



Strengthening Inter-Agency Integration of SPBE Governance in Ambon City

Jusuf Madubun^{1*}, Muhtar², Judy de Fretes³, Wirasti Rahayaan⁴, Honoratus Ruban⁵

Universitas Pattimura

Corresponding Author: Jusuf Madubun jmadubunwr3unpatti@gmail.com

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ABSTRACT

This article explains the strengthening of inter-agency Electronic-Based Government System (SPBE) governance toward integrated business processes, data, services, information security, and performance accountability. Using a qualitative case-study synthesis in Ambon City by reinterpreting Smart City research findings as an empirical baseline. SPBE is positioned as the institutional development of smart city initiatives, shifting digital innovation from sectoral applications of documents, interviews, observations, and focus group discussions, the study shows that e-signatures, IETPD 96%, QRIS, Command Center 112, OMI Channel, digital libraries, One Data, waste banks, and Sound of Green provide initial integration assets. However, data interoperability, cross-agency standards, digital human-resource capacity, and technical regulation must be strengthened.

INTRODUCTION

Public-sector digital transformation in Indonesia has moved from basic service digitisation to integrated digital government. This shift is consistent with the literature on digital-era governance, institutional change, contextual digital government, and digital transformation as an organisational process, not merely the adoption of applications (Dunleavy et al., 2006; Fountain, 2001; Janowski, 2015; Mergel et al., 2019; Vial, 2019). At the local level, this transition is reflected in the need to move from fragmented smart city initiatives to the Sistem Pemerintahan Berbasis Elektronik (SPBE), which requires a coordinated architecture of processes, data, applications, services, and accountability.

SPBE requires integration of business processes, data, applications, infrastructure, information security, and performance accountability across government agencies. Presidential Regulation No. 95 of 2018 defines SPBE as an integrated electronic government system, while Presidential Regulation No. 39 of 2019 strengthens the One Data agenda as a foundation for standardised public data. In this sense, SPBE is closely related to data governance, public value, interoperability, and e-government success factors (Bannister & Connolly, 2014; Gil-Garcia & Pardo, 2005; Khatri & Brown, 2010; OECD, 2020; Twizeyimana & Andersson, 2019).

Ambon City is an important case because it has developed smart city initiatives since joining the national Movement toward 100 Smart Cities. Previous Smart City Ambon research identified electronic signatures, Command Center 112, IETPD, QRIS, Ambon One Data, OMI Channel, digital libraries, waste banks, and Sound of Green. These initiatives reflect the multidimensional nature of smart cities, which links technology, institutions, people, infrastructure, economy, and environment (Caragliu et al., 2011; Chourabi et al., 2012; Harrison et al., 2010; Nam & Pardo, 2011; Yigitcanlar et al., 2022). The issue is that these achievements must now be lifted into the more integrated institutional logic of SPBE.

LITERATURE REVIEW

The island-city context makes the issue more urgent. Ambon faces dispersed service locations, coastal connectivity gaps, unequal digital capacity across agencies and communities, and service needs that cut across population administration, licensing, local revenue, citizen complaints, disaster response, tourism, education, and environmental management. Under such conditions, adding new applications without integrating processes and data would only reproduce the familiar bureaucratic tragedy: every office gets a platform, but citizens still carry the same information from desk to desk like a ritual offering to administrative chaos.

This article explains how SPBE governance integration can be strengthened among OPDs in Ambon City by using Smart City research findings as an empirical baseline. It does not treat Smart City and SPBE as competing agendas. Smart City is read as a field of innovation, while SPBE is read as the institutional mechanism that consolidates these innovations into integrated digital governance. The contribution is a compact transition model from smart

city innovation toward accountable, interoperable, and island-sensitive SPBE governance (Dawes, 2009; Meijer & Bolivar, 2016; Scholta et al., 2019).

METHODOLOGY

This article uses a qualitative case-study synthesis based on Smart City Ambon research and the proposed development of inter-agency SPBE governance in Ambon City. The unit of analysis is inter-agency governance integration rather than a single application. Case-study synthesis is appropriate because SPBE integration involves organisational processes, institutional arrangements, technology use, and contextual interpretation (Braun & Clarke, 2006; Yin, 2018).

The main empirical material comes from research on Smart City Ambon that included interviews, focus group discussions, field observations, and document review. The research covered six smart city dimensions: smart governance, smart economy, smart branding, smart society, smart living, and smart environment. These materials were reread through the SPBE lens, particularly the dimensions of business process integration, data interoperability, application and service integration, information security, and digital accountability.

The analysis was conducted in four steps. First, digital achievements with direct relevance to SPBE were identified, such as electronic signatures, Ambon One Data, Command Center 112, QRIS, OMI Channel, online population administration, and digital public-service channels. Second, each achievement was converted into SPBE needs by asking whether it contributed to process integration, data exchange, service integration, security, or accountability. Third, integration gaps were mapped by identifying fragmented applications, inconsistent data standards, unequal digital capacity, and weak cross-agency coordination. Fourth, a strengthening model was formulated to connect actors, business processes, data, applications, services, and performance indicators.

The validity of analysis was maintained through triangulation of documents, interviews, observations, and FGD results, as well as consistency checking against the national SPBE regulatory framework. The analysis also drew on collaborative governance and innovation-helix perspectives to avoid treating integration as a purely technical issue (Ansell & Gash, 2008; Cavallini et al., 2016; Emerson et al., 2012; Etzkowitz & Zhou, 2020). In other words, Smart City findings were used as an empirical baseline, while SPBE was positioned as a more systemic governance agenda.

Table 1. Analytical stages for converting Smart City findings into SPBE strengthening

Stage	Analytical focus	Main source	Analytical output
1	Identification of relevant Smart City achievements	Interviews, FGD, observations, and Smart City documents	List of digital outputs relevant to SPBE

2	Conversion of Smart City outputs into SPBE dimensions	Smart governance, economy, branding, society, living, and environment findings	Matrix linking Smart City achievements and SPBE needs
3	Mapping of integration gaps	OPD data, digital services, complaint channels, transactions, and Command Center practices	Problems of interoperability, workflow, and coordination
4	Formulation of SPBE integration model	Synthesis of findings and national SPBE regulation	Model of inter-agency SPBE governance integration

RESULTS AND DISCUSSION

Smart City as the empirical baseline for SPBE

The Smart City Ambon findings show that digital transformation has already emerged in many sectors. In smart governance, the city has introduced electronic signatures across OPDs, Command Center 112, CCTV-supported situational monitoring, public information portals, and the Ambon One Data agenda. In smart economy, achievements include government transaction elektronification, QRIS adoption, MSME support, and collaboration with Bank Indonesia and local banking actors. In smart society and smart living, OMI Channel, digital literacy activities, online population administration, digital libraries, and public feedback mechanisms have expanded citizen access. In smart environment, waste banks, Sound of Green, and environmental rehabilitation initiatives have created a bridge between digital governance, culture, and sustainability.

These findings are significant but must be interpreted carefully. Smart City achievements show that digital innovation exists, but SPBE requires a higher level of integration. A smart city can display many digital programmes while still suffering from fragmented data, duplicated verification, weak interoperability, or uneven accountability. This confirms broader studies that digital government transformation depends on the co-evolution of technology, organisations, institutions, and service models (Janowski, 2015; Luna-Reyes & Gil-Garcia, 2014; Meijer & Bolivar, 2016).

The shift can therefore be described as a transition from digital innovation to digital governance. Digital innovation generates applications, events, public-service channels, and collaborative practices. Digital governance ensures that all innovations have rules, data standards, responsible actors, performance indicators, security controls, and evaluation mechanisms (Bannister & Connolly, 2014; Dawes, 2009; Estevez & Janowski, 2013; Khatri & Brown, 2010). SPBE is thus the logical development of Ambon's Smart City agenda.

Table 2. Conversion of Smart City achievements into SPBE integration needs

Smart City dimension	Main achievement/finding	SPBE development need	Inter-agency implication
Smart Governance	E-signatures, Command Center 112, Ambon One Data, public portals	SPBE architecture, data standards, security management, integration forum	Diskominfo must become an integration orchestrator, not merely a technical operator
Smart Economy	IETPD 96%, QRIS, MSME digitalisation, banking collaboration	Integration of transactions with revenue, licensing, and fiscal dashboards	BPKAD/BPPRD, DPMPTSP, Diskominfo, and banks need linked economic-service workflows
Smart Society	OMI Channel, digital literacy, citizen participation, MSME training	Complaint channels linked to OPD workflows and response indicators	Citizen feedback must become performance data, not just incoming messages
Smart Living	Online population services, digital library, public internet, CCTV	Integrated service status, digital identity use, and monitoring of basic services	Basic services can be tracked across OPDs and evaluated in near-real time
Smart Branding and Environment	Ambon City of Music, Sound of Green, waste banks, destination promotion	Destination Management System, environmental data, and tourism-environment integration	Tourism, culture, and environmental data support regional decisions

Strengthening smart governance as the SPBE foundation

Smart governance provides the most direct foundation for strengthening SPBE in Ambon City. The use of electronic signatures across OPDs has created a digital trust infrastructure by accelerating document authorisation and reducing dependence on manual circulation. In SPBE terms, electronic signatures are not only administrative tools; they support digital identity, authorisation, document

security, and audit trails, which are essential in digital-era governance (Dunleavy et al., 2006; Fountain, 2001; Gil-Garcia & Pardo, 2005).

Command Center 112 also shows the potential for cross-agency service integration. It supports CCTV-based monitoring and coordination during emergencies, including periods of heavy rainfall and potential disaster events. In an integrated SPBE model, the Command Center should be developed into a service and incident data hub. It should not stop at visual monitoring; it needs to be connected to action workflows, responsible agencies, response-time indicators, complaint records, and post-event evaluation.

Ambon One Data demonstrates the direction of information integration, but it must be strengthened into a data interoperability regime. The challenge is not simply collecting data from OPDs, but ensuring that data definitions, formats, metadata, ownership, updating schedules, validation mechanisms, and access rights are standardised. Without these elements, a one-data portal risks becoming a passive repository rather than an operational decision-support system (Khatrı & Brown, 2010; OECD, 2020; Pemerintah Republik Indonesia, 2019).

Integrating transactions, services, and performance accountability

The achievement of IETPD 96% indicates that transaction electronification in Ambon City has reached a strong stage. This is an important asset for SPBE because digital transactions can be connected to local revenue, expenditure, licensing, taxation, and performance reporting. It also demonstrates public value in the form of efficiency, transparency, and traceability (Bannister & Connolly, 2014; Twizeyimana & Andersson, 2019).

From an SPBE perspective, digital transactions must be linked to cross-agency service workflows. Business licensing, for example, should not stop at online submission. It also requires identity validation, location verification, business classification, tax or retribution data, payment status, and service-performance reporting. This means that DPMPTSP, Disdukcapil, BPKAD/BPPRD, Diskominfo, and oversight bodies must be connected through a clear and secure data flow.

Online population administration, digital libraries, OMI Channel, and official social media show that digital access has expanded. However, service quality is not determined only by channel availability. In the SPBE framework, each channel should have response standards, case classification, responsible OPDs, completion deadlines, proof of completion, and feedback loops. This is the difference between digital display and integrated service accountability (Scholta et al., 2019; United Nations, 2022).

Table 3. Empirical Smart City achievements as the SPBE integration baseline

Aspect	Empirical achievement	Meaning for SPBE	Strengthening direction
Digital legality	Electronic signatures across OPDs	Strengthens trust infrastructure	Integrate e-signatures with service workflows and digital archives

		and document audit trails	
Digital transactions	IETPD 96% and QRIS expansion	Improves transaction transparency and fiscal data availability	Connect transactions with licensing, taxes, retribution, and dashboards
Service control	Command Center 112 and 37 CCTV points	Creates a basis for service and disaster-response monitoring	Link the Command Center with SOPs and response indicators
Citizen participation	OMI Channel and BETA AMBON social media	Provides feedback and complaint channels	Integrate complaint tracking with OPD performance assessment
Public services	Online population services and digital libraries	Improves basic-service access and digital literacy	Integrate service status, user data, and satisfaction evaluation
Environment and branding	Sound of Green, waste banks, Ambon City of Music	Links culture, environment, and tourism innovation	Develop DMS and environmental data integration

The SPBE integration model based on Smart City findings

Based on the conversion of Smart City findings, the strengthening model for SPBE governance in Ambon City consists of four core dimensions. The first is business process integration, namely the alignment of cross-OPD service procedures from request, verification, processing, approval, payment, complaint handling, to reporting. The second is data interoperability, namely standardised data, metadata, exchange mechanisms, security, and data ownership. The third is application and service integration, namely consolidation of sectoral applications. The fourth is digital performance accountability, namely the linkage of service data with OPD performance indicators, SAKIP/LAKIP, and supervision mechanisms (Estevez & Janowski, 2013; Luna-Reyes & Gil-Garcia, 2014; OECD, 2020).

The model positions Diskominfo as the technical and architectural orchestrator of SPBE, Bappeda as the connector between development planning and performance indicators, DPMPTSP and Disdukcapil as priority data-based service providers, BPKAD/BPPRD as managers of transaction and revenue integration, the Inspectorate as the guardian of accountability, and technical OPDs as service owners. Outside government, DPRD, universities, banking institutions, communities, MSMEs, and citizens remain relevant as collaborative

actors because SPBE integration concerns public governance, not only digital infrastructure.

Through this model, Smart City achievements do not remain a list of innovations. Electronic signatures, Command Center 112, QRIS, OMI Channel, digital libraries, waste banks, and Sound of Green become nodes in an SPBE ecosystem. Each node needs a data flow, SOP, responsible agency, performance indicator, and evaluation mechanism. This is the key difference between digital innovation and SPBE integration: innovation creates services, while integration ensures that those services are connected and accountable.

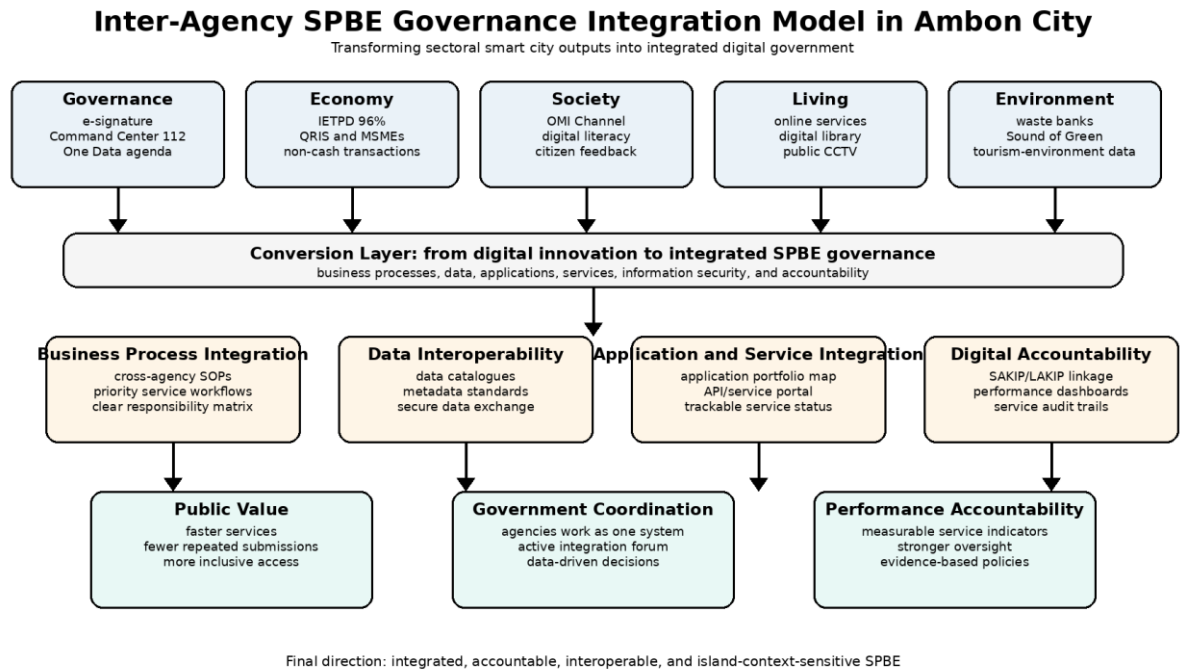


Figure 1. Inter-agency SPBE governance integration model based on Smart City Ambon findings

Integration barriers and strengthening strategies for 2025-2029

The Smart City findings reveal several barriers that are highly relevant to SPBE. First, inter-agency data integration remains incomplete. Second, digital capacity varies across OPDs, so the ability to manage applications, data, security, and service responses is uneven. Third, coastal connectivity remains a challenge for citizens accessing digital services. These barriers are common in smart city and e-government implementation, especially when technological projects are not matched by institutional reform, data governance, and human capacity development (Chourabi et al., 2012; Gil-Garcia & Pardo, 2005; Nam & Pardo, 2011).

Fourth, integrated regulation needs to be strengthened. The Smart City draft regional regulation can serve as an entry point, but SPBE also requires technical rules on architecture, application portfolios, data ownership, interoperability, information security, and cross-agency coordination forums. Fifth, tourism and environmental sectors require more advanced data systems, such as a Destination Management System and environmental sensors connected to the Command Center.

The 2025-2029 strategy should be gradual. The first stage is institutional arrangement through an SPBE integration forum, an application map, a data catalogue, and the selection of priority services. The second stage is standardisation of data and business processes for population administration, licensing, regional transactions, citizen complaints, and disaster mitigation. The third stage is integration of applications and service channels so that service status can be tracked across OPDs. The fourth stage is development of a digital accountability dashboard based on service data and citizen complaints.

Table 4. Barriers and strategies for strengthening SPBE integration in Ambon City

Main barrier	Evidence from Smart City findings	Risk for SPBE	Strengthening strategy
Fragmented data and applications	Digital innovations remain spread across several OPDs and service channels	Repeated verification, duplicated data, and non-end-to-end services	Data catalogue, application map, APIs, data-exchange rules, and metadata standards
Uneven digital capacity	Digital literacy of officials and citizens differs by agency, area, and generation	Slow adoption and inconsistent service response	Upskilling for officials, digital service teams, and assistance for citizens/MSMEs
Limited coastal connectivity	Internet access is uneven in parts of Ambon	Digital services may exclude island and coastal citizens	Public-private network partnerships and public internet for basic services
Weak integration regulation	Smart City regulation remains part of the strengthening agenda	Coordination depends on sectoral initiatives	Technical SPBE regulation, integration forum, and data-owner mandates
Tourism and environmental data not yet real-time	DMS and environmental sensors are not fully developed	Tourism and environmental policies lack current data	Integrate DMS, sensors, waste-bank data, and Command Center monitoring

Implications for public value and island governance

Strengthening SPBE integration has direct implications for citizens. Integrated services can reduce repeated data input, accelerate verification, clarify service status, and shorten bureaucratic distance. In Ambon's island-city context, this is crucial because citizens do not always have easy access to physical service offices. Integrated SPBE can reduce time and mobility costs, especially for coastal

and connectivity-constrained communities, thereby strengthening public value and digital inclusion (Twizeyimana & Andersson, 2019; United Nations, 2022).

SPBE also strengthens public trust. When complaints submitted through OMI Channel can be tracked, electronically signed documents can be verified, government transactions are digitally recorded, and Command Center 112 can support rapid response, citizens have stronger grounds for evaluating government performance. Public trust does not come from digital slogans. It comes from consistent, transparent, and traceable service experience.

For local government, SPBE integration creates opportunities for data-driven decision-making. Data on services, complaints, transactions, population administration, licensing, tourism, and environment can help government identify recurring problems, slow service points, areas requiring network intervention, or environmental programmes with measurable effects. Thus, SPBE becomes an organisational learning instrument, not just another collection of applications trying desperately to look modern.

CONCLUSION AND RECOMMENDATIONS

The findings show that Smart City Ambon has provided an empirical foundation for strengthening inter-agency SPBE governance integration. Achievements such as electronic signatures across OPDs, IETPD 96%, QRIS, Command Center 112, Ambon One Data, OMI Channel, digital libraries, waste banks, and Sound of Green indicate that a local digital innovation ecosystem has already developed. However, these achievements must be upgraded into a more integrated SPBE system through business process integration, data interoperability, application and service integration, information security, and digital performance accountability.

SPBE in this article is understood as the institutional development of Smart City. If Smart City Ambon demonstrates multiple innovations across six dimensions, SPBE functions to connect those innovations into a more structured, measurable, and accountable government system. The strengthening agenda should therefore focus less on adding applications and more on building SPBE architecture, data standards, cross-agency coordination forums, service-integration roadmaps, and data-based performance dashboards.

The main recommendations are as follows. First, Ambon City should strengthen SPBE integration regulation through technical rules connecting Smart City, One Data, information security, and performance accountability. Second, the city should select priority services for early integration, especially population administration, licensing, regional transactions, citizen complaints, and disaster response. Third, OPDs need a data catalogue, metadata standards, application portfolio map, and secure data-exchange SOPs. Fourth, the digital capacity of officials and citizens must be improved through continuous training and assistance. Fifth, Command Center 112 should be expanded into an integrated monitoring hub for services, complaints, disasters, tourism, and environmental data. These strategies can support an SPBE system that is inclusive, accountable, interoperable, and sensitive to Ambon City's island context.

This compact article has one limitation. It synthesises Smart City findings as a baseline for SPBE integration and does not yet measure the full maturity of each OPD through a formal SPBE index. Future research should conduct OPD-level SPBE maturity assessment, test data-exchange standards, examine user experience, and evaluate whether integrated services improve accountability and public value in measurable ways (Janowski, 2015; OECD, 2020; Vial, 2019).

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