Understanding interagency relationships in the sharing of government data: a meta-analysis

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Abstract

Introduction. *This paper reports on a research study that aimed to understand and qualify the influences of interagency relationships on interagency government data sharing (IDS).*
Methods and Analysis. *Using a meta-analysis approach, 76 interviews previously collected from three city governments in China were analysed under the theoretical lens of a unified social network theory of inter-organisational relations (IOR).*
Results. *The meta-analysis shows that interagency data sharing is influenced by the constitution and determinants of interagency relationships. A conceptualisation of the findings indicated that tensions between government agencies are the core cause of the lack of interagency data sharing. Therefore, effective management of interagency tensions should become a central strategy for enhancing interagency data sharing.*
Conclusions. *This paper provides a novel perspective on the conceptualisation of interagency data sharing problems and a new approach to strengthen interagency data sharing in practice.*

Keywords*: data sharing, inter-organisation relations, government agencies, government data, public sector*

Introduction

Today's organisations increasingly engage in complex inter-organisational networks and data-centric collaborations (Jagals and Karger, 2021). In recent years, to support the development of smart government and smart public services, government agencies are expected to release, open, and share their data with one another. Interagency government data sharing (IDS) is essential to the collaboration, coordination and achievement of collective success across various government agencies (Yang, 2014).

Nevertheless, interagency data sharing is highly complex, often ineffective and generally problematic. Researchers from many countries have attempted to investigate and resolve the lack of interagency data sharing among government agencies, mainly by adopting either a technological or an organisational perspective. While one group of researchers believes that interagency data sharing can be significantly improved by exploring, designing, and implementing inter-organisational technological platforms, the other group claims it is almost futile to attempt to resolve interagency data sharing problems solely from a technological perspective. Instead, an organisational view is more comprehensive and appropriate when studying the problem as human behavioural, managerial, relational, social and cultural perspectives are needed in addition to the technological perspective (Zhou, et al., 2021).

A growing body of evidence implies that government agencies are more likely to share data when embedded in long-term collaborative, trusting, and mutually beneficial relationships (Gil-Garcia and Sayogo, 2016; Curtis and Edwards, 2019). Determinants of interagency data sharing success include the establishment, maintenance, and management of interagency relationships (Wang, 2018; Zhou, et al., 2020). However, there is scant research investigating the lack of government interagency data sharing from the perspective of understanding and managing interagency relationships. Thus, this research aims to understand the influences of interagency relationships on government interagency data sharing. The following research question was posed:

- How do interagency relationships influence interagency government data sharing?

Research Methodology and Processes

This research adopted a qualitative meta-analysis approach. Meta-analysis is an analytical process of integrating, comparing, and synthesising qualitative research findings to generate interpretive results (Erwin, et al., 2011; Hareket and Kartal, 2021). A meta-analysis combines the research findings from multiple qualitative studies to generate a more robust interpretation (Willig and Wirth, 2018; Hareket and Kartal, 2021). In this study, three previously completed case studies investigating interagency data sharing problems in China's government were drawn on. The case studies were recently completed by the authors of this paper.

- Case study 1 (October-November 2018) aimed to identify and understand barriers to interagency data sharing. The government of City X was selected as the case study, in which 18 government leaders, public servants and IT specialists were interviewed using a semi-structured interview question script. City X is one of the largest cities in China, with a population of close to 10 million and a GDP of more than 1,200 billion CNY. The analysis of interview data pointed to 19 interagency data sharing barriers, which emerged in four theoretical themes: external environment, interagency partnership, organizational readiness, and individual motivation.
- Case study 2 (February 2020-January 2021) aimed to explore and understand how the characteristics of data influence government interagency data sharing. The case study was carried out in City Y, a typical small-scale city with a population of 1 million and a Gross domestic product (GDP) of slightly over 37 billion Chinese Yuan (CNY). Twenty-three government workers from 18 different administrative bureaus were approached and interviewed. The analysis revealed that data could become sticky during the processes of interagency data sharing. Data stickiness represents the incremental difficulty involved in

transferring a given unit of data to a specific data seeker in a useable form. Moreover, the analysis identified five factors that cause data stickiness in government interagency data sharing: data absorptive capacity, data sharing willingness, data sharing ability, data articulatability, and data residence.

- Case study 3 (June-November 2021) aimed to investigate how the behaviours of individual government workers influence interagency data sharing. The case study comprised interviews with ten leaders, officials, and data workers from the government of City Z. City Z is a typical medium-sized city in China with a population of 5 million and a GDP of around 640 billion CNY. The case study shows that government workers demonstrate territorial behaviours during the processes of interagency data sharing, and constantly protect and reinsure the ownership of data created within the territory of an agency. There were four types of territorial behaviours identified: identity-oriented marking behaviour, control-oriented marking behaviour, anticipatory defending behaviour, and reactionary defending behaviour. All these behaviours can significantly hinder government interagency data sharing.

A qualitative meta-analysis approach was employed. This approach is particularly useful for suggesting a higher-order theory, as Peters et al. (2020) proposed. Therefore, in the meta-analysis, results from the three case studies were re-examined, synthesized, and conceptualised. Specifically, the meta-analysis examined existing coding structures and quotations instead of going back to the original interview data from the beginning. Similar strategies were adopted in a number of studies (e.g., Notz, 2005; Zhou, 2017), and have been proven effective and useful in social science research.

To facilitate the coding process, a unified social network theory of inter-organisational relations (IOR) was adopted. Inter-organisational relations provided a preliminary theoretical basis and lenses critical for the re-analysis and examination of interview data. Inter-organisational relations believes that organisations are socially embedded in inter-organisational networks through inter-firm relationships (Ekanayake, et al., 2014). Inter-organisational networks typically represent a dyadic relationship with two nodes and a link. An organisation in the network can be conceptualised as a node (or an actor), which relates to other nodes in the process of value creation. An inter-organisational relationship is conceptualised as a *tie* of connectedness, collective action, and reciprocity (Ekanayake, et al., 2014).

Therefore, a qualitative coding strategy was practised around two central themes: the constitution of interagency relationships and relational determinants of interagency data sharing. Three coding techniques were operationalised: open, axial, and selective coding. Open coding was used to identify new concepts when examining the quotation excerpts. When a new concept emerged, it was compared with existing codes to confirm if it was new or could be merged with one or more existing codes. Axial coding built horizontal and vertical connections between the emerging codes. Selective coding systematically checked and validated the findings against the data.

Research Findings

Research findings are presented and discussed in this section. To support the discussion, interview statements from the case studies were used.

Constitution of Interagency Relationships

China's government adopts a network structure, which prescribes formal interagency relationships fundamental to interagency collaboration, communication and coordination. The network structure consists of TIAOs and KUAIs, which literally mean *branch* and *block* in English. TIAOs refer to the vertical connections between agencies belonging to the same functional administrative system, whereas KUAIs represent horizontal connections between agencies of different functionalities that reside at the same administrative level, i.e., central ministries, provincial-level, city-level, and district/county-level. Respondents asserted that the overall structure of China's government is *in a very large-scale and coherent network shape* (Case 2), which *probably is unique around the world* (Case 3).

However, as shown in the meta-analysis, the government structure can be *overly rigid* (Case 1), *highly complex* (Case 2), and *the biggest problem for interagency data sharing* (Case 3). The policies and procedures of every agency are designed to respect and protect the organisational boundary and have been evolving for decades. These boundaries severely hinder interagency data sharing and interagency collaboration, as they separate agencies and move them away from collaboration. They also create a sense of territory, *perceived ownership of what is ours and what is theirs* (Case 2), and rivalry relationships between agencies. Data are valued as one of the most critical assets for protecting an agency's territory, power, and status. Therefore, interagency data sharing is highly challenging.

The meta-analysis also revealed that interpersonal relationships could be important to interagency data sharing. While interpersonal relationships can be formal or informal, informal relationships, such as *friends and old colleagues* (Case 1), are probably more useful and effective for enhancing interagency data sharing. In this case, employees become boundary spanners and enact critical roles in interagency data sharing. Furthermore, an interview respondent raised that interagency data sharing can be even easier *when the leaders of agencies can maintain good personal relationships* (Case 1).

Determinants of Interagency Relationships

The meta-analysis identified seven determinants of interagency relationships that either positively enhances interagency collaboration and encourage interagency data sharing or negatively affect collaboration by exacerbating interagency rivalry and preventing interagency data sharing.

Intention to help people. Government employees collaborate and share data to *help people* (Case 3). The real goal of interagency data sharing is for *the benefit of people* (Case 2), as claimed by a few respondents. One asserted that interagency data sharing is an inevitable basis for *providing good and convenient services to people, and helping people in resolving their daily problems with their lives* (Case 3). It can be perceived that the expectation of serving and helping people is a critical determinant of interagency relationships, presenting positive effects that bring government agencies together to work on people-oriented solutions collaboratively.

Political determination. Several interview respondents claimed that interagency data sharing is a high-level national strategy implemented by China's State Council, which has published a series of political documents at the national level demanding *the promotion of data and information sharing between government agencies* (Case 1). These interagency data sharing policies clearly demonstrate the strong determination of the central government. They are *invisible and powerful hands* (Case 2), pushing government agencies to share data with each other. Nearly all respondents implied that they feel compelled to participate in interagency data sharing.

Interagency partnership. The conditions of interagency partnership can strongly influence interagency data sharing. The meta-analysis revealed substantial interagency competition for institutional power, status, and reward from superior agencies. Data are deemed one of the most critical resources, essential for winning and securing competitive advantages. Therefore, agencies are most likely to protect and guard their data against sharing. An interview respondent stated that *the more data are in our control, the more [institutional] power we are likely to get* (Case 1).

Data ownership. Nearly all agencies consider *the data they collected and stored as their own* (Case 2). Considering that data are important assets with both operational and strategic value, agencies are more likely to defend their ownership of data unless sufficient incentives, rewards, and data reciprocation agreements are provided. For instance, one respondent stated: *for so many years, people have this self-defined ownership [over data]; The data are mine, and thus they are not for you* (Case 1).

Organisational readiness. Both leaders and employees of an agency need to be fully prepared for interagency data sharing. Leaders and decision-makers must fully commit and support interagency data sharing, knowing and accepting that interagency data sharing might not bring immediate and major rewards in return. Moreover, interagency data sharing training programs and sessions should be offered to government employees, who need to possess adequate knowledge and skills, and be fully

motivated to work for interagency data sharing. Nonetheless, as shown in the three case studies, neither the leadership nor the employees can be considered ready for interagency data sharing.

Financial readiness. Interagency data sharing can be very costly as it requires overwhelming and consistent financial investments. However, as the central government provides no additional and designated funding to support interagency data sharing, individual agencies must use their own present budget, which *has already been stretched to the limit* (Case 2). Some respondents claimed that interagency data sharing is *not realistic* (Case 2) and *virtually impossible* (Case 3) simply because interagency data sharing is designed *for people from other agencies to take advantage of our own data and we have to pay for that* (Case 2).

Technological support. The meta-analysis showed a significant lack of technological support and interconnected data sharing platforms. At present, individual agencies develop their own information systems by *contracting different system providers* (Case 2) solely based on their own interests and requirements. Therefore, the systems are *architecturally and technologically incompatible* (Case 2), making it *very difficult to achieve interconnection* (Case 3).

Discussion

In addition to identifying the constitution and determinants of interagency relationships, a conceptualisation of the research findings was devised by relating the codes that emerged from the qualitative analysis to the inter-organisational relations theory proposed by Ekanayake et al. (2014). The inter-organisational relations theory offers a novel perspective to interpret, understand and theorise government interagency data sharing, pointing to a conceptual model (Figure 1) that demonstrates explanatory power in interpreting and understanding government interagency data sharing problems.

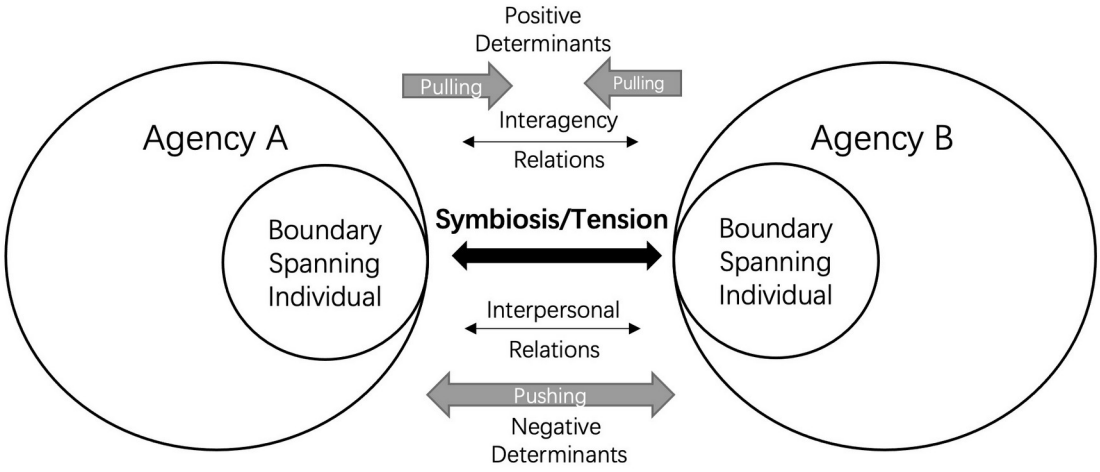

Figure 1: Influences of interagency relations and determinants on government interagency data sharing

The meta-analysis indicated that stable and reliable interagency relationships are indispensable for interagency data sharing. Figure 1 shows dyadic interactions between two government agencies as two individual nodes in the network of government agencies. The two nodes are connected by a combination of two types of relationships.

1. Interagency relationships are determined by the TIAO-KUAI network structure of China's government.
2. Interpersonal relationships occur between individual employees who enact boundary-spanning roles.

Determinants of interagency relationships can create positive or negative effects. The positive and negative effects operate in opposite directions and result in a dynamism of pushing and pulling on the relationships between government agencies. Positive effects pull agencies close, and conditions are created in which agencies are more likely to participate in interagency data sharing. By contrast, negative effects push agencies away from collaboration and result in distrust, conflict, and rivalry.

The dynamism of pushing and pulling results in two different interagency statuses: symbiosis (caused by stronger pulling forces) and tension (caused by stronger pushing forces). Symbiosis is conducive for interagency data sharing, where agencies engage in interagency data sharing through predetermined and mutually agreed terms, procedures, and communication channels. Tension is conceptualised as the main cause of interagency data sharing problems and needs to be meticulously managed and prevented. Hence, managing tension should be a central strategy for promoting interagency data sharing by adopting at least two perspectives: strengthening interagency and interpersonal relationships, and managing the determinants of interagency relationships by mitigating negative determinants and reinforcing positive ones. Although the implications were clearly reflected in the findings of the conceptualisation, they need to be further studied, validated, and tested in resolving real interagency data sharing problems in future studies.

Conclusion

This paper presents a meta-analysis that aimed to understand the influences of interagency relationships on government interagency data sharing. The meta-analysis showed that the constitution and determinants of interagency relationships could strongly influence interagency data sharing. The conceptualisation of the meta-analysis findings indicates that tension is the main cause of interagency data sharing problems. Therefore, successful interagency data sharing needs to be developed based on effective management of interagency tension. The findings presented in this paper are drawn from a meta-analysis of three previously completed case studies. Future studies should aim to validate, verify and further develop conceptual propositions by collecting primary data from the field.

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