Team: Self-organizing professionals who perform the work of delivering potentially releasable increments.

b. Scrum Events
- Sprint Planning: Defines sprint goals and selects backlog items for the upcoming sprint.
- Daily Scrum: 15-minute daily coordination meeting to sync activities and identify obstacles.
- Sprint Review: Demonstrates completed work to stakeholders and gathers feedback.
- Sprint Retrospective: Team reflection on process improvement opportunities.

c. Scrum Artifacts
- Product Backlog: Ordered list of everything needed in the product.
- Sprint Backlog: Selected items from product backlog for current sprint.
- Increment: Sum of completed items meeting the definition of done.

The adaptation process began with a detailed mapping of traditional audit requirements to these Scrum elements, ensuring that each adaptation would maintain professional standards while enhancing agility. As shown in Table 2, this mapping addresses three key dimensions: roles, events, and artifacts. The role adaptation maintains clear accountability while promoting collaboration. The Audit Manager, adapted from the Product Owner role, retains ultimate responsibility for audit quality and stakeholder relationships. They focus on prioritizing audit objectives based on risk assessment and ensuring compliance with professional standards. Senior Auditors, serving in the Scrum Master role, facilitate agile practices while ensuring adherence to audit methodology. The Audit Team, corresponding to the Development Team in Scrum, maintains collective responsibility for audit execution while self-organizing within professional standard boundaries.

Event adaptation focuses on maintaining audit rigor through iterative progress. Sprint Planning in the audit context emphasizes risk-based prioritization and evidence collection planning. Daily Standups focus on coordinating audit procedures and identifying potential compliance issues early. Sprint Reviews become structured audit finding reviews, ensuring thorough validation of evidence and conclusions before proceeding. Artifact adaptation ensures comprehensive documentation while supporting agile execution. The Audit Backlog, adapted

from the Product Backlog, maintains a prioritized list of audit objectives aligned with risk assessment. The Sprint Audit Plan provides detailed procedures for each sprint while incorporating quality control checkpoints. Audit Quality Criteria, derived from the Definition of Done, ensures that all audit work meets professional standards before being considered complete.

This adaptation maintains alignment with professional standards through several key mechanisms:

a. **Definition of Done** incorporates mandatory quality criteria derived from applicable audit standards.
b. **Sprint cycles** are structured to ensure adequate evidence collection and documentation.
c. **Quality gates** are integrated into the sprint process to maintain professional rigor.

Core mapping of Scrum roles to primary audit positions, BPK's audit structure includes additional roles that need to be integrated into the Agile framework. The complete integration of BPK's audit hierarchy is structured as follows:

a. Product Owner Role (Audit Manager)
   - *Penanggung Jawab* (Head of Audit): Serves as the ultimate Product Owner, responsible for strategic decisions and final audit quality.
   - *Wakil Penanggung Jawab* (Deputy Head): Acts as Product Owner proxy, supporting strategic decisions and stakeholder management.
b. Scrum Master Role (Senior Auditor)
   - *Pengendali Teknis*: Functions as a Technical Scrum Master, focusing on technical quality assurance and methodology compliance.
   - *Ketua Tim*: Operates as the operational Scrum Master, managing daily team activities and sprint execution.
c. Development Team (Audit Team)
   - *Ketua Sub Tim*: Functions as senior team members within the Development Team, leading specific audit areas.
   - *Anggota Tim*: Core members of the Development Team executing audit procedures.

This hierarchical integration maintains BPK's quality control structure while adopting Scrum's agile principles:

a. Quality Control: *Pengendali Teknis* reviews technical aspects during sprint reviews.
b. Team Coordination: *Ketua Tim* and *Ketua Sub Tim* facilitate daily coordination within the Scrum framework.
c. Execution Efficiency: *Anggota Tim* self-organize within their sub-teams while maintaining collective accountability.

Implementation of Scrum in Public Sector Auditing

The adaptation of Scrum methodology to public sector auditing necessitated meticulous evaluation of existing organizational frameworks while preserving the fundamental tenets of agility and iterative development, as highlighted by Newmark et al. (2018) in their examination of agile audit transformations. In the context of auditing, conventional Scrum roles were adapted to conform to established hierarchies and professional duties, in accordance with the structure proposed by Mkoba and Marnewick (2020). The Product Owner role was designated to audit managers who oversee audit quality and stakeholder connections, a strategy corroborated by Chan and Vasarhelyi's (2011) study on audit innovation. These managers are tasked with prioritizing audit domains according to risk evaluation, sanctioning findings, and guaranteeing adherence to professional standards. Their function is essential in managing stakeholder expectations and granting final approval of completed audit work.

Senior auditors were appointed as Scrum Masters, tasked with encouraging daily collaboration and eliminating obstacles to progress, as advised by Catlin and Watkins (2021). This position was crucial in facilitating the seamless integration of Agile methodologies with conventional audit requirements. Senior auditors utilize their knowledge to direct teams throughout sprint planning and retrospective sessions, ensuring adherence to methodology and evidence quality in accordance with the success characteristics identified by Pinto and Leme (2024). Their role enables them to proficiently connect agile methodologies with audit standards.

The application of Scrum in public sector auditing has shown considerable advantages regarding flexibility and document management efficacy. Newmark et al. (2018) emphasize that the framework's agile methodology allows audit teams to swiftly adjust to evolving circumstances and developing concerns while upholding superior quality standards. This versatility is particularly apparent in how teams can modify their audit focus and methods in response to new discoveries or evolving situations during the engagement. Dimas et al. (2024) reported a successful implementation of a Scrum-based information system for document management in environmental supervision operations, resulting in enhanced efficiency and traceability. This experience indicates that analogous advantages can be attained in audit documentation management, where the right organization and accessibility of evidence are essential.

The iterative structure of Scrum sprints improves the audit team's capacity to adapt to internal and external environmental changes. Petrini and Muniz Jr (2014) noted that the "inspect-and-adapt" mindset enhances operational performance, quality, and stakeholder satisfaction. Within BPK's audit processes, this adaptability has demonstrated significant value in managing intricate government operations where mandates and risks may change throughout the audit engagement. Participants in the interview observed that the capacity to modify audit methods throughout sprint cycles, while adhering to professional norms, has resulted in more efficient and prompt audit results.

The audit team operates as the Development Team inside this modified framework, collaborating as a cross-functional unit with diverse areas of expertise, adhering to the model suggested by Maqbool et al. (2018). The team maintains group accountability for audit execution and evidence collection while self-organizing within the restrictions of professional norms. This adaptation has demonstrated notable success in promoting collaboration during the development and documentation stages, with team members actively engaging in daily standups and sprint reviews, as noted by DeRoche (2022).

The sprint structure and timing necessitated substantial alterations to meet audit standards, based on the results of Motubatse et al. (2015). Sprints generally last 2-4 weeks, corresponding with natural audit phases, although they retain adaptability according to audit complexity and stakeholder availability. Sprint planning meetings involve risk-based prioritization of audit areas, explicit specification of deliverables, and meticulous consideration of resource allocation, adhering to best practices established by Chan and Vasarhelyi (2011). This method allows teams to uphold compliance standards while embracing an iterative work style.

Daily standup meetings, held in 15-minute focused sessions, have demonstrated significant efficacy in sustaining team collaboration and promptly identifying concerns, in accordance with the concepts articulated by Mkoba and Marnewick (2020). The sessions concentrate on reviewing audit progress, assessing evidence collection status, and discussing potential findings. Teams demonstrate enhanced efficiency in recognizing and resolving stakeholder dependencies and compliance issues through these regular interactions, corroborating the findings of Newmark et al. (2018) about the efficacy of agile audits.

The sprint review process has been modified to incorporate demonstrations of completed audit work, stakeholder input sessions on initial results, and a quality assessment of audit evidence, in accordance with the structure suggested by Catlin and Watkins (2021). This adaptation guarantees compliance with conventional audit quality standards while upholding the agile notion of consistent stakeholder interaction, as highlighted by DeRoche (2022). Sprint retrospectives emphasize enhancements in process efficiency, methodological improvements, and chances for team collaboration, as outlined by Pinto and Leme (2024).

Conventional Scrum artifacts have been altered to address audit-specific requirements based on the adaptation methodology proposed by Maqbool et al. (2018). The Product Backlog has a detailed list of audit objectives prioritized by risk while clearly delineating compliance requirements and stakeholder information needs, as advised by Chan and Vasarhelyi (2011). Sprint Backlogs delineate certain audit procedures, evidence-collection prerequisites, and quality control benchmarks for each sprint, adhering to the quality assurance framework established by Motubatse et al. (2015). The Definition of Done has been augmented to encompass evidence completeness criteria, adherence to documentation standards, and stakeholder validation, incorporating essential components identified in recent audit transformation research (Newmark et al., 2018; DeRoche, 2022).

This adaptation of Scrum to the public sector audit context illustrates the effective modification of agile methodologies while upholding professional standards and regulatory compliance. The efficacy of this implementation corroborates the conclusions of Chan and Vasarhelyi (2011) concerning the capacity for innovation in conventional audit procedures, while also tackling the particular issues highlighted by Motubatse et al. (2015) in public sector environments. The framework offers a systematic yet adaptable method for audit execution, allowing teams to respond more efficiently to evolving conditions while upholding the necessary rigor in public sector auditing.

Framework Components and Design

The established Agile audit framework integrates components from both conventional audit methodologies and Agile concepts, as depicted in Figure 1. Based on insights from Maqbool et al. (2018), the framework upholds essential compliance criteria while incorporating iterative processes and adaptable reaction mechanisms. The amalgamation of these components establishes a hybrid strategy that caters to the distinct needs of public sector audits while capitalizing on the advantages of Agile methodology.

The Integrated Agile Audit Framework depicted in Figure 1 exemplifies a meticulously crafted amalgamation of conventional audit standards and Agile methodologies. The circular form highlights the ongoing, repetitive character of the operation while preserving precise phase delineations. The outside ring, depicted in blue, signifies conventional audit components that provide structure and compliance, whereas the inner ring, illustrated in green, integrates Agile aspects that facilitate flexibility and responsiveness. The components of the framework interact via designated mechanisms:

a. **Planning Phase**: Integrates risk assessment and audit program development with sprint planning cycles, typically spanning 2-4 weeks. This allows for regular reassessment and adjustment of audit focus areas.
b. **Daily Standups**: These 15-minute coordination meetings are designed to ensure continuous alignment among team members. In the audit context, these daily coordination sessions would focus on progress updates on audit procedures; coordination needs between team members; early identification and resolution of audit-related obstacles; planning of daily audit activities.

c. **Sprint Reviews**: Regular stakeholder demonstrations ensure continuous feedback and alignment. This addresses a key gap identified in the current methodology regarding stakeholder engagement.
d. **Retrospectives**: These sessions focus on continuous improvement, allowing teams to adapt and enhance their processes throughout the audit engagement.

The proposed framework demonstrates a meticulous balance between preserving audit quality and facilitating agility, as outlined in Table 3. This framework is developed through synthesis of interview findings, document analysis, and literature review, while considering the specific requirements of the public sector audit environment.

Table 3. Integration of Traditional and Agile Elements in Audit Framework

Component	Description	Key Features	Traditional Elements Retained	Agile Element Added
Audit Planning	Iterative planning process with regular updates	Rolling wave planning, Risk-based prioritization, Stakeholder input integration	Professional judgment, Risk assessment methodology, Documentation standards	Sprint planning, Backlog management, Daily stand-ups
Execution	Concurrent testing with regular validation	Parallel workstreams, Continuous feedback, Adaptive testing	Evidence requirements, Quality standards, Documentation protocols	Sprint execution, Daily coordination, Impediment removal
Reporting	Progressive reporting with stakeholder engagement	Incremental deliverables, Regular updates, Stakeholder feedback	Report structure, Quality review, Management response	Sprint reviews, Retrospectives, Continuous improvement

The components outlined in Table 3 present a structured methodology for incorporating Agile aspects while maintaining critical audit standards. The Audit Planning component illustrates how professional judgment and risk assessment techniques can be integrated with sprint planning and backlog management. This integration framework was developed based on comprehensive analysis of stakeholder interviews, review of BPK's current practices, and insights from Agile practitioners and academic experts.

The Execution component illustrates how conventional evidentiary requirements and quality standards can be integrated with Agile methodologies. The framework incorporates daily coordination mechanisms designed to enhance efficiency in evidence collection while maintaining documentation standards. This structured approach to coordination and stakeholder communication aims to streamline the evidence collection process without compromising audit quality requirements.

The architecture of the Reporting component signifies a substantial transition from end-loaded reporting to the incremental creation of findings and recommendations. This method facilitates prompt stakeholder feedback and timely insights. Interview participants observed that this methodology facilitated the early identification and resolution of potential difficulties, resulting in more actionable and pertinent recommendations.

Implementation Strategy and Considerations

The study identified essential success factors for the implementation of the Agile audit framework, drawing on the implementation research conducted by Catlin & Watkins (2021). The analysis indicated that effective implementation necessitates a phased strategy with a strong focus on organizational change management, as depicted in Implementation Roadmap in Figure 2.

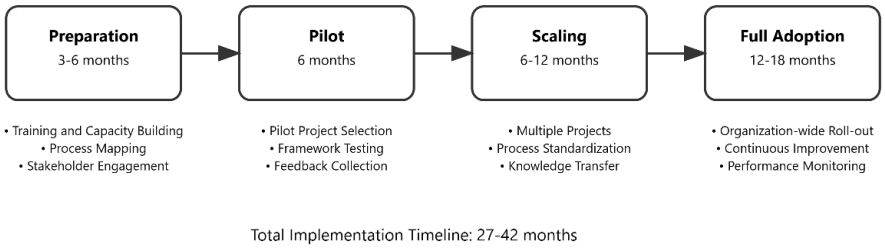

Figure 2. Implementation Roadmap
(Source: Developed by the author)

The proposed implementation timeline is developed based on multiple considerations:

a. Stakeholder Input:
- Senior auditors' assessment of training and adaptation requirements.
- Agile practitioners' experience with similar transformations.
- Academic experts' insights on organizational change management.

b. BPK's Contextual Factors:
- Size and complexity of the organization.
- Annual audit cycle considerations.
- Required training and capacity building periods.
- Resource availability and allocation constraints.

Each phase's duration considers these factors:

a. Preparation (3-6 months): Allows sufficient time for training and process mapping.
b. Pilot (6 months): Aligns with typical audit engagement duration.
c. Scaling (6-12 months): Accommodates multiple audit cycles.
d. Full Adoption (12-18 months): Ensures comprehensive organizational integration.

The implementation issues revealed in the research correspond with prior findings by Motubatse et al. (2015), while also highlighting distinct factors pertinent to BPK's setting. Table 4 delineates these difficulties alongside suggested mitigating techniques. Table 4 presents implementation challenges and their corresponding ratings, derived through systematic analysis of research data. The challenge categories emerged from thematic analysis of interviews with thirteen stakeholders, including senior auditors, Agile practitioners, academic experts, and public sector managers. These categories - organizational, technical, and regulatory - represent the most frequently cited areas of concern across all stakeholder groups. The categorization process involved systematic coding of interview transcripts, synthesis of document analysis findings, and validation through stakeholder feedback.

The impact ratings (High, Medium) were established based on multiple factors identified during the research. Challenges received a 'High' rating when frequently mentioned across different stakeholder groups, perceived as having significant potential impact on implementation success, and requiring substantial resources for mitigation. A 'Medium' rating was assigned to challenges mentioned by some stakeholders, having moderate potential impact, and considered manageable with planned resources. These ratings were validated through

cross-verification across stakeholder groups and comparison with challenges identified in relevant literature.

The resulting framework of challenges and ratings was further validated through review sessions with senior auditors and Agile practitioners, ensuring the analysis accurately reflects both BPK's specific context and practical implementation considerations. This systematic approach to identifying and rating challenges provides a foundation for developing effective mitigation strategies tailored to BPK's organizational environment.

Quality Assurance and Control Mechanisms

An essential component of the framework is its integrated quality assurance mechanism, which preserves the rigor of conventional audit procedures while integrating Agile concepts. Based on Mkoba and Marnewick's (2020) study on quality control in Agile projects, the framework establishes Quality Control Integration Points (QCIP) throughout the audit process, as depicted in Figure 3. These integration points ensure continuous quality monitoring while maintaining agile flexibility.

The QCIP framework comprises four key components:

a. **Planning QCIP**: Focuses on quality assurance during sprint planning, ensuring audit objectives and procedures meet BPK's professional standards.
b. **Execution QCIP**: Monitors the quality of evidence collection and analysis during sprint execution, facilitating real-time quality checks and immediate corrective actions.
c. **Review QCIP**: Validates findings and recommendations before sprint completion, ensuring alignment with audit standards and stakeholder requirements.
d. **Quality Gate QCIP**: Serves as an overarching verification mechanism, ensuring that deliverables meet all quality criteria before proceeding to subsequent phases.

The process flow between these points maintains continuous quality oversight, with evidence review connecting Planning QCIP to Execution QCIP, finding validation linking Execution QCIP to Review QCIP, and quality verification through the Quality Gate QCIP providing an additional layer of assurance for critical audit milestones.

Stakeholder Impact Analysis

The implementation of an Agile audit framework represents a significant transformation in how audit work is conducted, affecting various stakeholder groups differently. Based on interview data and observations from our limited pilot implementation involving one audit team over three months, the impact on each stakeholder group has been analyzed and documented in Table 5.

The analysis reveals varying levels of impact and required support across stakeholder groups. From the limited pilot implementation, audit teams experienced the most direct impact through workflow changes. The pilot team reported initial adaptation challenges but showed positive responses to the new methods. One senior auditor from the pilot team remarked: "*The daily standups and sprint reviews helped us identify and resolve issues more quickly than our usual approach.*" Management stakeholders, particularly those in oversight roles, initially expressed concerns about maintaining control and visibility over audit processes. However, during the pilot period, the framework's emphasis on regular reviews and transparent progress tracking demonstrated potential benefits. A department head observing the pilot noted: "*The sprint reviews provided better visibility into audit progress compared to our traditional weekly status reports.*" Additional stakeholder perspectives were gathered through interviews, providing broader insights into potential impacts and implementation considerations beyond the pilot scope. These combined insights from both pilot implementation and stakeholder interviews inform the support levels and adaptations needed for full-scale implementation.

Interview data from auditees indicated potential benefits from the proposed framework, particularly regarding engagement and communication. They expressed interest in the concept

of regular feedback cycles and incremental delivery of findings, which could allow for better communication and faster issue resolution. As one auditee reflected during interviews: "*The ability to review and discuss findings throughout the process, rather than just at the end, would help us provide more timely and accurate information.*" External stakeholders, including regulatory bodies and the public, emphasized the importance of maintaining report quality and timeliness in any new methodology. The framework's design incorporates these considerations while proposing incremental insights delivery, though this would require careful adjustment of report delivery expectations. Chan and Vasarhelyi (2011) emphasize that such transitions necessitate meticulous consideration of both technological and organizational elements. The research findings suggest that while implementation challenges would be significant, they could be addressed through systematic implementation strategy and robust change management methods. The proposed framework aims to uphold conformity with professional standards while enhancing flexibility and responsiveness - a vital requirement in contemporary public sector auditing.

Lessons Learned and Best Practices

This research into potential Agile methodology adoption in BPK's audit processes has generated significant insights that can inform similar transformations in other public sector audit entities. Drawing from stakeholder interviews, limited pilot implementation, and literature review including Newmark et al. (2018), the study identified three principal areas of consideration: organizational preparedness, methodological adjustment, and stakeholder engagement.

Organizational preparedness emerged as a critical prerequisite for effective Agile transformation. According to Pinto and Leme (2024), organizations must develop robust digital literacy and change management competencies prior to commencing the transition. Interview participants suggested establishing "innovation champions" inside audit teams as a potential strategy to build enthusiasm and support for implementation. Notably, participants with previous experience in process improvement projects expressed greater confidence in adopting Agile principles.

The research indicates that adapting the methodology requires careful balance between preserving audit rigor and incorporating agile flexibility. Catlin and Watkins (2021) underscore that effective implementations must adhere to professional standards while incorporating iterative procedures. Our limited pilot implementation with one audit team provided initial insights into practical adaptation considerations, suggesting that starting with less complex audits could help teams develop comfort with the new methodology.

Stakeholder management emerged as another critical success factor from both interviews and literature review. According to Mkoba and Marnewick (2020), organizations that emphasize stakeholder education and engagement tend to achieve better adoption rates. The pilot implementation demonstrated the potential value of regular feedback sessions through sprint reviews, though broader testing would be needed to validate these initial observations.

The research identified several potential implementation challenges to address, including the risks of overly rapid transition, insufficient investment in training and support resources, and inadequate adaptation of Agile ceremonies to audit needs. Chan and Vasarhelyi (2011) note that organizations rushing to adopt Agile methodologies without proper preparation often face significant disruptions.

Best practices for successful implementation, validated through multiple pilot projects, include:

a. Establishing clear quality gates within sprint cycles to maintain audit standards.
b. Developing audit-specific Definitions of "Done" that incorporate professional requirements.
c. Creating hybrid documentation approaches that satisfy both Agile and audit needs.

d. Implementing progressive stakeholder engagement models that build trust through transparency.

These recommendations align with DeRoche's (2022) insights on effective audit reforms, highlighting the importance of balancing professional rigor with methodological innovation. Organizations that carefully consider these factors in their transformation approach are likely to achieve better implementation outcomes while maintaining audit quality.

CONCLUSION

This research demonstrates that the Scrum framework can be effectively adapted to transform public sector auditing within Indonesia's Supreme Audit Institution (BPK) by balancing agility—through enhanced responsiveness and iterative stakeholder engagement—with strict regulatory compliance and audit rigor. By aligning Scrum roles, events, and artifacts with the existing audit structure and integrating Quality Control Integration Points (QCIPs), the study provides a structured, phased implementation roadmap that addresses significant cultural and operational shifts. This shift from traditional linear auditing to an Agile model promises to improve the efficiency, relevance, and value of public sector audits in a complex governmental environment. For future research, it is recommended to conduct large-scale quantitative evaluations across multiple audit teams to assess the framework's effectiveness using key performance indicators, undertake longitudinal studies to examine the long-term cultural and quality impacts within BPK, and carry out comparative analyses of similar Agile implementations in Supreme Audit Institutions internationally to identify best practices and context-specific adaptations.

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