

Program-Led Enterprise Architecture for ICT Transformation: A Delivery-Centric Control Framework for Multi-System Integration at Scale

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Abstract: Enterprise Architecture (EA) to control their complex ICT transformation programs, which include multiple cloud migrations, enterprise resource planning updates, cybersecurity systems and system interoperability projects. Many organizations are experiencing unstable delivery processes due to their enterprise governance systems being incompatible with their operational program activities. The study makes the following contribution: the Program-Led Enterprise Architecture Control Framework (PLEACF). The framework delivers architectural governance through delivery mechanisms that enable teams to trace architectural elements from design through project completion, using decision gates, dependency tracking, integration risk management, and continuous delivery monitoring. The assessment used simulated enterprise transformation scenarios, including ERP modernization, HR system migration, cybersecurity implementation, enterprise data modernization, and Energy Trading and Risk Management deployment. The results show that the framework outperforms traditional governance methods by improving milestone completion accuracy, schedule predictability, integration stability, deployment readiness and operational visibility. The framework enhances enterprise-wide risk detection capabilities and reduces integration failures. The proposed framework provides a suitable operational organization model based on the governance principle that can be scaled up to help organizations implement ICT transformation projects and multi-system integration projects amidst the current challenges in implementing and adopting them in the organization.

Keywords: Enterprise Architecture, ICT Transformation, Multi-System Integration, Program Governance, Integration Risk Management, ERP Modernization.

I. INTRODUCTION

Information and Communication Technologies (ICT) have made great progress in many fields of human activities, particularly in the past 2 decades, where they have a wide range of applications [1][2]. Today's businesses rely critically on intricate digital ecosystems, such as hybrid infrastructure environments, application programming interfaces (APIs), cybersecurity frameworks, and enterprise resource planning (ERP) systems, and cloud computing [3] is an integral part of these environments. This rapid growth has made ICT transformation programs more complex and interdependent, requiring the performance of various systems, vendors and technologies to work together in an integrated and coordinated way [4][5]. With the ongoing digital transformation, the demand for structured governance and seamless integration, along with operational visibility at any time, has started to matter for organizations to move towards successful outcomes [6][7].

Enterprise Architecture (EA) is a growing area of interest for managing organizational complexity, connecting business goals to IT infrastructure, governance approaches, and systems of operation [8]. Traditional approaches like

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TOGAF, Zachman or FEAF offer structured methods to plan, design and govern enterprise systems [9][10]. Despite their popularity, however, organizations continue to struggle with integration failures, delayed deployments, dependency management issues, cybersecurity issues, and a lack of visibility into the operational execution. The current EA approaches have been very focused on documentation, planning and compliance and less on the continuous delivery execution and real-time monitoring of transformations [11]. This creates a gap between enterprise governance and program-level implementation, leading to disjointed decision-making and inefficiencies in transformation [12][13][14].

To overcome these weaknesses, new governance models are increasingly being considered in modern enterprises based on the use of automation and telemetry-based monitoring systems [15]. Such methods enable predictive risk analytics, on-the-fly performance monitoring and decision making in complex ICT settings [16][17][18]. Yet, enterprise architecture governance and delivery execution, dependency coordination and operational risk management are not yet integrated in a framework that is effective in delivering large-scale transformation programs [19].

This study presents a framework that seeks to close this gap, which embraces the governance mechanisms in ICT program delivery. It facilitates ongoing convergence of business

strategy, architectural governance and effective delivery action by way of a structured decision gate, dependency mapping, integration risk control and delivery telemetry. The primary goal is to drive improved transformation predictability, minimize integration failure, increase cybersecurity compliance and increase executive visibility across multi-system enterprise environments.

A. Motivation and Contributions of the Study

ICT transformation programs involve costly, huge-scale projects, but they frequently end up with delays, integration issues, operational instability, cybersecurity issues and cost overspending even when the programs are built using enterprise architecture and project management frameworks like PMBOK Guide. Such problems are primarily due to poor coordination between enterprise governance and operational delivery processes. Traditional enterprise architecture is primarily centered on planning and compliance, delivery management is primarily centered on implementing and scheduling, and governance is fragmented and operational visibility is limited. Modern digital ecosystems involving cloud migration, cybersecurity, APIs, and hybrid infrastructures require more adaptive governance models. Therefore, this study proposes a delivery-centric framework integrating governance, operational monitoring, telemetry, and risk management throughout ICT transformation lifecycles. The key contributions of the study are as follows:

- Proposes a novel PLEACF for ICT transformation governance.
- Integrates enterprise architecture governance with operational delivery execution and monitoring.
- Introduces architecture-to-delivery traceability and decision gate governance mechanisms.
- Enhances dependency coordination and enterprise-wide integration risk management.
- Evaluates the framework using enterprise transformation scenarios involving ERP, cloud, cybersecurity, and ETRM systems.
- Demonstrates improvements in delivery predictability, integration stability, and governance efficiency compared with traditional approaches.

B. Justification and Novelty

The novelty of this study lies in the development of a PLEACF that directly integrates enterprise governance with operational delivery execution for large-scale ICT transformation. Unlike traditional enterprise architecture models focused mainly on planning and compliance, the proposed framework introduces delivery-centric governance, continuous dependency coordination, integration risk control, and telemetry-driven monitoring. The framework is unique in bringing together both governance from the top and

operational visibility from the bottom, which enhances the predictability of transformation, management of interoperability, alignment of cybersecurity and executive decision-making in complex multi-system enterprise environments.

C. Structure of the paper

This paper consists of several sections: Section II reviews related literature on enterprise architecture and digital transformation. Section III presents the proposed PLEACF model and evaluation methodology. Section IV discusses the results and comparative analysis. Section V concludes the study with limitations and future research directions.

II. LITERATURE REVIEW

The literature identifies Enterprise Architecture as a key driver of ICT transformation through governance, integration, compliance, and scalable delivery-centric coordination across complex multi-system digital environments.

D. Dang and Q. Bui (2025) present a case study of the introduction and implementation of Enterprise Architecture (EA) ideas across a 15-year period in Vietnamese government institutions. EA concepts have been able to support a number of DT projects, including digitization and e-government, to mention a few, thanks to this translation process. The results point to two mechanisms in the translation process: a contextualization mechanism unpacks these concepts into useful, flexible approaches, aligning EA with adopters' priorities and boosting its chances of dissemination, while a theorization mechanism generalizes local practices into abstract concepts at the field level, making them easier to spread[20].

S. Kabade et al. (2025) developed intelligent system learns to generate optimal outcomes, which simultaneously produce the highest compliance benefits with minimum operational expenses and upper-level performance improvement through multiple decision sequences. System metric collection starts the methodology, which is then followed by training a (MADRL) model for effective resource management and governance policy enforcement. An intelligent system supports adherence to security regulations, efficient workloads and compliance by rewarding good behavior, but punishes those who do not comply or whose results are ineffective [21].

S. Srisawat, P. Wannapiroon, and P. Nilsook (2024) present the creation of a distributed digital enterprise architecture framework for educational institutions that have implemented the Federal Enterprise Framework, Zachman, and The Open Group Architecture Framework's enterprise architecture concepts. An online survey was used to gather data from 520 participants. The findings of the study show that in order for a company to become a dispersed digital enterprise, enterprise architecture is necessary for

methodically integrating digital technologies with its mission or process[22].

R. L. de Moura and L. de Landa Ceotto's (2024) development has led to convergence, merging previously segregated Operational Technology (OT) and IT areas. Technological and structural convergence aims to increase cybersecurity and productivity and significantly reduce costs for projects and the maintenance of industrial assets. Good practices from two previously isolated areas must be merged to reinforce the best in each. EA, one of these practices, must be included in the daily routine of operational technology projects [23].

Fajrillah et al. (2023) present a comprehensive overview of enterprise architecture tailored for the digital era. It explores the crucial role enterprise architecture plays in the digital age, delves into the challenges organizations encounter when formulating and executing a successful enterprise architecture, and suggests optimal approaches to address these challenges. In the digital world, companies are currently struggling with the challenge of staying competitive and reacting to the shifting market dynamics. Enterprise architecture serves as an important approach for organizations aiming to manage these challenges and achieve

their strategic goals. However, the development and implementation of an effective enterprise architecture remains complex and challenging[24].

A. B. M. Nayeem, R. Dilnutt, and S. Kurnia (2023) study examines EA implementation in Bangladesh as a case study for EA development in developing nations to explore current EA practices and related challenges. Through literature reviews and interviews with professionals from different fields, the research provides insights into EA practices and their role in supporting sustainable digital transformation. The results show that organizations attempting to integrate environmental, social, and governance (ESG) criteria into sustainability initiatives and ICT systems need a clearer understanding of EA processes. The study highlights EA implementation challenges in developing nations and their impact on digital transformation and sustainability efforts through practical and research-based observations[25].

Table I identifies weaknesses in scalability, validation, and implementation frameworks while highlighting the relevance of enterprise architecture in digital transformation, with a focus on governance, integration, and automation.

TABLE I. SUMMARY OF LITERATURE REVIEW ON ENTERPRISE ARCHITECTURE FOR ICT TRANSFORMATION

| Authors | Focus | Approaches | Findings | Limitations | Recommendations |
|--|---|---|---|--|---|
| D. Dang and Q. Bui (2025) | EA adoption in Vietnamese government digital transformation | Long-term case study of government agencies | EA concepts supported e-government and digitalization through theorization and contextualization mechanisms | The study focused only on Vietnamese public sector organizations | More comparative studies are needed across industries and countries to examine EA translation processes |
| S. Kabade et al. (2025) | AI-driven compliance and governance optimization | Multi-Agent Deep Reinforcement Learning (MADRL) model | System improved compliance, resource allocation, and operational efficiency through reward-based learning | Limited testing environment and short training duration | Future work should evaluate real-time enterprise deployment and long-term scalability |
| S. Srisawat, P. Wannapiroon, and P. Nilsook (2024) | Distributed digital enterprise architecture for education organizations | Survey using TOGAF, Zachman, and FEAF frameworks | Proposed a seven-dimensional EA framework with high expert evaluation scores | Research limited to educational institutions and survey-based analysis | Further implementation and validation studies are required in practical environments |
| R. L. de Moura and L. de Landa Ceotto (2024) | Integration of Operational Technology (OT) and Information Technology (IT) using EA | Conceptual and practical discussion | EA enhanced cybersecurity, productivity, and cost reduction in IT-OT convergence | Lack of empirical and quantitative validation | Future research should include industrial case studies and performance evaluation metrics |

| | | | | | |
|---|--|---|--|---|--|
| Fajrillah et al. (2023) | Enterprise Architecture in the Digital Era | Literature review with case studies and expert opinions | EA plays a vital role in achieving digital transformation and strategic alignment | Mostly theoretical with limited practical implementation evidence | More empirical research is needed on industry-specific EA implementation strategies |
| A. B. M. Nayeem, R. Dilnutt, and S. Kurnia (2023) | EA challenges for sustainable digital transformation in developing countries | Literature review and professional interviews | Organizations lacked EA understanding for integrating sustainability and ICT goals | Study limited to Bangladesh and qualitative analysis | Future studies should design practical EA adoption frameworks for developing countries |

III. METHODS & MATERIALS

The proposed PLEACF presents a complete framework through its components, including enterprise architecture design, operational governance mechanisms, a validation environment, and an evaluation methodology for ICT transformation assessment.

A. Problem Statement

The operational stability of large-scale ICT transformation programs suffers because their enterprise architecture governance fails to align with their program delivery and implementation needs. Traditional enterprise architecture approaches mainly focus on technical planning and governance, while project management methodologies emphasize scheduling and operational delivery. The integration of security systems creates two major difficulties: security conflicts and executive visibility problems, while operational dependencies between systems create additional issues for enterprises during cloud migration, ERP modernization, cybersecurity implementation and multi-system integration. Therefore, organizations require a delivery-centric enterprise architecture model that continuously integrates governance, operational execution, dependency coordination, integration risk management, and transformation monitoring throughout the ICT transformation lifecycle.

B. Proposed Enterprise Architecture Flow

The enterprise architecture design uses a dual system that combines top-down governance with bottom-up monitoring. The enterprise governance system makes decisions based on strategic business objectives, which then direct program delivery activities, system integration operations, security controls, infrastructure deployment and operational monitoring activities. Delivery telemetry mechanisms maintain their function of supplying continuous operational feedback to governance and executive stakeholders about transformation progress, operational risks, integration health and delivery performance.

1) Business Strategy Layer

The Business Strategy Layer represents the highest-level governance component within the proposed architecture. The layer establishes organizational transformation objectives which it defines with enterprise priorities and business capability requirements and strategic modernization goals. The framework guarantees that ICT transformation activities follow enterprise business outcomes and operational performance targets and digital transformation initiatives.

2) Enterprise Governance Layer

The Enterprise Governance Layer establishes centralized governance and policy management mechanisms for ICT transformation execution. The layer manages enterprise architecture governance while handling compliance management, executive oversight, policy enforcement and transformation decision coordination. The governance layer ensures that all transformation activities comply with enterprise standards, regulatory requirements, security policies, and operational governance procedures.

3) Program Delivery Layer

The Program Delivery Layer operationalizes enterprise architecture during ICT transformation execution. The system oversees milestone tracking, delivery coordination, dependency management, transformation scheduling, resource allocation and operational risk management activities. The layer functions as the primary execution coordination mechanism within the architecture and ensures continuous synchronization between enterprise governance requirements and operational implementation activities. The system enables users to monitor delivery delays, dependency conflicts and transformation risks in a proactive manner.

4) Application and Integration Layer

The Application and Integration Layer manages interoperability and communication between enterprise systems, business applications, APIs, middleware platforms, and cross-functional digital services. The layer offers ERP platform, HR system, enterprise application, cloud, and external vendor ecosystem integration orchestration support. The integration layer plays a crucial role when organizations

are on a large path of ICT systems' modernization and strive for great operational efficiency.

5) *Data Management Layer*

The Data Management Layer governs enterprise-wide data operations associated with transformation execution. The layer controls data migration activities together with data governance policies, enterprise analytics operations, synchronization controls and master data management processes. The system enables enterprise reporting, operational intelligence and data-driven decision-making processes.

6) *Security and Compliance Layer*

The Security and Compliance Layer provides enterprise-wide cybersecurity governance and regulatory compliance management across all transformation activities. The security layer includes identity and access management systems, together with threat detection systems, security validation systems, compliance auditing systems and operational security enforcement systems. The security architecture protects enterprise systems, cloud services, enterprise applications, application programming interfaces and operational data environments without interruption. The system enables organizations to maintain compliance with enterprise governance standards and industry-specific regulatory requirements.

7) *Infrastructure and Cloud Layer*

The Infrastructure and Cloud Layer provides the foundational operational environment that enables enterprise transformation execution. The layer controls the management of cloud platforms together with hybrid infrastructure environments, virtualization services, network operations and infrastructure scalability methods. The organization uses this layer to maintain its operation capacity while supporting the dynamic needs of transformation.

8) *Delivery Telemetry Layer*

The Delivery Telemetry Layer provides continuous operational monitoring and executive visibility throughout the ICT transformation lifecycle. The layer collects transformation performance indicators, integration health metrics, delivery milestones, governance compliance status, defect trends, and operational risk indicators to conduct analysis. The layer enables organizations to identify problems before they occur while providing executive teams with data-based resources to make informed decisions about their transformations.

9) *Business Outcomes Layer*

The Business Outcomes Layer represents the final operational objective of the proposed architecture. shows in Figure 1. The layer measures ICT transformation execution success through its assessment of organizational results which can be quantified. The proposed architecture enables

enterprise transformation processes to maintain alignment between actual business value creation and established strategic business objective throughout their entire duration.

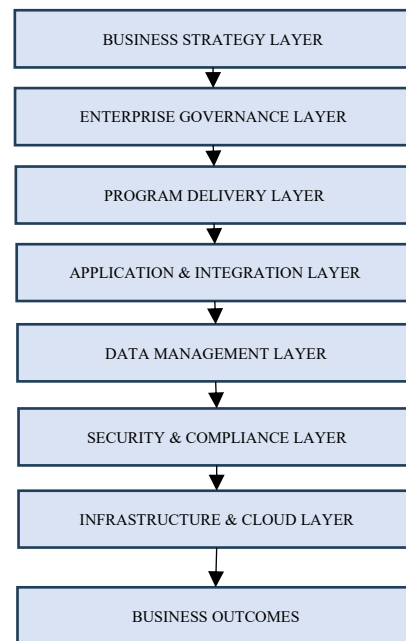


Fig. 1. Proposed Enterprise Architecture Flow for Multi-System ICT Transformation

C. *Framework Operational Mechanisms*

The Program-Led Enterprise Architecture Control Framework PLEACF which is presented here, uses five interconnected governance systems together with operational control systems to enhance coordination between enterprise architecture governance and ICT program delivery execution.

1) *Architecture-to-Delivery Traceability*

The framework establishes continuous traceability between enterprise architecture decisions and operational delivery activities. Each architectural decision connects directly to delivery milestones, system dependencies, integration workflows, testing activities, security validation processes and measurable business outcomes. The mechanism maintains alignment of architectural change with implementation schedules, deployment readiness, compliance requirements and transformation objectives throughout the ICT program lifecycle. The traceability model allows stakeholders to follow the decisions made in architecture and their operational consequences throughout various enterprise systems, which leads to better accountability.

2) *Decision Gate Governance*

Table II presents the Decision Gate Governance framework, which establishes organized governance points that it designates as decision gates throughout the complete ICT transformation process. The governance gates work to verify

essential operational, architectural, security and deployment requirements before the project moves to its next implementation stages.

TABLE II. DECISION GATE GOVERNANCE FRAMEWORK FOR ICT TRANSFORMATION

| Decision Gate | Validation Objective |
|---------------|------------------------------------|
| Gate 1 | Business capability validation |
| Gate 2 | Enterprise architecture approval |
| Gate 3 | Integration readiness verification |
| Gate 4 | Security and compliance assessment |
| Gate 5 | Deployment readiness approval |
| Gate 6 | Operational stabilization review |

The decision gate mechanism establishes better governance control because it stops unauthorized project development, decreases risks of system integration problems, and enhances the quality assurance process of transformation activities.

3) Dependency Mapping and Coordination

The framework uses a continuous dependency mapping system to track operational connections between enterprise systems and applications, infrastructure components, cloud environments, APIs and their external vendors. Dependency coordination enables early identification of delivery bottlenecks, integration conflicts, infrastructure readiness issues, and vendor-related delays that may affect transformation execution.

The dependency management process continuously tracks:

- application dependencies,
- API interoperability dependencies,
- cloud migration sequencing,
- infrastructure provisioning readiness,
- data synchronization dependencies,

- and vendor coordination requirements.

This mechanism improves delivery predictability by providing real-time visibility into interconnected transformation activities and operational constraints.

4) Integration Risk Control Mechanism

The framework establishes an organized integration risk management system that protects the organization from operational disruptions during its enterprise-wide multi-system upgrades. The integration control mechanism continuously validates interoperability, deployment readiness, and security alignment across interconnected ICT platforms.

The framework incorporates:

- interface validation procedures,
- interoperability verification,
- change impact analysis,
- deployment readiness assessment,
- security integration testing,
- and enterprise-wide compatibility evaluation.

The governance mechanism reduces integration failure risks through its capacity to detect and handle operational and technical hazards that need to be addressed before production deployment.

D. Validation Environment and Evaluation Metrics

The proposed PLEACF was evaluated using simulated enterprise ICT transformation scenarios designed to represent large-scale, multi-system organizational transformation environments. The validation process tested how well the framework operated by measuring its ability to handle enterprise architecture governance, delivery coordination, dependency orchestration, integration risk management, cybersecurity alignment and executive-level transformation visibility. The evaluation scenarios included enterprise transformation domains that contained ERP modernization, HR technology migration, cybersecurity implementation, enterprise data platform modernization and Energy Trading and Risk Management (ETRM) deployment.

The framework performance assessment used governance and delivery indicators, which measured architecture governance integration, delivery coordination, dependency management, integration stability and transformation visibility[26][27]. The selected metrics assessed governance effectiveness and operational execution performance throughout enterprise transformation activities (As shown in Table III) which needed to be evaluated.

TABLE III. EVALUATION METRICS

| Metric | Description |
|--------|-------------|
|--------|-------------|

| | |
|---------------------------|--|
| Delivery Predictability | Measures the accuracy and consistency of milestone completion and schedule adherence |
| Integration Failure Rate | Measures the percentage of failed system integrations and interoperability disruptions |
| Risk Detection Efficiency | Measures the capability to identify operational and delivery risks before deployment |
| Architecture Compliance | Measures adherence to approved enterprise architecture governance standards |
| Executive Visibility | Measures the transparency and availability of operational transformation reporting |

The evaluation process assessed how well the framework fulfilled its requirements by evaluating its capacity to enhance transformation prediction accuracy while reducing integration failures and improving governance coordination, operational visibility and enterprise-wide accountability during the ICT transformation process.

IV. RESULTS AND DISCUSSION

The comparative assessment results presented in Table IV are aimed at assessing the delivery performance of traditional ICT governance methods and the proposed framework. The findings indicate there are significant improvements in three categories: accuracy of milestone completion schedule predictability, deployment readiness, and dependency resolution efficiency. The enhancements prove their worth in providing operational coordination enhancements and accuracy of delivery across enterprise transformation projects.

TABLE IV. DELIVERY PERFORMANCE EVALUATION RESULTS

| Delivery Indicator | Traditional Approach | Proposed Framework | Improvement |
|----------------------------------|----------------------|--------------------|-------------|
| Milestone Completion Accuracy | 63% | 89% | +26% |
| Schedule Predictability | 58% | 86% | +28% |
| Deployment Readiness Accuracy | 61% | 91% | +30% |
| Dependency Resolution Efficiency | 56% | 87% | +31% |

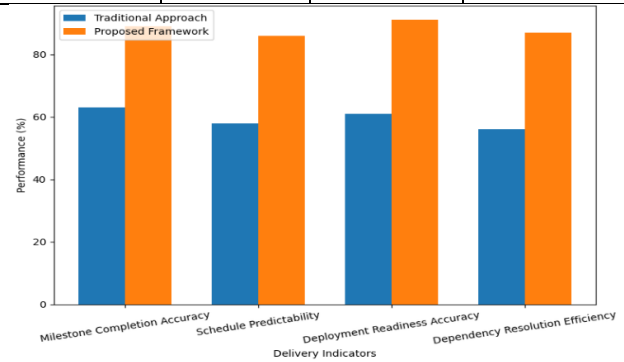


Fig. 2. Comparative Delivery Performance Evaluation Across ICT Transformation

The results of the delivery performance assessment are presented in Figure 2, which contrasts traditional governance approaches with the new governance approach. The results demonstrate improved milestone completion accuracy and schedule predictability, deployment readiness and dependency resolution efficiency. Operational coordination and governance visibility are enhanced, resulting in more predictable delivery and stability of enterprise-scale ICT transformation environments.

Table V shows a comparison of the performance of the enterprises in terms of enterprise integration in traditional governance and the proposed governance framework. The findings show substantial decreases in API integration failure and data synchronization errors, as well as security and authentication integration problems and infrastructure compatibility failures. The results suggest that the suggested framework enhances interoperability management and reduces operational instability due to large-scale ICT transformation processes.

TABLE V. ENTERPRISE INTEGRATION PERFORMANCE EVALUATION

| Integration Category | Traditional Model | Proposed Framework |
|--------------------------------------|-------------------|--------------------|
| API Integration Failure | 32% | 11% |
| Data Synchronization Errors | 27% | 9% |
| Authentication Integration Failure | 24% | 7% |
| Infrastructure Compatibility Failure | 29% | 10% |

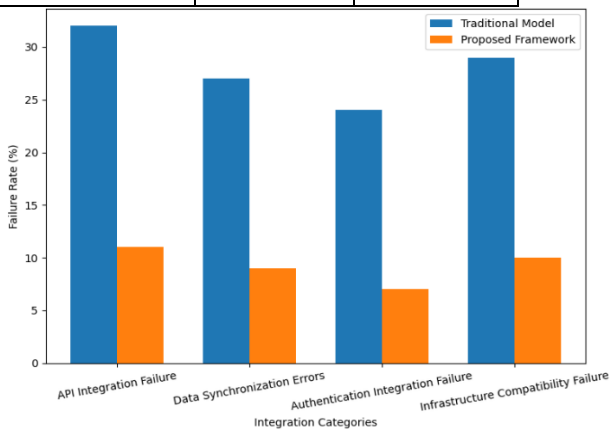


Fig. 3. Integration Failure Reduction Analysis Using the Proposed Framework

The proposed Figure 3 illustrate framework is effective as it reduces enterprise integration failures. The comparative analysis shows fewer integration failures in the API, fewer data synchronization errors, fewer authentication integration errors and better infrastructure compatibility performance. The framework extends interoperability governance and integration risk control on the implementation of multi-system transformation in the field of ICT.

The risk detection performance evaluation of traditional governance frameworks was compared to the proposed framework in Table VI. The proposed framework has been found to be more effective than the traditional approach for early risk detection, vendor dependency and change impact analysis and identification of security risks. The findings reveal that governance monitoring over the long haul and delivery of telemetry systems assist organizations in managing enterprise governance transformation risks better.

TABLE VI. COMPARATIVE RISK DETECTION PERFORMANCE ANALYSIS

| Risk Indicator | Traditional Governance | Proposed Framework |
|------------------------------|------------------------|--------------------|
| Early Risk Detection | 46% | 84% |
| Security Risk Identification | 54% | 90% |
| Vendor Dependency Visibility | 49% | 86% |
| Change Impact Detection | 52% | 88% |

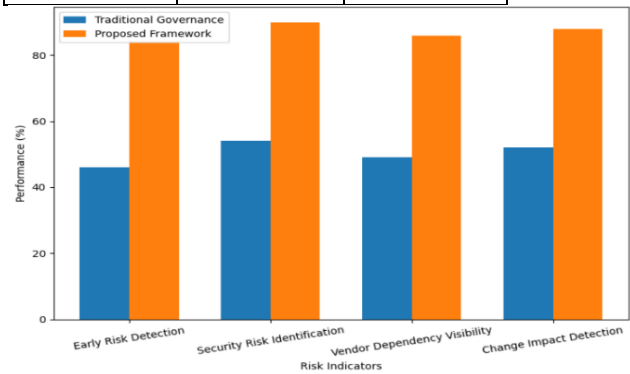


Fig. 4. Comparative Risk Detection and Governance Performance Analysis

The performance of existing governance approaches is compared with the suggested framework for risk detection by analyzing Figure 4. The results demonstrate improvements in early risk detection, security risk identification, visibility of vendor dependencies, and change impact assessment. The architecture improves governance transparency and operational monitoring via two components: continuous delivery telemetry and dependency coordination mechanisms.

A. Discussion

The evaluation results suggest that the proposed Program-Led Enterprise Architecture Control Framework (PLEACF) increases governance coordination, delivery predictability, integration stability and operational visibility, compared to the existing ICT governance approaches. This system enhances milestone tracking, dependency management, interoperability validation and cybersecurity alignment through continuous delivery telemetry and organized governance methods. The reduction in API failures, authentication difficulties, and deployment instability demonstrates the value of proactive integration risk management and decision-gate control. Additionally, executive visibility is enhanced and risks to enterprise change are identified earlier using telemetry-based monitoring. But it may involve re-structuring the organization, standardizing governance, and coordinating

stakeholders, especially in complicated multi-vendor setups. Emerging technologies such as AI-driven governance, predictive analytics and intelligent operational automation may offer further support for corporate transformation management and improve scalability, resilience and operational efficiency in future digital ecosystems.

V. CONCLUSION AND FUTURE STUDY

This study proposes a Program-Led Enterprise Architecture Control Framework (PLEACF) that offers a delivery-oriented governance framework to control complex ICT transformation projects such as cloud migration, enterprise integration, cybersecurity implementation, ERP modernization, and multi-system operation coordination. The framework optimizes business architecture by combining governance structures with delivery execution, dependency management, integration risk assessment, and telemetry-based monitoring across the transformation lifecycle. Evaluation results revealed increased milestone achievement, deployment preparedness, schedule accuracy, interoperability control and enterprise risk identification compared to conventional governance approaches. The methodology also allows firms to track integration health, delivery KPIs and compliance standards, resulting in improved executive control, operational responsibility and transformation stability. However, the issue of implementing the governance framework in simulated enterprise settings, testing of operations, and management of decentralization remains a problem for organizations. For successful implementation, organizations should design and implementation strategy that suits their operations. In future research, there is need for further study in enterprise validation, governance automation through artificial intelligence, predictive dependency analysis, autonomous compliance testing, intelligent telemetry, and cloud-based transposition.

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