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The relational impact of open data intermediation: Experience from Indonesia and the Philippines

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Introduction

Understanding the impact of open data initiatives requires in-depth investigation of the relationships between data publishers, intermediaries and end-users of open data (Davies et al. 2013). This relationship is central in justifying whether the emerging impacts of open data are sustainable and stable, or whether they are vulnerable due to the absence of intermediary groups (Van Schalkwyk et al. 2016a). However, there is still a lack of understanding of how these relationships change as a result of the implementation of an open data initiative.

This research aims to understand the impact of open data projects in terms of changes in the relationship between an intermediary organisation and a data supplier (government), and between the intermediary and the end-user. The primary research question put forward in this research is: How does the participation in an open data project change the working relationship between intermediary organisations, data suppliers and end-users of open data?

Empirical data was gathered on a citizen-led budget transparency open data project (OD4Transparency), an initiative run by the Open Data Lab Jakarta, in two countries: Indonesia and the Philippines. Several qualitative data collection techniques were used in the case-study approach, including in-depth semi-structured interviews and document/archival analysis of the project documentation, reports, project websites and social media.

The results of the study provide evidence that support the findings of prior studies regarding the impact of intermediary organisations in open data initiatives. In complementing prior studies, this research documents the best practices from the case studies on how participation in an open data project changes the working relationship between the intermediary and other key

stakeholders. This chapter shows how trust among intermediary and other stakeholders developed over the course of the project while at the same time introducing synergies in pursuing government transparency and accountability. Both trust and a synergistic relationship contribute to the institutionalisation of open data in government. As for the relationship with end-users, the study shows that continuous interaction is key to improving scalability and sustaining public awareness. Finally, the study shows that improving public participation begins with the effective use of open data to address those socio-economic and development issues affecting communities.

Open data intermediaries

An open data intermediary ‘is an agent positioned at some point in a data supply chain that incorporates an open dataset, is positioned between two agents in the supply chain, and facilitates the use of data that may otherwise not have been the case’ (Van Schalkwyk et al. 2016a). From this definition, previous studies have described different roles to intermediaries in open data ecosystems. First, intermediaries are critical to ensuring data use, especially in developing countries where awareness regarding the existing data may be low, and where the capacity of users to make use of and derive results from data are limited (Cañares & Shekhar 2016, Chattapadhyay 2014). Second, intermediaries can play an important role as advocates for open government data. They can play a significant role in increasing visibility of the open data movement and in advocating for better transparency in government (Cañares et al. 2014). Intermediaries can also play the role of convener or catalyst by, for example, bridging the relationship between data supplier and potential end-users (Andrason & Van Schalkwyk 2017). Intermediary organisations need not necessarily be open data savvy; there are cases where local chiefs, community centers, churches and mosques function as intermediaries between governments and citizens (Mutuku & Mahihu 2014).

Therefore, intermediaries are vital to both the supply and the use of open data to translate data into information, knowledge and workable action. Prior research has underlined the important role (both technical and social) of intermediaries in ensuring ‘effective use’ and re-use of data as well as in ensuring a match between data supply and demand (Gurstein 2011). There are, however, several steps that need to be taken before open data interventions can deliver long-term political, social and economic impacts (Craveiro et al. 2014, Davies 2014, Zuiderwijk & Janssen 2014). Moreover, the interaction between intermediaries with both data suppliers and data users is necessary to transform data into measurable outcomes and impacts. The availability of good-quality datasets, the appropriate legal frameworks and technical skills are all important. Integration of these resources can transform datasets into several usable outputs. Nevertheless, whether the outputs drive home their

intended impact will depend on how the outputs are used to change practices, behaviour and systems within governments (Van Schalkwyk et al. 2016b), and also among citizens and citizen groups.

Research design

The choice of approach and method is shaped by the research aim and associated research question (Neuman 2006). The research employed a qualitative approach using a case study method, which is suitable because the nature of the study required the inclusion of the context in which the study takes place and an in-depth understanding of the phenomenon to be observed (Yin 2009).

Case study 1: Perkumpulan IDEA Indonesia

The OD4Transparency project in the city of Yogyakarta aims to encourage public participation in monitoring city budget by providing budget data in a machine-readable format, allowing for further analysis by the public. The project also produces tools and budget analysis, in both online and offline formats (e.g. the budget newspaper).

The city budget open data portal was launched in February 2015. Before the launch, several preparatory activities were conducted by Perkumpulan IDEA, including data requests from the city government, data scraping and data cleaning. At the time of writing, the portal provided budget data for the fiscal years 2012 to 2014 for all ten government offices, including (1) the regional tax and financial management office, (2) the department of health, (3) the regional public hospital, (4) the department of education, (5) the settlement and regional infrastructure office, (6) the department of social welfare and labour, (7) the department of trade, industry, cooperatives and agriculture, (8) the market management office, (9) the tourism office, and (10) the women and community office. There is also provision to download the data in several open formats such as JSON, .sql, .csv and .xls. In addition to providing budget data, the portal also offers several analyses and visualisations of budget data. Examples of analysis include revenue trends, expenditure trends (totals and by government office/department) and trends of the budget balance.

Besides online formats, the analysis of budget data was also disseminated in print in the form of a two-page newspaper called the 'budget newspaper'. A total of 2500 copies of the budget newspaper were printed and distributed to CSOs, individuals and communities in several sub-districts in the city of Yogyakarta. The budget newspaper also contains illustrations to aid readers in their understanding of the analysis presented.

In this project, Perkumpulan IDEA is the open data intermediary. They have been advocating for transparency, participation and local budget accountability for almost ten years. Perkumpulan IDEA works closely with the city government,

particularly the regional tax office and financial management (*Dinas Pendapatan Daerah dan Pengelolaan Keuangan [DPDPK]*). DPDPK is the data supplier. The DPDPK provided city budget data for the years 2012 to 2014, including budget realisation data for the year 2012. In disseminating the results, Perkumpulan IDEA worked with several CSOs and individual users who are the end-users of open data. The CSOs work on various issues including women and reproductive health, children, disability, and community information. Individuals who have an interest in the city budget were also invited to participate in the project.

Case study 2: E-Net Philippines

The E-Net Philippines is a network of CSOs in the Philippines working on education reforms to ensure that quality education becomes a basic human right for all. Its main activities are focused on education financing, strengthening of alternative learning systems and civil society partnership with governments to achieve better education outcomes.

E-Net Philippines advocates for better use of the Special Education Fund (SEF). These funds are administered by local school boards (LSB), of which 40% of the members are from civil society. The SEF can be used to meet the supplementary needs of the public-school system. Funds are equivalent to 1% of the assessed value of every real property and collected together with property taxes paid to the local government.

Through this project, E-Net sparked the development of a process where LSBs can monitor the budgeting and utilisation of the SEF, using open data made available through the Full Disclosure Policy Portal (FDPP). The FDPP is a government portal where local government units are mandated to upload plans, budgets, financial reports and other related financial documents in machine-readable formats. Their pilot project took place in two sites in Northern Mindanao, namely Kidapawan and Alamada.

Before this project, monitoring of the SEF in the pilot sites was very low due to lack of awareness and information on the role of LSBs, and the lack of data available to be used for monitoring the use of the funds. Currently, local government units are required to post SEF utilisation reports on the FDPP, and civil society members can access the report to monitor spending. With increased awareness on these topics, more than 100 CSO members of the school boards from the two municipalities are now in a better position to monitor the use of public funds and to ask local governments questions regarding how the funds are used to improve education outcomes at the local level. With access to data and knowledge on how to analyse the data, CSOs feel more empowered to engage with government to discuss their demands for better spending on education. To document lessons learned from this process, E-Net is currently preparing an Open Data and SEF Toolkit that LSBs can use in ensuring the transparent utilisation of the education budget.

Several qualitative data collection techniques were utilised, including in-depth semi-structured interviews and document/archival analysis (project documentation, report, website and Twitter/Facebook).

A semi-structured questionnaire was used to gather data from selected participants within the (1) intermediary organisation, (2) government agencies as the suppliers of data, and (3) CSOs and citizens as end-users. Participants were identified together with Perkumpulan IDEA and E-Net. The case study participants are listed in Table 1. Individual (one-on-one) interviews employed in the case study allowed for a detailed examination of each individual’s (i.e. participant’s) opinion about the phenomenon under study (Kvale 1996).

Table 1 Case study participants

Stakeholders	Position and affiliation (Perkumpulan IDEA, Indonesia)	Position and affiliation (E-NET, Philippines)
Data supplier	Head of the regional tax office and financial management City Government of Yogyakarta: Section head, financial management City Government of Yogyakarta: Regional tax office and financial management	Chair, Committee on Education of the Local Government Unit (LGU) Kidapawan Local school board member of LGU Kidapawan
Intermediary	Perkumpulan IDEA Executive Director Programme coordinator for OD4Transparency project Programme staff	E-Net Philippines Staff members Members of the Board of Trustees
End user	CSOs: Sapda ¹ (Sentra Advokasi Perempuan, Difabel, dan anak) Komunitas Angkringan Yogyakarta ² KMIPY (Koalisi Masyarakat Informasi Publik Yogyakarta); CRI ³ (Combine Resource Institution); CIQAL ⁴ (Center for Improving Qualified Activity in Life People with Disabilities); Aksara ⁵ Individual users: Archival consultant, lecturer, housewives (2), lecturer/activist	Participants of the two-day workshop on special education fund (March 2015) from the CSO community

Notes

- 1 <http://www.sapdajogja.org/>
- 2 <http://angkringan.web.id/>
- 3 <http://www.combine.or.id/>
- 4 <http://ciqal.blogspot.co.id/>
- 5 <http://www.aksara-jogja.net/>

In addition to the semi-structured interview, this study used document analysis as a secondary source of information. These secondary sources serve a data triangulation purpose to corroborate and augment evidence obtained from the interviews. The sources include (1) project proposals and annual progress reports, (2) formal studies or evaluations of the same cases, (3) news clippings and other articles appearing in the media or newspapers, (4) blog posts and website, and (5) Twitter and Facebook posts.

In the analysis stage, the data were analysed according to the themes emerging from transcripts of the interviews and other data sources. The focus of data analysis is to discover regularities and patterns within the empirical data with an established rigor to answer the research question (Miles & Huberman 1994).

Findings

This section discusses the impact of the implementation of the OD4Transparency project on several aspects concerning stakeholders' relationships in open data initiatives. The first three sub-sections review the impact of project implementation on the relationship between the data supplier and the intermediary. The last two sub-sections present the findings related to the impact on the relationship between the intermediary and the end-users.

Opportunity to build trust

The open data initiatives had the potential to create a new space for government and civil society organisations to work together in building trust. The trust-building process develops as each stakeholder understands what constitutes the open data project. The project also creates an opportunity for each stakeholder to share their prior experiences.

At Perkumpulan IDEA, the evidence from the case study reveals that prior to OD4Transparency project, government officials at the DPDPK had fears about the integrity of data. As a result, DPDPK always provided the data in hardcopy or PDF to whoever requested the data. The head of DPDPK indicated that once he learned more about the project and followed the activities organised by Perkumpulan IDEA, none of the original concerns materialised.

Besides an understanding of the current project, knowledge about prior activities and the track record of the organisation contributed to building trust between both parties. Perkumpulan IDEA's OD4Transparency project is the first project in ten years done in cooperation with the city government of Yogyakarta. However, government officials commented that they have known Perkumpulan IDEA for several years and understood the credibility of the organisation.

At E-Net Philippines, the LGU acknowledged the challenges in implementing the open data initiative, even within the LSB. It also realised that CSOs, like E-Net, should be seen as connectors and promoters of education and should operate further downstream to explore structures that can be used for monitoring and evaluation, and to inform them how to hold the government accountable. An example of such a downstream structure is the Parents-Teachers Association.

One of the outputs of the open data workshop facilitated by E-Net was a plan drafted by the participants detailing what can be done to promote open data on the SEF. Given the reality that LGUs are not conscious of how specific budget

allocations should be spent and hence how budgets may be diverted, one of the measures formulated was a directive on the proper use of the SEF which could then serve as a ‘bible’ for the LGU to follow. In the workshop, it was explained that there are only certain projects which can be funded by the SEF, as specified by law (for example, for school improvement but not for the travel expenses of senior school administrators). To date, the LGU claims significant success. They have curtailed the inappropriate use of the SEF and identified additional subsidies for teachers and students. A strict implementation of the RPT collection and information, education, communication (IEC) campaigns were also successfully implemented to reduce the number of delinquent taxpayers.

LGU Kidapawan is open to CSO participation as it considers the number of CSOs in the City Development Council (CDC) as its barometer for maximum citizen participation. The CDC of LGU Kidapawan allows 20 CSOs as official members but urges others to participate as observers. It recognises the critical role of E-Net as a leader in education issues. It encourages E-Net to sit in the CDC and be part of the planning processes.

Some politicking is inevitable. A case in point is the LSB composition which mandates for a representative from the Parents-Teacher Association and a non-teaching personnel representative; however neither was rightfully represented. This was corrected later on through creative campaigning and the work of the advocates for transparency. This demonstrates the evolving landscape of the LSB in the LGU. As a whole, what helped in the struggle for transparency in the budgeting process and in advocating for open data, was awakening the sectors and consulting with stakeholders, such as putting in place the rightful composition of the LSB.

Synergy to pursue government accountability and effectiveness

Both case studies also reveal that open data projects can enable synergy among all stakeholders to pursue government accountability and effectiveness. This was accomplished through the availability of a new communication channel for information exchange that allows for public participation in the monitoring and evaluation of the governance process.

In the case of Perkumpulan IDEA, government officials noted that budget transparency, including publication of budget data, had been their priority. Several regulations concerning publication of budget data include:

- Regulation of the Minister of Home Affairs Number 13 of 2006 regarding Guidelines for Management Regional Finance.
- Law No. 14 of 2008 on Disclosure of Public Information.
- Instruction of the Minister of the Interior of the Republic of Indonesia Number 188.52/1797/SJ dated May 9, 2012 on Enhancing Transparency Budget Management Area.

The city government of Yogyakarta also has an action plan for eradicating corruption (*Rencana Aksi Daerah untuk Pemberantasan Korupsi* [RADPK]) with one of the action points being to provide budget data in a transparent way. For this purpose, the government has utilised several channels of communication. Publication of the budget data on the official government website has been done continuously since 2012. Responses from citizens are channeled through the (1) Musrembang (*Musyawarah Rencana Pembangunan*/Multi-Stakeholder Consultation Forum for Development Planning); (2) UPIK' (*Unit Pelayanan Informasi dan Keluhan*/Information and Complaints Service Unit) where citizens can send queries via SMS, phone or the website; and (3) *Walikota Menyapa* (Mayor Greets), a weekly local radio talkshow featuring the mayor of the city.

However, the head of DPDPK admitted that publication of the budget data is still far from effective. He noted 'we also tried to publish APBD data to the public. But for me, it (publication) is not interesting because it is still very narrative. All this time, related to the budget, the public only knows the value of the budget alone. The public does not know about the government's priorities. For me, the publication was not effective. So when Perkumpulan IDEA came up with this project, to provide the data in different ways, we certainly agreed.'

The initiative to publish budget data in machine-readable formats on an online portal and in the printed budget newspaper was seen by the city government of Yogyakarta as an innovative way to provide budget transparency to the public.

Perkumpulan IDEA also noted that the OD4Transparency project has allowed for synergy between government and CSOs to change how the government used the data and presented it to the public.

Similarly, E-Net views the OD4Transparency project as an opportunity for CSOs to engage creatively with the government, especially in the development landscape where there are many opportunities to make data user-friendly and accessible. It has intensified its attention and collaboration with LGUs as a strategic partner in budget transparency initiatives by making its presence more visible in areas where it can influence public fiscal processes such as the proper utilisation of the SEFS.

The OD4Transparency project framework has intensified E-Net's working approach towards the LGU regarding dealing with the education budget. It has shifted from focusing on use alone to involvement in the whole budgeting process. This is demonstrated in the network members' strong advocacy for public audit, transparency and accountability via Social-Watch and other alternative budget initiatives, for instance on how much tax has been collected. Whereas before this information could not be generated easily, the government now exercises more prudent responses to those seeking access to data. Such local-level advocacy expands to the broader advocacy effort of monitoring treasury at the national level. This also connects with the continuing effort of E-Net in

1 <http://upik.jogjakota.go.id/index.php/home>

pushing for the amendment of the Local Government Code (LGC), specifically on the LSB and SEF. E-Net hopes that this will also trickle down to its advocacy for stronger School Governing Boards (SGBs) and increase participation in drafting the School Improvement Plan (SIP).

Institutionalisation of the open data initiative

Participation in an open data project can change how government creates, prepares and uses its data. These changes, in turn, affect the institutionalisation of open data within government. It also affects the long-term sustainability of the open data initiative.

Two important observations were noted from the Perkumpulan IDEA's project. First, the DPDPK is willing to sign a memorandum of understanding (MoU) with Perkumpulan IDEA to ensure the long-term sustainability of the initiative. Starting from 2016, DPDPK will submit the city budget to allow for publication of budget newspaper as supplementary pages attached to the local daily newspaper. DPDPK is also in discussion with the IT department of the city government to link the APBD open data portal to the city government's website.

Second, Perkumpulan IDEA will continue to support the analysis of budget data. During the workshop held by Perkumpulan IDEA, government officials began to think how to better provide budget information to the community after hearing the aspirations from the workshop participants. In terms of the analysis of the datasets, besides the current budget plan, DPDPK will add two more aspects of budgeting data, including a budget realisation report which shows in detail actual spending in a fiscal year and a budget administration report which records the city's actual revenue and expenditure for the fiscal year.

In the case study of E-Net project, DepEd Kidapawan as a partner agency understands that the open data project is just starting out, but the principles it advocated for have been in practice within DepEd, with the exception of technological data management capacity-building which is still in the works. But DepEd also recognises this effort as parallel with its EPA 2015 which mandates performance indicators for the agency such as access, quality and governance.

There is also an acknowledgment that transparency increases the level of understanding of the stakeholders and that an informed citizenry can make a significant contribution. DepEd Kidapawan also revealed that IEC is embedded in all its units. It also has its information system (the Enhanced Basic Education Information System²) where all information about education is available.³

2 <http://ebeis.deped.gov.ph/>

3 The information system is not as 'open' as E-Net revealed, as access still requires a password.

Continuous interactions are necessary for public awareness

Awareness represents the knowledge or perception of a situation or fact. In a simple term, awareness means knowing what is going on (Gutwin & Greenberg 2002). The implementation of the OD4Transparency project has certainly brought awareness to the CSOs and individuals of the potential of open data to promote budget transparency. Two important insights regarding public awareness revealed from both case studies are scalability and sustainability of public awareness.

On the scalability of public awareness, all stakeholders in the case study of Perkumpulan IDEA were aware of the limitation of public awareness towards the use of public funds in the city of Yogyakarta. Several channels were used by Perkumpulan IDEA including:

- Website: www.perkumpulanidea.or.id
- <http://128.199.127.141:8000/>, for visualisations of the analysis of the local budget.
- Twitter: @perkumpulanidea, followers: 54, tweets:100
- Facebook: Idea Yogyakarta, friends: 2 817
- Dissemination and public discussions between Open Data APBD Kota Yogyakarta and the government, citizens, CSOs, NGOs, the media and academics.
- Budget newspapers.

However, all stakeholders agreed that more needs to be done before the OD4Transparency project can create ripple effects to increase public awareness on budget transparency in the city of Yogyakarta. As mentioned above, starting in 2016, the DPDPK will publish the results of budget analysis in leading local newspapers to reach a wider audience. The CSOs and individual users intend to continue promoting the portal and budget newspaper in their communities. Perkumpulan IDEA think that the limited project duration affected the number of audiences they are able to reach. In the future, their work will focus on the development of current open data for the budget transparency programme to reach lower income communities. They are also looking for the development of mobile apps to cater for middle to upper-income communities.

For E-Net Philippines, the most immediate yet important gain of the OD4Transparency project is that the end-users recognised and appreciated the effort of E-Net in highlighting the importance of transparency and all its concomitant processes, in that simply, corruption in government can be detected when there is access to data. End-users who participated in the Open Data Workshop felt strongly that their ideas on transparency were reinforced with the OD4Transparency project. This is to the extent that the concept of open data as espoused by E-Net is equated by end-users to transparency and accountability given the current initiative of the government on Full Disclosure and Open

Data which advocates for transparency and accountability. The common reaction elicited from encountering the concept of open data is the perception of honesty. This downplays a focus on 'open data formats' and the technological aspects of open data. But overall, end-users viewed positively the initial outputs of the open data workshop, particularly that they learned more about SEF and LSB mechanisms. They also learned about the vital importance of CSO participation in the LSB, the rightful composition of the LSB and targets for lobbying.

The second concern regarding public awareness is the continuity of the awareness. As the social and political environments are continually changing, public awareness must constantly be maintained. Perkumpulan IDEA is aware that the nature of OD4Transparency project was not conducive to maintaining public awareness since it was done within a short period of time. The difficulties in maintaining the interaction can be seen from the Twitter response during the project: the data shows that the end-users only interact (i.e. re-tweet) when there was a tweet from Perkumpulan IDEA. Hence, sustaining end users' awareness is still challenging for open data initiative when done through the social media.

In the case of the E-Net project, further interaction between E-Net and stakeholder-partners after the workshop was limited to emails. In these emails, E-Net asked for further data on the area as well for inputs on the Toolkit for SEF Open Data. Per E-Net's May 2015 Terminal Report, the number of people reached through communication materials and information activities has yet to reach a critical mass. The open data initiative is viewed as still in its 'birthing stage'. When asked how much change can be attributed to the OD4Transparency project, end-users stated that such anticipated changes would take time as the most difficult thing to do is to change the mindset of the people. The project has only been downloaded this year, and the key components of the open data shall have to be disseminated further. The data management aspect of the work also still needs more work.

Public participation is an outcome of the effective use of open data

The term participation in the context of development is often viewed as a process of giving relevant knowledge and experience from the public that could potentially serve as important inputs for effective development (Olphert & Damodaran 2007, Puri & Sahay 2007, Puri & Sahay 2003). Citizen participation tends to create links with the issue of social inclusion. From the viewpoint of the data, information and knowledge framework, public participation is the output of knowledge creation and usage.

The findings from the IDEA project show that more work is needed to improve information use before the OD4Transparency project could bring significant public participation in promoting transparency in the use of public funds at LGU. Thus far, in the city of Yogyakarta, the work has only been done by Perkumpulan IDEA.

In the case study of E-NET Philippines, the increased awareness of open data translated into actionable points such as when a workshop participant approached the LGU and the DepEd, and made use of the SEF data which was user-friendly and released fairly quickly. As a result of the positive experience in accessing data, this participant went on to teach other *ustadz* (Islamic teachers) how to access the SEF. They formed the North Cotabato Federation of Madrasa Community Ustadz in July 2015. The group requested that the salaries of their *ustadz* be funded by the SEF. Two of the eight requests have been earmarked for funding. This lobbying extended to another success: access to the budget for uniforms of the *ustadz*. They are hopeful that their initiative will have a multiplier effect and can empower more *ustadz* to demand increased access to the SEF.

With the abovementioned example, it can be said that the use and practice of open data are already gaining currency. However, broader participation of the end-users in public fiscal transparency issues is still something to be desired. Stakeholders in the education system and in this initiative are multiple; and are not confined to internal stakeholders such as teachers and students. External stakeholders include the Parents-Teachers Associations, School Governing Councils, government agencies, NGOs, the private sector and marginalised groups. These stakeholders need data for evidence-based planning. Citizen participation serves as the balancing factor for any government action, but open data initiatives have consistently been a solitary struggle, such as the initiative pushing for the rightful composition of the LSB in the LGU. While there was a point when the network of church organisations and militant organisations in the area were still strong and this kept alive watchdog initiatives, the culture of citizen participation has waned. There is a need for a push from media and CSOs for more consciousness-raising on the issue. This is where E-Net plays a pivotal role in injecting more dynamism through its wide and existing network members in what has been perceived as a diminished activism on the part of CSOs in the area.

Conclusion

The results of this study offer evidence to support the findings from prior studies and further document best practices regarding the importance of intermediaries for both the supply and use of open data (Chattapadhyay 2014, Van Schalkwyk et al. 2016a). The findings suggest that intermediary organisations view open data favorably as it acts as a novel tool and intermediation channel for advocacy work (Davies 2014). Digital technology, which is an intrinsic part of open data, provides efficient information sharing, analysis and retrieval. However, these advantages come with specific requirements which are now becoming challenges for the intermediary organisations given their limited resources (Chattapadhyay 2014, Zuiderwijk & Janssen 2014).

The findings also show that open data initiatives offer a new intermediation channel based on information technology (Davies 2014). Not only can the public receive the information, but it can also re-use the information created by the intermediary organisations for their own analysis, integrating data and information to address different questions, issues and concerns that are significant in their community.

In addition to confirming the role of intermediaries in open data initiatives, the study also provides detailed descriptions on how participation in open data initiative changes relational working process between intermediary organisations and other stakeholders. Open data initiatives created a new space for government and civil society organisations to work together to build trust. The sustainability of open data initiatives is achievable as long as intermediaries can build their credibility as a trusted partner of the government. The ability to identify a gap in the current transparency programmes of the city government and simultaneously propose solutions to address the gap are critical to ensuring the match between the needs of the data supplier and end users. Hence, synergy in the working process between data supplier, intermediary and the end users is critical.

The conversations with the intermediary organisations that participated in this study also reveal that open data projects allowed for synergies to be exploited by government and the intermediary in order to change how government uses data and how it presents data to the public. Therefore, working on an open data project can change how government creates, prepares and uses its data. This outcome, in turn, affects the institutionalisation of open data within government practices. It will also affect the long-term sustainability of the open data initiatives.

For the open data initiatives to sustain public awareness towards the critical issue in the society, a long-term interaction between the intermediaries and the end-users must be maintained. Similarly, better information quality and the high capacity of end-users are necessary prerequisites for widespread effective user participation since end-user participation should be viewed as an output of effective use of open data. Effective inputs from the end users can only be achieved if society is constantly working to produce knowledge that can be used to address socio-economic and development issues.

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