

Exploring the Dimensions and Drivers of Enterprise Architecture Adoption in Malaysia's Local Authorities

Meneroka Dimensi dan Pemacu Penerimaan Seni Bina Perusahaan di Pihak Berkuasa Tempatan Malaysia

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ABSTRACT

Enterprise Architecture (EA) is a strategic approach for aligning organisational processes, information, applications and technology with public-sector transformation goals. Nevertheless, EA adoption among Malaysian Local Authorities (LAs) remains uneven due to conceptual ambiguity, fragmented implementation and limited organisational readiness. This study explores the main dimensions, barriers and drivers influencing EA adoption in LAs. A Basic Qualitative Inquiry design was applied through semi-structured interviews with five ICT-related officers representing city, municipal and district councils. Data were analysed manually using open coding, axial coding and thematic development. Four themes emerged: unclear EA dimensions, inconsistent implementation, low organisational readiness and critical drivers of adoption. The findings show that formal EA documentation is limited, systems are frequently developed in departmental or vendor silos, and many LAs experience shortages of skilled staff, training, infrastructure and financial resources. Leadership commitment, national mandates, system-integration needs and appropriate governance structures were identified as the strongest enablers. The study extends existing public-sector EA research by focusing on local government and provides practical direction for strengthening digital governance, interoperability and organisational capability at the LA level.

Keywords: Enterprise Architecture; Local Authorities; Organisational Readiness; Digital Governance; EA Implementation

ABSTRAK

Senibina Perusahaan (EA) merupakan pendekatan strategik untuk menyelaraskan proses, maklumat, aplikasi dan teknologi organisasi dengan matlamat transformasi sektor awam. Walau bagaimanapun, penerimaan EA dalam kalangan Pihak Berkuasa Tempatan (PBT) Malaysia masih tidak sekata disebabkan oleh kekaburan konseptual, pelaksanaan yang berpecah-belah dan kesediaan organisasi yang terhad. Kajian ini meneroka dimensi utama, halangan dan pemacu yang mempengaruhi penerimaan EA di PBT. Reka bentuk Inkuiri Kualitatif Asas telah diaplikasikan melalui temu bual separa berstruktur dengan lima pegawai berkaitan ICT yang mewakili majlis bandar, perbandaran dan daerah. Data dianalisis secara manual menggunakan pengekodan terbuka, pengekodan paksi dan pembangunan tematik. Empat tema muncul: dimensi EA yang tidak jelas, pelaksanaan yang tidak konsisten, kesediaan organisasi yang rendah dan pemacu kritikal penerimaan. Penemuan menunjukkan bahawa dokumentasi EA formal adalah terhad, sistem kerap dibangunkan dalam silo jabatan atau vendor, dan banyak PBT mengalami kekurangan kakitangan mahir, latihan, infrastruktur dan sumber kewangan. Komitmen kepimpinan, mandat negara, keperluan integrasi sistem dan struktur tadbir urus yang sesuai dikenal pasti sebagai pemboleh yang paling kuat. Kajian ini memperluaskan penyelidikan EA sektor awam sedia ada dengan memberi tumpuan kepada kerajaan tempatan dan menyediakan hala tuju praktikal untuk memperkukuh tadbir urus digital, kebolehkendalian dan keupayaan organisasi di peringkat LA.

Kata kunci: Senibina Perusahaan; Pihak Berkuasa Tempatan; Kesediaan Organisasi; Tadbir Urus Digital; Pelaksanaan EA

INTRODUCTION

EA supports coordinated digital transformation by linking strategy, business processes, data, applications and technology. In Malaysia, national initiatives have encouraged public agencies to use EA to improve ICT planning, interoperability and governance. However, implementation has progressed more strongly at federal and state levels than among LAs. This gap is important because LAs deliver citizen-facing services such as licensing, land administration, public health, urban management and community facilities. Their ability to integrate systems and data directly affects service quality and public-sector digital transformation.

LAs commonly operate under tighter budgets, limited ICT staffing, legacy infrastructure and departmental silos. These conditions make it difficult to translate national EA guidance into daily organisational practice. Although prior studies have examined EA adoption, readiness and institutional pressures in the Malaysian public sector, empirical evidence focused specifically on LAs remains limited. Therefore, this study investigates the dimensions, organisational conditions and drivers that shape EA adoption in this distinctive local-government setting.

RELATED WORK

Previous research indicates that EA adoption is multidimensional. Refer to table 1. Governance factors include clear decision rights, strategic alignment, expected benefits, standards and accountability. Organisational readiness involves leadership, communication, financial capacity, human resources, training and structural preparedness. Human factors, particularly knowledge and innovativeness, affect how officers interpret and apply EA. Technological factors include relative advantage, complexity, infrastructure maturity, interoperability and legacy-system constraints.

Institutional conditions also shape adoption. Coercive pressure arises from government policies and mandates; normative pressure develops through professional standards and accepted practices; and mimetic pressure occurs when organisations imitate successful peers. Studies comparing federal and state agencies show that the significance of these factors may vary by organisational type. This implies that approaches designed for ministries or state agencies cannot be transferred directly to LAs without contextual adaptation.

TABLE 1. Key dimensions and drivers of EA adoption.

Dimension	Key drivers	Relevance to LAs
Governance	Leadership, accountability, standards, expected benefits	Provides direction and enterprise-wide coordination.
Organisational readiness	Communication, staffing, budget, training, structure	Determines whether EA can be institutionalised.
Human capability	Knowledge, innovativeness, EA competency	Supports understanding and sustained implementation.
Technology	Infrastructure, integration, relative advantage, complexity	Affects interoperability and transition from legacy systems.
Institutional environment	National mandate, professional norms, peer influence	Creates pressure and legitimacy for adoption.
Assessment	Performance measures and maturity evaluation	Enables progress monitoring and continuous improvement.

EA implementation is further complicated by framework complexity, rigid business processes, dispersed authority, vendor dependence and limited assessment mechanisms. Balanced and structured evaluation is therefore required to assess governance, internal processes, learning, innovation and benefits. International evidence from local government similarly reports fragmented ICT systems, limited technical capability and uneven maturity. Collectively, the literature suggests that successful EA

adoption depends on the interaction of governance, organisational readiness, human capability, technology conditions and external institutional support.

METHODOLOGY

The study employed a qualitative approach using Basic Qualitative Inquiry to understand how officers interpret EA and experience its implementation. Five participants were selected purposively from city, municipal and district councils based on their responsibility for ICT operations or involvement in EA-related activities. Semi-structured interviews addressed four areas: understanding of EA dimensions, implementation challenges, organisational readiness and required support mechanisms. Informal observations of systems, ICT arrangements and departmental interaction supplemented the interviews.

All interviews were recorded, transcribed verbatim and analysed manually in Microsoft Word. Open coding identified initial concepts, axial coding grouped related concepts, and theme development produced broader explanatory patterns. Trustworthiness was strengthened through triangulation, member checking, an audit trail and researcher reflexivity. Participants provided informed consent, identities were anonymised as P1–P5, and sensitive organisational information was protected.

RESULTS AND DISCUSSION

The analysis produced four interconnected themes as shown in Table 2. Together, they explain why EA remains difficult to institutionalise in LAs and identify the conditions required for improvement.

TABLE 2. Summary of emergent themes from the findings and discussion.

Theme	Main evidence	Interpretation
1. Unclear EA dimensions	Different definitions across departments; limited formal documentation; weak understanding of business, data, application and technology domains.	EA is often treated as an ICT concept rather than an enterprise-wide management approach.
2. Inconsistent implementation	Departmental systems, multiple vendors, different workflows and limited interoperability.	Fragmentation prevents common standards, integrated data and coordinated planning.
3. Low organisational readiness	Shortage of ICT staff, limited training, ageing infrastructure, budget constraints and weak governance readiness.	Many LAs lack the capability and resources to implement EA comprehensively.
4. Critical EA drivers	Leadership support, national mandates, integration requirements and formal governance structures.	Strong direction and institutional support can accelerate adoption despite internal limitations.

The first theme shows that EA lacks a shared operational meaning. Without an approved blueprint, architecture principles or domain documentation, officers rely mainly on personal ICT experience. This ambiguity weakens cross-departmental communication and makes EA difficult to connect with organisational strategy. The finding is consistent with earlier Malaysian studies reporting limited understanding of EA domains and weak institutionalisation of architecture practices.

The second theme concerns fragmented implementation. Participants described systems developed independently by departments and vendors, with inconsistent standards and workflows. Consequently, data exchange and interoperability remain limited. EA therefore does not yet function as an enterprise-wide coordination mechanism. This finding supports prior public-sector research that identifies system silos, vendor fragmentation and weak standardisation as continuing barriers.

The third theme demonstrates that readiness is not only technological. ICT units may have very few staff, limited EA competency and insufficient training, while existing servers and systems are difficult to integrate. Financial constraints further delay modernisation. These findings indicate that EA adoption

requires simultaneous investment in people, governance, processes and infrastructure rather than the introduction of a framework alone.

The fourth theme identifies practical sources of momentum. Participants viewed leadership commitment as the most influential internal driver because management direction affects priorities, funding and interdepartmental cooperation. National mandates and standards create external pressure and legitimacy, while urgent system-integration needs provide an operational reason to adopt EA. A formal governance structure is required to convert these drivers into sustained practice.

The findings imply that a PBT-specific approach should begin with a clear and simplified description of EA domains, supported by minimum documentation standards and defined governance roles. Capacity-building should prioritise EA literacy for managers and technical officers, while implementation should be phased according to organisational maturity and resources. Shared standards for data, applications, procurement and vendor management are also needed to reduce fragmentation. At the policy level, national guidance should provide stronger implementation support, assessment criteria and practical templates suitable for different categories of LAs.

CONCLUSION

This study concludes that EA adoption among Malaysian LAs is shaped by four main conditions: conceptual clarity, implementation consistency, organisational readiness and enabling drivers. The absence of formal documentation and common understanding restricts the ability of LAs to use EA strategically. Fragmented systems and workflows reduce interoperability, while limited staffing, competency, infrastructure and funding weaken readiness. Nevertheless, leadership support, national mandates, integration requirements and formal governance arrangements provide a strong basis for improvement.

Four recommendations are proposed. First, LAs should establish a concise EA blueprint covering business, data, application and technology domains. Second, EA governance should be formalised through clear ownership, cross-departmental committees and architecture review processes. Third, capability development should include targeted training, competency planning and knowledge-sharing across LAs. Fourth, implementation should follow a phased maturity roadmap supported by common standards, measurable outcomes and periodic assessment. These actions can help bridge the gap between national digital aspirations and the operational capacity of local government.

The study contributes empirically by shifting attention from federal and state organisations to the underexplored LA context. It also provides a foundation for developing a contextual EA adoption framework for Malaysian LAs. Future research should involve a larger and more diverse group of LAs, compare different organisational categories and regions, and validate the proposed dimensions through expert review and practical usability assessment.

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