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Exploration Organizational Interoperability in Smart Governance in Indonesia and Malaysia

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Abstract. Organizational interoperability increases efficiency, improves service delivery to citizens, and facilitates better decision-making. Achieving interoperability requires a holistic approach involving technical solutions, policies, procedures, change management, and the involvement of stakeholders, government officials, and the community. The objective of this research is to explore the interoperability frameworks that organizations use to share information and exchange data in intelligent governance. The involvement of stakeholders, including government officials, community members, and representatives in private sector organizations, has also been explored. This approach uses a multi-criteria decision analysis structure based on AHP (Analytic Hierarchy Process). The Nvivo app is then used to visualize connections and find themes and patterns. Additionally, SmartPLS (Partial Application Least Squares Structural Equation Modeling) is used to analyze comparisons of relations between countries. Key components explored from the interoperability framework include data signatures, exchange of data from one organization to another, data management procedures, data quality, processes business, identity management, and technical infrastructure (hardware, software, and networks that organizations use to share information and exchange data). The results of the study reveal that interoperability frameworks in Indonesia and Malaysia implement smart governance, which is carried out using existing standards and protocols or by adopting new regulations based on the demands of public services. Flexible, adaptive, and actionable framework over time in response to technological and organizational changes. So that the organizational interoperability work structure becomes inclusive and open to the involvement of all stakeholders, including the government, the commercial sector, and citizens. Citizens.

Keywords: Organizational Interoperability · Smart Governance · share information · exchange data

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1 Introduction

Today, almost all governments in the world are changing the way their services become remote and online public services and realizing that these two digital technology services can change the face of government administration allowing for more customized and proactive public services and enabling more innovative solutions to be provided (1). In fact, since the late 1990s, governments at all levels in Europe have launched electronic government projects to provide electronic information and services to citizens. (2). Then, since 2014, OECD (The Organisation for Economic Co-operation and Development) member states have officially adopted digital governance as a strategic driver to create an open, participatory, trustworthy public sector that brings together government and non-government actors (3).

Interoperability enables timely, efficient, and effective service completion, as well as the discovery of new, smarter, and more adaptive services (4). E-government architecture model for the deployment of interoperable systems from government to government. Responsiveness to risk is closely related and the main determinant is the dimensions of Organization, Management, and Interoperability (5).

In Indonesia (Bandung City) (which also won the Smart City Award 2015 held by the magazine Asia's Tech Ecosytem(6)), Smart City applications can form public trust by improving application quality, satisfaction, reliability and community empowerment. However, the number of people who use smart city applications is still small. Therefore, the culture of using such applications needs to be encouraged to help build citizen trust in the government and improve urban quality (7). Citizens need to be reassured that their data is protected, and confidentiality is ensured. Not only to convince the public of goodwill, but also to ensure the involvement of citizens in the success of smart city projects. Therefore, the state (government) needs to present a clear narrative about why the government needs to transform into a smart city or what might happen if the government fails to become a smart city (8).

2 Literature Review

2.1 Smart Governace

For much of the 20th century, the idea that a city could be intelligent was portrayed in the popular media as science fiction, but suddenly the potential for a city to be intelligent, even alive, has become a new reality (9). The smart city concept is increasingly popular, and almost all cities in the world label their cities as smart cities (10). Initially, this concept emerged as a response to the challenges of urbanization in the 21st century. Planning and building smart urban districts is an aim of the smart city concept, where technology is integrated into infrastructure and used to control and manage city functions innovatively (11).

Smart Governance according (12) reflected in aspects of community participation in government as well as services to the community such as its administrative functions. Smart governance is reflected through online public services, supporting infrastructure, and open government (government transparency) ((13). To observe smart governance,

there are 4 (four) indicators, namely, 1) participation in policy making, 2) online services (online procedures), 3) infrastructure (HR capabilities, wifi coverage, diversity of sensors), and 4) open governance (data sets and open data).

Smart governance: It is described mainly by effective and efficient public administration, quality of public services and and the participation of residents in making decisions about the city. Information and communication technologies are used in e-administration, to improve democratization and services delivery, as well as support decisions made by public authorities (14).

2.2 Organization Interoperability

The concept of interoperability was used for the first time in the military field circa 1977, defined as "The ability of a system, unit or force to provide services and receive services from other systems, units, or forces and to use the services that are exchanged to enable them to operate effectively together. Same."(15), (16), (17). Accordingly, this concept is also interpreted as interoperability is the ability of two or more systems or components to cooperate despite differences in functionality, language, and implementation framework (18).

Interoperability is characterized as an organization's ability to interact with many other organizations across data, systems, and processes in order to achieve common goals (19). Interoperability solutions are critical to enabling the transfer of data and assets for the deployment of innovative applications, both within private enterprises and government agencies. Interoperability which aims to enable the system to connect services and open the possibility of data exchange to provide better services to stakeholders. Interoperability can increase advanced functionality for future applications and revolutionize the design principles of technology governance (20).

Aspects (attributed) Organization Interoperability determines the level (level) of interoperability of smart government. There are 9 (Nine aspects that are the indocators of interoperability organizations, namely: 1) Design Process, 2) Government Process Alignment, 3) Compatibility with policies and regulations, 4) Interaction with users, 5) Service Consumption, 6) Reuse and sharing, 7) Interoperability at national-international level, 8) Change Management, and 9) Governance (21).

3 Research Methods

This approach uses a multi-criteria decision analysis structure based on AHP (Analytic Hierarchy Process). The Nvivo app is then used to visualize connections and find themes and patterns. Additionally, SmartPLS (Partial Application Least Squares Structural Equation Modeling) is used to analyze comparisons of relations between countries. Key components explored from the interoperability framework include data signatures, exchange of data from one organization to another, data management procedures, data quality, processes business, identity management, and technical infrastructure (hardware, software, and networks that organizations use to share information and exchange data).

4 Discussion and Results

Organizational interoperability in smart governance refers to the ability of different organizations to exchange information effectively and efficiently and coordinate their activities to achieve common goals in an intelligent governance ecosystem. Smart governance involves the use of advanced technology and data analytics to improve decision-making, increase transparency, and increase citizen participation in government activities.

In Indonesia and/or Malaysia, interoperability is often associated with other terms, such as interconnectivity, Connectivity, Openness, Communication, Data exchange, Data integratio, Data collaboration, atau Data sharing. Figure 1 shows the past year's search interest in the word's "interoperability" and "data sharing" in google trends.

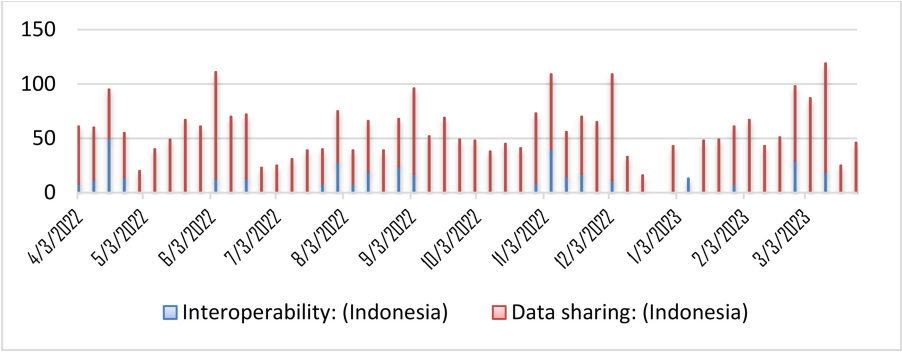

Fig. 1. Interest in searching for "interoperability" and "data sharing" in Indonesia in the last year (Source: Google Trends)(22)

Similarly, in Malaysia, search interest for the words "interoperability" and "data sharing" appears in (See Fig. 2).

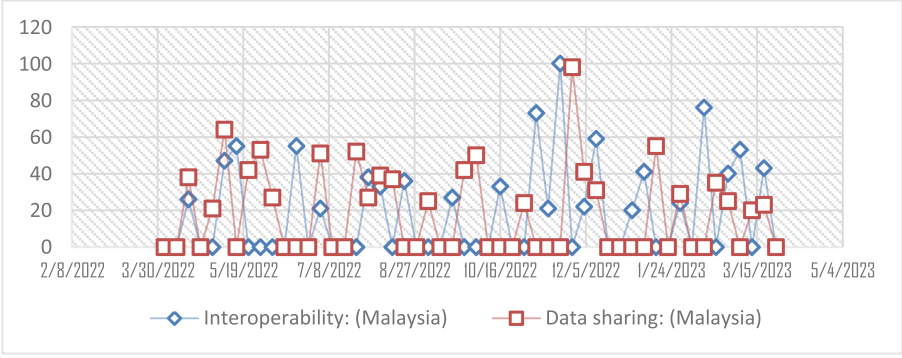

Fig. 2. Interest in searching for "interoperability" and "data sharing" in Malaysia in the last year (Source: Google Trends)(23)

Achieving interoperability between public administration in Indonesia and Malaysia is an important factor for efficient, cost-effective, and transparent public service delivery. However, there are many challenges and limitations that must be faced, due to technical, semantic, legal, and organizational factors. The importance of organizational interoperability to information integration has been known for many years. Today, it is still a challenge and is undoubtedly gaining momentum due to the complexity of organizational aspects as public organizations move towards inter-organizational governance as well as due to the enforcement of new policies such as One Data and Open Data.

Di Malaysia, interoperability (perkongsian data) means the disclosure of data from one or more of the organizations to another, or the sharing of data between different departments/divisions within an organization.

Design Process Interoperability

The design process in interoperability requires a series of stages to ensure that different systems or organizations can work together smoothly and effectively. In Malaysia, the design of the interoperability process is contained in the achievement strategy interoperability (*pengkongsian data).* The strategy formed is the result of the combination of each core and the EDGE framework (See Table 1). This is to ensure that the strategy under each core is comprehensive. The aim is to create an integrated and conducive data sharing environment in Malaysia to support data value creation for the public sector, private sector, and the people.

Table 1. Strategy Achievement of Interoperability in Malaysia (24)

Framework	Purpose	Strategy Direction
E Establish	Basics of control mechanisms and structures necessary for a conducive data sharing environment	Accountability and control mechanisms to strengthen the transmission in the system based on related acts/policies
D Develop	Existing controls and structures to be empowered to enable more conducive data sharing	Guidelines and resources to ensure smooth access, use, control, and governance rights for all data types
G (Guide)	Public sector, private sector, and people on proper understanding for data sharing	Stakeholders in intra-sectoral/cross-industry or sector data sharing for value creation
E Enable	Public sector, private sector and people to share data for value creation, especially through innovation	An environment that promotes the construction of data governance strategies and effective implementation plants

To realize interoperability, Malaysia built an interoperability management platform, namely Malaysian Government Central Data Exchange (MyGDX) A data sharing platform consisting of a collection of standards, tools, components, repositories, and registries that enable the sharing of data from various agency sources to the target agency in an agreed data format. MyGDX is a data sharing platform that provides data integration services across agencies to facilitate the provision of End to End (E2E) online services.

Currently, in Malaysia MyGDX users are Government agencies registered with MyGDX consisting of federal, state, local government, and statutory agencies. The implementation of integration through MyGDX began 25 May 2018. As of February 2021, a total of 120 Application Programming Interface (API) has been developed for data sharing purposes involving 26 public sector agencies.

In Indonesia, Data Interoperability Services (LID) are services provided by certain agencies in accordance with their duties and authorities in order to share Data between Electronic Systems using certain mechanisms to ensure reliability, accountability, and security. Data interoperability or data and information exchange services is the process of sending and receiving data or information from two or more devices connected in a network, both local and global such as the internet.

Data exchange procedures in Indonesia are carried out by 1) Electronic Data Interchange/EDI can be done by sending documents in electronic format over a computer network. 2) System-to-System Data Exchange can be done by connecting one system to another system through a computer network. 3) Device-to-Device Data Exchange can be done by connecting one device to another device through a computer network or without a computer network, and 4) Application-to-Application Data Exchange can be done using applications that support data exchange.

5 Conclusion

To ensure that various systems or organizations can coexist harmoniously and productively, the planning process for interoperability necessitates a number of steps. In Malaysia, the achievement strategy interoperability contains the design of the interoperability procedure (pengkongsian data). Malaysia established the Malaysian Government Central Data Exchange (MyGDX), an interoperability management platform, to accomplish interoperability. MyGDX is a platform for sharing data that consists of various standards, tools, elements, repositories, and registries that permit the sharing of data from various agency sources to the destination agency in an accepted data format.

Interoperability frameworks in Indonesia and Malaysia implement smart governance, which is carried out using current standards and protocols or by implementing new laws based on the demands of public services. An adaptable, practical, and flexible framework that can be adjusted to changing organizational and technological requirements. so that the organizational interoperability work framework can be used by all stakeholders, including the government, the business community, and citizens.

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