RESEARCH ARTICLE

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Master Data Management (MDM) integration strategies in hybrid cloud environments.

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Abstract

Organizations are dealing with an increasing amount of hybrid cloud environments, with a mix of on-premises and public and private cloud services, and Master Data Management (MDM) is rapidly emerging as a key part of enterprise data governance. Hybrid cloud architecture offers flexibility, scalability, and operational efficiency, but also poses challenges for data consistency, synchronization, governance, interoperability, and security. This study analyzes various integration approaches to facilitate effective MDM implementation in the hybrid cloud landscape. It tests architectural solutions, governance models, data integration methods, and lifecycle management solutions supporting the development and stewardship of accurate, consistent, and trusted master data. The study also delves into how automation and artificial intelligence can help improve metadata management, data quality, minimize synchronization lag times, and bolster regulatory compliance. Based on the criteria of scalability, operational efficiency, governance performance, and cost optimization, the effectiveness of the centralized, registry-based, coexistence, and transactional MDM models is assessed by comparative analysis. The results show that organizations with structured governance policies, standardized integration processes, and intelligent automation enjoy higher data reliability and enterprise agility while reducing complexity. In conclusion, the study finds that a proper hybrid cloud MDM strategy provides a secure foundation for digital transformation and enterprise decision-making, delivering long-term business value and enabling high-quality master data across a variety of computing environments.

Keywords: Master Data Management (MDM), Hybrid Cloud, Data Integration, Data Governance, Data Quality, Cloud Computing, Enterprise Data Management, Artificial Intelligence, Metadata Management, Digital Transformation.

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Introduction

Hybrid cloud computing's rapid adoption has revolutionized how enterprises manage data by enabling businesses to integrate on-premises systems with private and public cloud services. It offers greater scalability, operational flexibility, and resource optimization to meet the growing demands of data-driven business processes. The spread of information across different environments has, however, made the challenges of mastering data consistency, governance, interoperability, and synchronization more complex. As such, Master Data Management (MDM) is now a necessary approach for creating a single, correct, and trustworthy view of critical business entities such as clients, suppliers, merchandise, and funds (Seetala, 2021; Kunadi, 2022).

Many organizations are deploying hybrid cloud solutions and face the challenge of dealing with a fragmented data set across a range of applications, enterprise resource planning (ERP) systems, cloud-native services, and legacy data stores.

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These fragmented data sources can create duplicate data, mismatched information metadata, conflicting business rules, and other issues that adversely impact the ability to operate efficiently and make strategic decisions. Therefore, effective cloud data integration, together with sound governance policies, is essential to ensure the quality of master data across the enterprise (Vadde & Engineer; Vadde).

The rise of hybrid and multi-cloud environments has increased the complexity of enterprise integration. It is imperative that businesses keep communication across

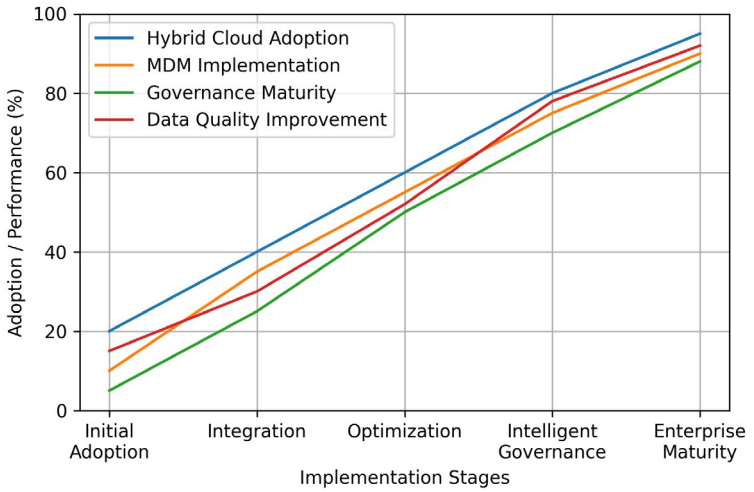

Figure 2: Enterprise Trends in Hybrid Cloud Adoption, MDM, Governance, and Data Quality

distributed platforms flowing, ensure adherence to regulatory obligations, maintain security, and incur minimal operational costs. In today's context, integration strategies need to embrace connectivity through APIs, metadata-driven orchestration, event-based synchronization, and intelligent automation to enhance data accessibility and governance across a geographically dispersed landscape (Bitkuri et al., 2021; Mamidala et al., 2023).

There has also been significant recent progress in artificial intelligence (AI) for enterprise MDM. With AI-driven data stewardship, data can be automatically classified, anomalies identified, duplication resolved, metadata enriched, and governance predicted, resulting in less manual effort and more reliable data. These features enhance business decision-making and empower organizations to adapt more effectively to evolving business needs in a timely manner (Vedantham, 2025).

Cost effectiveness in lifecycle management has also become an increasingly important factor in hybrid clouds. The need in organizations is for the integration of architectures that maximize storage efficiency, minimize synchronization time and cost, and ensure optimal system performance while adhering to governance goals. A critical aspect of lifecycle planning is keeping master data accurate, accessible, and compliant throughout its lifecycle and supporting sustainable digital transformation efforts (Zhang et al., 2024).

Although there have been significant advancements in cloud integration technologies, many organizations still face governance fragmentation, multiple data ownership, ERP-centric master data management, inter-platform synchronization challenges, and interoperability constraints. The solutions to these challenges are complex MDM integration strategies that consider scalability, security, governance maturity, and operational efficiency across a variety of enterprise environments (Gali & Rastogi, 2025; Gamaralalage & Jayarathne, 2025).

Accordingly, this study examines contemporary Master Data Management integration strategies within hybrid cloud environments by evaluating governance frameworks, architectural models, synchronization mechanisms, and intelligent automation techniques that collectively improve enterprise data quality, consistency, and long-term organizational value.

Literature Review

Concept of Master Data Management (MDM)

Master Data Management (MDM) is recognized as a strategic discipline that establishes a single, authoritative source of critical enterprise information, including customer, product, supplier, financial, and employee records. By standardizing, validating, and governing these shared data assets, MDM enhances operational consistency, supports informed decision-making, and reduces redundancy across business units. Seetala (2021) emphasizes that effective MDM combines governance frameworks, standardized architectures, and stewardship practices to maintain data integrity throughout the enterprise. Likewise, Kunadi (2022) argues that scalable MDM platforms provide the structural foundation needed to support the expansion of enterprise ecosystems while preserving accuracy and consistency across distributed applications. These perspectives demonstrate that MDM has evolved from a data management function into a core

Table 1: Comparative Review of Existing Studies on Hybrid Cloud MDM

AUTHOR(S)	*RESEARCH FOCUS*	*KEY CONTRIBUTION*	*IDENTIFIED GAP*
Vadde & Engineer	Cloud data integration	Demonstrated improvements in data quality and governance through integrated cloud environments	Limited emphasis on enterprise-wide hybrid cloud MDM implementation
Vadde	Enterprise cloud integration	Highlighted governance enhancement through standardized integration processes	Insufficient discussion of scalable MDM architectures
Seetala (2021)	MDM governance frameworks	Established governance models for enterprise consistency and data stewardship	Limited consideration of AI-assisted governance
Kunadi (2022)	Scalable MDM systems	Proposed scalable architectures supporting enterprise data platforms	Minimal evaluation of hybrid cloud synchronization strategies
Bitkuri et al. (2021)	Hybrid and multi-cloud integration	Identified integration challenges and interoperability requirements	Limited focus on master data governance
Mamidala et al. (2023)	Hybrid cloud strategies	Examined architectural integration models and future directions	Limited quantitative assessment of MDM performance
Zhang et al. (2024)	Data lifecycle management	Introduced cost-efficient lifecycle management strategies for hybrid cloud environments	Limited discussion of master data quality management
Gali & Rastogi (2025)	Oracle Cloud ERP MDM	Presented enterprise best practices for cloud ERP master data optimization	Restricted to Oracle ERP implementation scenarios
Gamaralalage & Jayarathne (2025)	ERP-centric MDM challenges	Examined governance and integration challenges affecting ERP master data	Limited exploration of hybrid cloud interoperability
Vedantham (2025)	AI-enhanced MDM	Demonstrated AI-driven governance, automation, and enterprise value creation	Requires broader validation across diverse enterprise environments

business capability supporting enterprise-wide digital transformation (Seetala, 2021; Kunadi, 2022).

Hybrid Cloud Architecture and Enterprise Integration Models

Hybrid cloud environments integrate on-premises infrastructure with private and public cloud services, enabling organizations to balance scalability, performance, security, and cost efficiency. This architecture allows enterprises to allocate workloads according to operational requirements while maintaining flexibility for future expansion. Mamidala et al. (2023) and Bitkuri et al. (2021) explain that hybrid and multi-cloud environments improve business continuity and resource utilization but introduce complexities related to interoperability, workload orchestration, and unified governance. Successful integration, therefore, depends on standardized communication protocols, interoperable APIs, and synchronized metadata repositories that ensure seamless information exchange across heterogeneous platforms (Mamidala et al., 2023; Bitkuri et al., 2021).

Data Governance and Data Quality in Cloud-Based Environments

Data governance provides the policies, standards, accountability mechanisms, and monitoring processes required to preserve trustworthy enterprise information. In cloud-enabled ecosystems, governance extends beyond traditional database management by ensuring data quality, security, regulatory compliance, and lifecycle control across multiple environments. Vadde and Engineer emphasize that cloud data integration significantly improves governance effectiveness when supported by automated validation, standardized transformation rules, and continuous monitoring. Similarly, Vadde demonstrates that integrated cloud architectures strengthen consistency by reducing

duplication, minimizing inconsistencies, and enhancing visibility throughout enterprise data pipelines. These governance capabilities enable organizations to maintain reliable master records while supporting regulatory compliance and business intelligence initiatives (Vadde & Engineer; Vadde).

MDM Integration Strategies Across On-Premises and Cloud Platforms

Organizations employ different MDM integration strategies depending on operational requirements, infrastructure maturity, and governance objectives. Common approaches include centralized, registry-based, coexistence, and transactional MDM architecture. Centralized models offer strong consistency through a single master repository, whereas coexistence and transactional models facilitate real-time synchronization between cloud and on-premises applications. Kunadi (2022) notes that scalable enterprise platforms require flexible integration architectures that can support increasing transaction volumes without compromising performance. Gali and Rastogi (2025) further demonstrate that Oracle Cloud ERP implementations benefit from standardized master data governance, automated synchronization mechanisms, and well-defined stewardship responsibilities, thereby improving enterprise-wide operational efficiency.

AI-Enabled Data Governance and Intelligent Metadata Management

Artificial intelligence is increasingly incorporated into MDM solutions to automate data profiling, entity matching, metadata classification, anomaly detection, and policy enforcement. AI-driven governance improves decision accuracy by identifying duplicate records, predicting inconsistencies, and recommending corrective actions before data quality deteriorates. Vedantham (2025) explains that intelligent MDM platforms enhance governance through automated stewardship, real-time monitoring, and predictive analytics, thereby improving enterprise responsiveness. Gali and Rastogi (2025) similarly highlight that AI-supported automation in cloud ERP ecosystems strengthens data consistency, accelerates integration, and reduces manual administrative effort.

2.6 Challenges Affecting Hybrid Cloud MDM Deployment

Despite significant technological advancements, hybrid cloud MDM implementation continues to face several organizational and technical barriers. These include inconsistent metadata standards, fragmented governance structures, integration complexity, synchronization latency, security concerns, regulatory compliance requirements, and difficulties in maintaining a single version of the truth across geographically distributed systems. Gamaralalage and Jayarathne (2025) identify ERP-centric integration challenges that arise from heterogeneous enterprise applications and evolving business processes. Zhang et al. (2024) further note that effective lifecycle management is essential for balancing operational efficiency with infrastructure costs, emphasizing that governance and cost optimization must be addressed simultaneously to sustain long-term enterprise performance.

Research Gaps and Emerging Opportunities

The reviewed literature confirms substantial progress in cloud integration, governance frameworks, scalable MDM architecture, and AI-assisted automation. Nevertheless, limited research integrates these components into a unified framework specifically designed for hybrid cloud environments. Existing studies frequently examine governance, lifecycle management, ERP optimization, or cloud integration in isolation, giving insufficient attention to comprehensive MDM strategies that simultaneously address interoperability, intelligent automation, cost efficiency, regulatory compliance, and real-time synchronization. Consequently, this study seeks to bridge these gaps by developing an integrated perspective on Master Data Management strategies that enhance enterprise data quality, governance effectiveness, and operational resilience across hybrid cloud ecosystems (Seetala, 2021; Kunadi, 2022; Mamidala et al., 2023; Zhang et al., 2024; Gali & Rastogi, 2025; Vedantham, 2025).

Research Methodology

Research Design

This study employed a systematic literature review and comparative analysis to examine Master Data Management (MDM) integration strategies in hybrid cloud environments. The methodology synthesized findings from peer-reviewed journal articles, enterprise case studies, and scholarly publications focusing on hybrid cloud architectures, data governance, cloud integration, enterprise resource planning (ERP), and MDM implementation. This design enabled a comprehensive evaluation of integration models, governance mechanisms, scalability considerations, and data quality improvement techniques across diverse

Table 2: Evaluation Framework for Hybrid Cloud MDM Integration Strategies

Evaluation Criterion	*Description*	*Performance Indicator*	*Expected Enterprise Outcome*
Data Quality	Accuracy, completeness, and consistency of master records	Error reduction and data integrity	Reliable enterprise information
Synchronization Efficiency	Speed of updating master data across environments	Replication latency	Faster decision support
Governance Effectiveness	Enforcement of policies, standards, and stewardship	Compliance level	Improved regulatory adherence
Scalability	Ability to support expanding workloads and users	Resource utilization	Sustainable organizational growth
Interoperability	Integration across cloud and on-premises systems	Cross-platform compatibility	Seamless information exchange
Security and Privacy	Protection of enterprise master data	Access control and encryption effectiveness	Reduced security exposure
Cost Optimization	Efficient utilization of cloud resources	Infrastructure and maintenance expenditure	Lower operational costs
AI-Assisted Management	Automation of governance, metadata, and validation processes	Automated workflows and predictive monitoring	Enhanced operational efficiency

enterprise environments (Mamidala et al., 2023; Bitkuri et al., 2021).

Data Sources and Selection Criteria

Secondary data formed the foundation of the research. Sources were selected based on their relevance to hybrid cloud computing, MDM frameworks, enterprise integration, governance practices, artificial intelligence, and lifecycle management. Priority was given to peer-reviewed journals, conference proceedings, and reputable industry case studies discussing practical implementation strategies and measurable organizational outcomes. Publications addressing cloud data integration, scalable MDM architectures, ERP-centered governance, and intelligent automation were included to ensure broad coverage of current enterprise practices (Vadde & Engineer; Kunadi, 2022; Gali & Rastogi, 2025).

Systematic Literature Review Procedure

A structured review protocol was employed to identify, screen, evaluate, and synthesize relevant literature. Studies were categorized according to architecture type, integration strategy, governance framework,

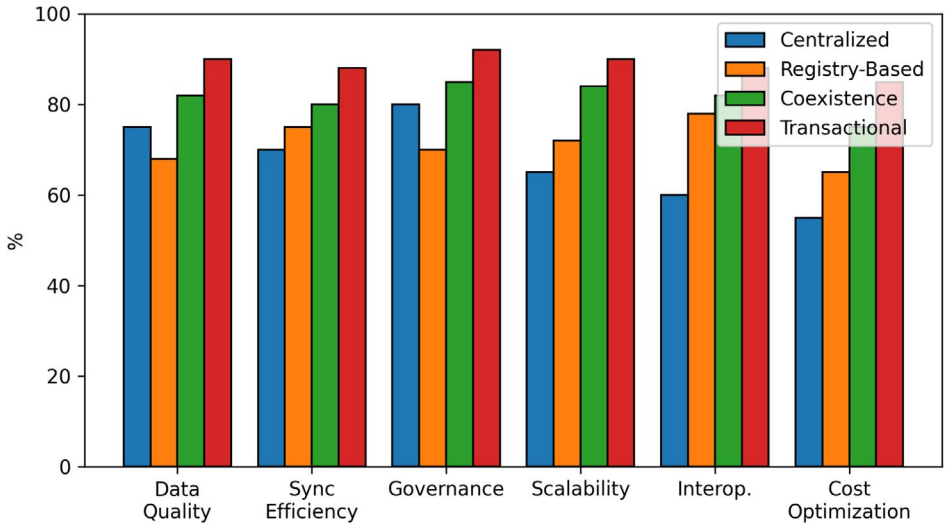

Figure 2: Comparison of Hybrid Cloud MDM Integration Strategies

synchronization techniques, scalability mechanisms, artificial intelligence capabilities, and operational performance. The systematic approach facilitated objective comparisons, minimized selection bias, and ensured consistency in evidence synthesis (Seetala, 2021; Mamidala et al., 2023).

Comparative Evaluation Framework

The analysis compared leading MDM integration strategies used across hybrid cloud ecosystems, including centralized, registry-based, coexistence, and transactional models. Each approach was assessed against standardized evaluation criteria comprising data quality, interoperability, governance effectiveness, synchronization performance, scalability, security, regulatory compliance, and infrastructure efficiency. The framework also examined the influence of ERP integration and AI-enabled governance on enterprise-wide master data consistency (Gamaralalage & Jayarathne, 2025; Vedantham, 2025).

Evaluation Metrics

The study employed multiple performance metrics to assess the effectiveness of hybrid cloud MDM strategies. Data quality was measured through consistency and accuracy of master records, while synchronization efficiency was evaluated by replication speed across distributed environments. Governance effectiveness is considered policy compliance, stewardship maturity, and regulatory alignment. Scalability examined system adaptability to increasing enterprise workloads, whereas interoperability assessed integration across heterogeneous platforms. Cost efficiency focused on optimized resource utilization and lifecycle management practices. AI-assisted governance was evaluated based on the automation capabilities that support metadata management, anomaly detection, and continuous monitoring (Zhang et al., 2024; Vedantham, 2025; Vadde & Engineer).

Reliability and Validity

Reliability was strengthened by using peer-reviewed academic publications and established enterprise research on MDM, hybrid cloud integration, and governance practices. Validity was enhanced by applying consistent evaluation criteria across all selected studies, enabling objective comparisons of architectural approaches and integration techniques. Cross-referencing evidence from cloud integration, lifecycle management, ERP implementation, and AI-driven governance research improved the robustness of the findings and ensured balanced interpretation of enterprise MDM practices (Kunadi, 2022; Seetala, 2021; Gali & Rastogi, 2025; Vadde, B. C.; Zhang et al., 2024).

Results and Discussion

Comparative Assessment of Existing MDM Integration Strategies

The comparative evaluation indicates that organizations implementing structured Master Data Management (MDM) frameworks within hybrid cloud environments achieve higher levels of data consistency, governance maturity, and operational efficiency than organizations relying on isolated or fragmented integration methods. Centralized and coexistence MDM models demonstrate superior performance in maintaining a single source of truth, whereas registry-based architecture provides flexibility but require stronger synchronization mechanisms. These findings align with the enterprise integration principles discussed by Kunadi (2022), Seetala (2021), and Mamidala et al. (2023), who emphasize standardized governance and scalable architecture as essential components of successful MDM deployments. Furthermore, cloud data integration significantly enhances information accuracy and stewardship when supported by automated validation processes (Vadde & Engineer; Vadde, B. C.).

Impact of Hybrid Cloud Architecture on Master Data Consistency

The analysis shows that hybrid cloud environments improve organizational flexibility while introducing complexities associated with distributed data repositories, latency, interoperability, and policy enforcement. Effective integration strategies employing API-driven synchronization, metadata repositories, and event-based replication substantially reduce duplicate records and inconsistencies across enterprise applications. Organizations adopting unified governance policies experience improved reliability and better decision support compared to those utilizing disconnected data management approaches (Bitkuri et al., 2021; Mamidala et al., 2023). Cost-aware lifecycle management further contributes to sustainable hybrid cloud operations by balancing storage utilization and processing efficiency (Zhang et al., 2024).

Role of Governance Frameworks in Improving Enterprise Data Quality

The findings reveal that governance frameworks remain the primary driver of high-quality master data.

Table 3: Comparative Analysis of Hybrid Cloud MDM Integration Strategies

MDM Integration Strategy	*Data Consistency*	*Governance Effectiveness*	*Scalability*	*Operational Cost*	*Implementation Complexity*	*Best Enterprise Application*
Centralized MDM	Very High	Very High	Moderate	Moderate	High	Large enterprises requiring a single source of truth
Registry-Based MDM	Moderate	Moderate	High	Low	Moderate	Organizations integrating multiple legacy systems
Coexistence MDM	High	High	High	Moderate	Moderate	Hybrid cloud environments with distributed applications
Transactional MDM	Very High	High	Moderate	High	Very High	Real-time operational and ERP-driven environments
AI-Enhanced MDM	Very High	Excellent	Very High	Moderate	High	Enterprises pursuing intelligent governance and automated data stewardship

Organizations with clearly defined ownership and stewardship responsibilities, standardized metadata policies, and continuous monitoring consistently achieve higher accuracy, completeness, and regulatory compliance. Data governance programs supported by cloud integration technologies reduce redundant records, improve audit readiness, and strengthen enterprise-wide trust in critical business information. These outcomes reinforce the governance models proposed by Seetala (2021) and the cloud integration practices presented by Vadde & Engineer, demonstrating that governance maturity directly influences MDM success.

AI-Assisted Automation for Metadata Management and Data Stewardship

Artificial intelligence enhances hybrid cloud MDM by automating metadata classification, duplicate detection, anomaly identification, and data quality monitoring. AI-enabled governance accelerates decision-making by minimizing manual intervention and improving the timeliness of master data updates. Intelligent automation also supports predictive data stewardship, allowing organizations to proactively resolve quality issues before they affect downstream applications. These observations are consistent with Vedantham (2025), who highlights AI-driven governance as an emerging capability for enterprise value creation, and Gali and Rastogi (2025), who demonstrate the effectiveness of intelligent MDM optimization within Oracle Cloud ERP environments.

Cost Optimization and Lifecycle Management in Hybrid Cloud Deployments

The evaluation demonstrates that cost-efficient lifecycle management significantly improves the long-term sustainability of enterprise MDM initiatives. Organizations applying intelligent data tiering, lifecycle automation, workload optimization, and scalable storage allocation achieve lower infrastructure costs while maintaining high system availability. Hybrid cloud architecture further enhances resource utilization by allocating workloads according to performance and governance requirements. These findings support the lifecycle management framework introduced by Zhang et al. (2024), which emphasizes balancing operational expenditure with enterprise performance objectives.

Discussion of Findings Relative to Existing Literature

Overall, the results indicate that successful MDM integration in hybrid cloud environments depends on the combined implementation of standardized governance, scalable cloud integration architectures, intelligent automation, and continuous data quality management. Earlier studies primarily emphasized architectural scalability and interoperability (Bitkuri et al., 2021; Mamidala et al., 2023), whereas more recent contributions build on these foundations by incorporating AI-enabled governance and enterprise optimization (Vedantham, 2025; Gali & Rastogi, 2025). Likewise, Kunadi (2022) and Seetala (2021) establish MDM as the strategic foundation for enterprise

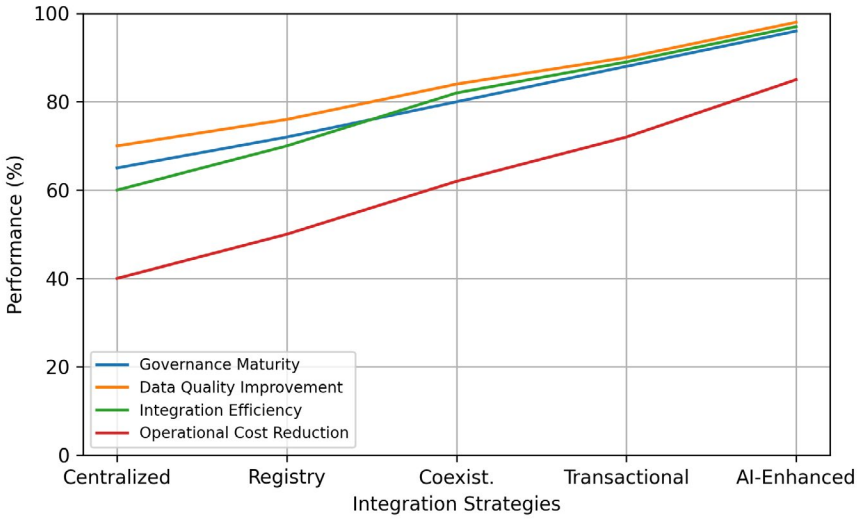

Figure 3: Governance, Data Quality, Integration Efficiency, and Cost Reduction Across MDM Strategies

consistency, while Vadde & Engineer and Vadde, B. C. demonstrate that cloud-based integration strengthens governance effectiveness and improves information quality across distributed environments. Collectively, these findings suggest that enterprises adopting integrated governance frameworks and intelligent MDM strategies are better positioned to achieve scalability, resilience, operational efficiency, and sustained business value.

Recommendations

Establish Enterprise-Wide MDM Governance Frameworks

Organizations should implement standardized Master Data Management (MDM) governance frameworks that define clear ownership, stewardship responsibilities, data standards, and accountability mechanisms across hybrid cloud environments. Consistent governance policies improve master data integrity, minimize duplication, and support regulatory compliance while enabling seamless collaboration between on-premises and cloud platforms (Seetala, 2021; Vadde, B. C., & Engineer).

Strengthen Hybrid Cloud Integration Architecture

Enterprises should adopt scalable integration architectures that support interoperability between heterogeneous systems through standardized APIs, metadata repositories, and automated synchronization services. Such an approach enhances information consistency, reduces integration complexity, and facilitates reliable data exchange across distributed infrastructures (Mamidala et al., 2023; Bitkuri et al., 2021; Kunadi, 2022).

Enhance Data Quality Through Continuous Monitoring

Continuous data profiling, validation, cleansing, and monitoring mechanisms should be embedded within enterprise workflows to ensure that master records remain accurate, complete, and up to date. Automated quality assessments enable organizations to detect inconsistencies early, improving decision-making and operational performance across business functions (Vadde, B. C., & Engineer; Vadde, B. C.).

Integrate Artificial Intelligence into MDM Processes

Artificial intelligence and machine learning should be incorporated into MDM platforms to automate metadata management, entity matching, anomaly detection, and predictive governance. Intelligent automation can significantly reduce manual intervention while improving data stewardship, governance efficiency, and enterprise responsiveness to changing business requirements (Vedantham, 2025; Gali & Rastogi, 2025).

Optimize Data Lifecycle and Resource Utilization

Organizations should implement comprehensive data

lifecycle management strategies that classify, archive, retain, and securely dispose of master data based on business value and compliance requirements. Efficient lifecycle policies reduce storage costs, improve resource utilization, and maintain long-term accessibility without compromising performance (Zhang, Zhang, & Feng, 2024).

Address ERP-Centric MDM Challenges

Enterprises deploying ERP-centric MDM solutions should harmonize master data across finance, procurement, supply chain, and customer management modules through standardized governance practices and coordinated integration strategies. Aligning ERP systems with hybrid cloud environments enhances operational consistency while reducing data fragmentation and synchronization issues (Gamaralalage & Jayarathne, 2025; Gali & Rastogi, 2025).

Promote Continuous Evaluation and Workforce Development

Organizations should periodically assess the effectiveness of their MDM strategies using performance metrics such as data accuracy, synchronization efficiency, governance compliance, scalability, and operational effectiveness. Regular employee training and cross-functional collaboration will strengthen governance maturity and ensure sustainable adoption of evolving hybrid cloud technologies (Kunadi, 2022; Mamidala et al., 2023; Seetala, 2021).

Conclusion

As a result, Master Data Management (MDM) remains a key capability for organizations across hybrid cloud environments, providing a strong foundation for enterprise-wide data consistency, governance, and informed decision-making. The results highlight the importance of governing policies, scalable architecture, standardized integration mechanisms, and consistent, ongoing data quality management for effective MDM integration. They help organizations align their critical data across on-prem and cloud environments and ensure that data remains accurate, interoperable, and compliant with regulations (Seetala, 2021; Kunadi, 2022).

The study also reveals that integration complexity, data fragmentation, and governance issues need coordinated lifecycle management and intelligent automation when implementing a hybrid cloud. Using AI in MDM solutions enhances data quality and metadata management, automates validation procedures, and boosts real-time governance, all while enhancing enterprise value and operational efficiency (Vedantham, 2025). Similarly, optimized lifecycle management and cost-driven cloud strategies help ensure sustainable resource utilization and enable long-term scalability (Zhang, Zhang, & Feng, 2024).

Moreover, cloud data integration enhances data reliability by eliminating duplication, ensuring synchronization, and enabling consistent management across distributed systems (Vadde & Engineer; Vadde). Hybrid and multi-cloud research studies showed the need for interoperability, security, and standardized integration solutions to create resilient enterprise data ecosystems (Bitkuri et al., 2021; Mamidala et al., 2023). Best practices for master data governance also boost operational efficiency and business continuity and resolve issues that arise during ERP system deployments (Gali & Rastogi, 2025; Gamaralalage & Jayarathne, 2025). In general, when powerful MDM solutions are combined with hybrid cloud solutions, businesses can enhance data trustworthiness, streamline their business processes, and maintain their ongoing digital transformation efforts.

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