User Participation in Government Open Data: Experiences and Implications from the UK, US, and Singapore (Postprint)

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Abstract

[Purpose/Significance] This study examines user participation cases in open government data from the UK, US, and Singapore to explore international experiences and pathways for China. [Method/Process] Based on statistical data from the third Open Data Barometer, and employing policy text analysis and case study methodologies, this research systematically examines the value positioning, stakeholder rights and responsibilities, and implementation mechanisms of user participation in open government data in these three countries, addressing the key questions of why to participate, who participates, and how to participate. [Results/Conclusion] Through practical case studies, the findings reveal that user participation in open government data in the UK, US, and Singapore has formed basic models including supply-led, balanced control, and supply-demand adaptive types. China's development of user participation in open government data should ground itself in a stage-specific value positioning centered on benefiting livelihood services and creating digital economic value, improve the organizational structure for user participation, clarify participating subjects and their rights and responsibilities, perfect the institutional guarantee system, and construct a supply-demand bilateral implementation mechanism.

Full Text

Preamble

Experiences and Enlightenment from User Participation in Open Government Data in the UK, US, and Singapore

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Abstract: [Purpose/Significance] This study examines cases of user participation in open government data in the UK, US, and Singapore to explore international experiences and pathways for China. [Method/Process] Based on statistical data from the third Open Data Barometer, this paper employs policy text analysis and case study methods to systematically examine the value positioning, stakeholder responsibilities, and implementation mechanisms of user participation in open government data in these three countries, addressing key questions of why participate, who participates, and how to participate. [Result/Conclusion] The findings reveal that the UK, US, and Singapore have developed three distinct models: supply-oriented, balanced control, and supply-demand adaptation. For China to advance user participation in open government data, it should establish a phased value orientation centered on improving public services and creating digital economic value, improve organizational structures for user participation, clarify stakeholder responsibilities, perfect institutional safeguards, and construct implementation mechanisms that address both supply and demand sides.

Keywords: open government data; user participation; multi-case comparison; digital governance
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Open data itself is not the end; rather, user participation in creating public value constitutes the purpose of government open data. User participation is both an essential component of open government data and an effective mechanism for realizing its public value. In 2015, China's State Council issued the "Outline for Promoting Big Data Development," explicitly requiring that "through the openness and sharing of government data, enterprises, industry associations, research institutions, and social organizations should be guided to actively collect and open data… through application innovation competitions, service outsourcing, crowdsourcing, booster programs, subsidies, rewards, and application training, enterprises and the public should be encouraged to explore and utilize open data resources" [1], emphasizing multi-stakeholder participation in government open data and planning for participants and forms of engagement.

From the perspective of institutional division and collaboration among open government data stakeholders, "which department should be in charge, what capabilities it possesses, and whether institutional frameworks and work mechanisms are in place are all practical challenges" [4]. According to the "2019 China Local Government Data Open Report" released by Fudan University and the State Information Center, "only 5.62% of data platforms have generated effective service applications from public utilization of government open data, mainly concentrated in transportation, education, health, and housing. Public utilization outcomes are few, single-type, narrow in coverage, and low in quality" [5]. Additionally, local governments' tendency toward "selective and one-way data disclosure" [6] has resulted in insufficient public participation motivation. Overall, the lag in China's government open data user participation stems from

an imperfect policy system, unclear stakeholder relationships, and inadequate public engagement motivation. In this sense, learning from international experiences is essential. In April 2016, the World Wide Web Foundation released the third Open Data Barometer global report, systematically evaluating open data levels across 92 countries and regions, with the UK, US, and Singapore performing exceptionally well [7]. This paper systematically examines and compares these countries' advanced experiences in user participation to provide beneficial insights for China.

2. Research Status

Existing research focuses on two aspects: first, addressing "why participate" and "who participates" to provide theoretical foundations for empirical studies; second, tackling "how to participate" through in-depth case studies or multi-case comparisons of different countries' practices. Regarding "why participate," F. Wijnhoven, M. Ehrenhard, and J. Kuhn argue that open government's essential goal is to engage citizens in public sector open data activities [8]. Xu Huina, Zheng Lei, and P. Theresa specifically note that government open data sharing "facilitates data reuse, stimulates social innovation, and creates commercial economic value" [9]. W. Christopher finds that building open government data partnerships can "help governments become more transparent, accountable, and responsive to citizens' plans" [10].

Regarding "who participates," Zhang Han and Wang Zhong identify "international cooperation and government-public collaboration" as primary participants [11], while Zhou Wenhong advocates for involvement of "domestic and foreign governments, social institutions, and the public" as different stakeholders [12].

Existing studies on UK, US, and Singapore experiences have produced representative perspectives. Some scholars examine open data platforms as entry points. U. Sivarajah, V. Weerakkody, and P. Waller use case analysis to study UK local government citizen participation, finding that building online participation platforms benefits citizens' use of open data and promotes more fact-based, evidence-driven, and transparent public policy making [13]. Wu Zhanwei and Yu Weihua, from a cross-level platform interaction perspective, note that US platforms like NYC's DataBridge, LA's LAOpenData, and the national Data.Gov have positively activated user participation [14]. Chen Mei examines Singapore's "Developer Zone" on Data.Gov.sg, enabling users to access government-provided API resources while following dataset usage protocols [15]. Other scholars explore multi-stakeholder cooperation models, such as Meng Xiaofeng's analysis of the UK's "data trust" pilot between AI labs and open data institutes to promote multi-group participation [16]. Wu Lin and Wu Shiyu examine training courses and free public lectures that advance user participation through talent cultivation [17].

Overall, existing international experience research has made contributions but

shows two weaknesses: first, lack of clear conceptual definition leads to ambiguous analytical dimensions; second, insufficient multi-case comparative studies, with most research providing narrative analysis of single countries without effectively summarizing differences and commonalities for comparative reference. This paper addresses these gaps by systematically examining and comparing UK, US, and Singapore experiences using the third Open Data Barometer and employing policy text analysis and multi-case comparison.

3. International Experience in User Participation

The essence of user participation in open government data involves introducing diverse stakeholders into the entire lifecycle of open data. Value positioning, stakeholder responsibilities, and implementation mechanisms are key to understanding why, who, and how users participate.

3.1 Value Positioning of User Participation

To elevate user participation to policy priority, the UK Cabinet Office explicitly defines its value positioning: "Building dialogue capacity between government and users can create greater public value. Government needs to ensure robust participation models, urge two-way dialogue… understand what datasets are published, when they are published, and maintain close contact with cutting-edge people in diverse and flexible ways" [18]. This demonstrates government motivation to promote substantive participation. Traditionally, governments merely pushed out data without measuring usage or value creation, necessitating a shift from pure supply to participatory models.

The US federal government's "Transparency and Open Government Memorandum" proposes "encouraging partnerships within federal government, across government levels, and with private institutions to improve government efficiency" [19]. The "Digital Government: Building a 21st Century Platform to Better Serve the American People" policy stipulates that "open government data should be used not only by government agencies but also by the public, non-profits, and private sectors" [20]. Thus, the US emphasized partnership-building from early stages.

Singapore defines data openness strategically as "better linking markets and citizens through digital governance." Its e-Government Action Plan II proposes building an e-citizen platform to serve government-citizen relationship building [21]. The Intelligent Nation 2015 Master Plan explicitly states "inviting private enterprises, research institutions, and developers to jointly participate in developing national ICT policy systems" [22], exploring optimal horizontal cooperation.

3.2 Participants and Responsibilities

As a pioneer, the UK has established the Public Data Group (PDG), Data Strategy Board (DSB), and Open Data Institute (ODI) with distinct functions engaging different users [23]. PDG focuses on public data sources, comprising high-quality data agencies (meteorology, earthquake, industry/commerce) that involve individual developers and experts in data production and protocol design. DSB oversees the open data market, with its Open Data User Group (ODUG) bridging public data demand and supply, coordinating foreign companies, public enterprises, and citizens. ODI focuses on commercialization, coordinating innovative SMEs, civil society, and developers to create business value. This broad definition encompasses international partners, society, markets, and individuals in collaborative relationships.

The US, an early open data adopter, established the Office of Management and Budget (OMB), Federal CTO, General Services Administration (GSA), and Digital Service Innovation Center (DSIC) for coordination, policy planning, logistics, and technical support [24]. DSIC interacts extensively with enterprises, social institutions, and the public.

Singapore's ICT-led reform since the 1990s created a multi-agency governance structure including the Data Center Committee, Ministry of Finance, and ICT committees. Recently, it formed the Infocomm Competency Council comprising public, research, and private sectors to manage public data and quality [25].

3.3 Implementation Mechanisms

3.3.1 UK's "Institution-Management-Execution" Tripartite Mechanism (1) Systematic Institutional Safeguards. Since 2009, the UK has built a robust institutional system. The National Archives' "Power of Information Task Force Report" advocated for government-industry-third-party cooperation [26]. The 2013 "Seizing the Data Opportunity: UK Data Capability Strategy" optimized citizen participation methods [27]. The G8 Open Data Charter UK Action Plan emphasized collaboration with civil society. The "Transparency and Open Government" system stressed joint public sector-user project development. The 2016-2018 Open Government National Action Plan incorporated civil society participation, and the 2019-2021 plan proposed building an Open Government Network to engage business, civil society, and citizens [28-29].

(2) Government-Led Adaptive Governance. The UK government targets global open data leadership through three governance transformations: First, public finance reform to reduce deficits and create better expenditure efficiency through open data value creation. Second, improved data service transparency standards, including the "Transparency Agenda" and National Information Infrastructure execution documents [30-31]. Third, government procurement of services, including expert think tanks and outsourcing to individual developers, as seen in the "Putting the Frontline First: Smarter Government" report [18].

(3) User-Integrated Execution Mechanisms. Recent UK initiatives include: "Pilot Examination" for innovative companies to enhance transparency; "Solution Exchange" for R&D user feedback; stakeholder mapping exercises exploring interactive digital participation; and regional user engagement events in Birmingham, Manchester, and Newcastle since 2016 to broaden dialogue with marginalized groups. The 2019 project demonstration day connected veterans, aspiring tech experts, and citizens with career opportunities, focusing on education and labor markets [32].

3.3.2 US "Privacy Protection-Project-Based-Capacity Incubation" Mechanism (1) Privacy Protection Foundation. Privacy risks hinder participation. The US has enacted comprehensive regulations including the Consumer Data Privacy Protection Act, Consumer Privacy Rights Act, Data Protection Act, and Digital Accountability and Transparency Act. These constrain large tech companies, empower users with rights to information, consent, refusal, and data portability, and build trust to motivate participation.

(2) Project-Based Participation Mechanisms. The US promotes diverse activities to stimulate participation. The University Scorecard project uses APIs to create accessible data systems for citizens and educational institutions, while enabling commercial developers to extract economic value. Cross-agency Federal Data Supporting Teams solicit input from industry, academia, civil servants, and the public. "Opportunity Projects" transform government data into user-friendly tools, demonstrated in the 2019 event connecting veterans and citizens with opportunities [32].

(3) Capacity Incubation Mechanisms. The Office of Information Policy and federal CTOs promote data awareness through training and seminars. The 2011 "FOIA Fees Summit" engaged citizens in discussing fee structures [33]. FOIA.gov expanded participation space by listing responsible departments' open data websites.

3.3.3 Singapore's "Supply-Demand Dual-Side" Mechanism (1) User Activation Through Data Platforms. Launched in 2011, Data.Gov.Sg aggregates datasets from 70+ agencies and 100+ applications across economy, education, environment, health, and transportation. It uses visualizations for citizen-friendly communication and a "Developer" zone with APIs for static and real-time data. Users can provide feedback via email, social media, and GitHub.

(2) Skills Matching Mechanisms. Building on early ICT reforms, Singapore implemented the Infocomm21 (2000-2003) and National IT Literacy Program to develop citizen data capabilities, targeting vulnerable groups with training for over 350,000 people and providing free access at libraries and community centers [34].

(3) Internal Government Capacity Building. The "SOEasy" project integrates ICT infrastructure, business data, and management processes into a

standardized environment, improving cross-agency data sharing and civil servants' multi-format information processing capabilities [35].

(4) Government-Enterprise Electronic Data Exchange. TradeNet, LawNet, and HealthNet facilitate online business licensing services (OBLS), enabling traders to submit data for licenses while allowing government statistical analysis and trade monitoring.

4. Experiences from UK, US, and Singapore

4.1 Differences in Experiences

Differences manifest in value positioning: the UK aims to create value through data reproduction to alleviate fiscal pressure, rooted in New Public Management reforms. The US anchors participation in controlling public power and building transparent government, viewing it as internal reform with conservative, steady characteristics. Singapore focuses on linking markets and society through data services, balancing power among government, market, and society.

Stakeholder definitions and organizational structures also differ. The UK broadly defines users to include international partners, society, and markets, with organizations centered on open data policy and research. The US definition is relatively narrow, emphasizing vertical/horizontal government cooperation with fiscal and technical agencies at the core. Singapore treats society as the core user, adapting existing ICT governance structures rather than creating new ones.

Implementation mechanisms vary significantly: the UK's systematic institutional-management-execution approach follows optimization logic; the US emphasizes privacy protection and basic regulations as a control mechanism; Singapore designs dual-side supply-demand mechanisms.

4.2 Basic Models

These differences crystallize into three models (see Table 1):

Table 1 Basic Models of User Participation in Open Government Data

Model	Country	Value Orientation	Implementation Mechanism
Supply-Oriented	UK	Data utilization creates fiscal value	Institutional safeguards, internal governance, policy execution
Balanced Control	US	Government performance reform	Privacy protection laws, public power control, rights balancing

Model	Country	Value Orientation	Implementation Mechanism
Supply-Demand Adaptation	Singapore	Government linking market and society	Dual-side dynamic adaptation

The UK's supply-oriented model uses institutional safeguards and governance reforms to drive multi-stakeholder participation, demonstrating government dominance in data supply. The US balanced control model anchors participation in controlling public power and shaping clean government while legally protecting private rights. Singapore's supply-demand adaptation model emphasizes visualization and citizen-friendly platforms to link markets and society, improving internal capacity for dynamic adaptation.

4.3 Consensus Factors

Despite differences, three countries share important consensus: (1) Clear public policy vision and value positioning, legally codified; (2) Functional organizational structures with clarified responsibilities, establishing macro-management, fiscal, policy, and research institutions; (3) Systematic institutional safeguards, with the UK building e-government regulations since the 1990s, the US strengthening privacy frameworks, and Singapore using public policies to support participation; (4) Multi-dimensional implementation mechanisms, including regional activities, diverse public projects, and information public services to expand participation channels.

5. Implications for China

Addressing China's weak policy system, unclear responsibilities, and insufficient motivation requires focusing on value orientation, organizational structure, stakeholder responsibilities, institutional safeguards, and implementation mechanisms.

5.1 Establishing Phased Value Orientation

International experience shows value orientation is a process of endowing public meaning through state power. China currently lacks legal positioning for user participation value. Given policy requirements and practical conditions, China should quickly establish a phased value orientation centered on improving public services and creating digital economic value, with periodic adjustments as issues, technology, and civic capabilities evolve.

5.2 Improving Organizational Structures

Currently, China's open data responsibilities lie mainly with the Ministry of Industry and Information Technology and local information authorities, with-

out dedicated user participation institutions. Drawing from international experience, China should empower local governments for participatory digital governance, establishing open data management and service departments at provincial, municipal, and county levels. Local governments should supplement organizations for policy research, fiscal support, data management, R&D, and logistics based on user needs.

5.3 Clarifying Participants and Responsibilities

Multi-center governance theory posits that government-centered multiple actors ensure good governance. While the UK, US, and Singapore broadly define users to include government agencies, data companies, universities, research institutions, social organizations, and the public, China's nascent practice requires a narrower definition initially: government and functional departments, enterprises, research institutions, and the public as core users. Policies should gradually specify the rights and responsibilities of these "government-enterprise-research-public" actors.

5.4 Perfecting Institutional Safeguard Systems

International experience demonstrates that continuously improving safeguard systems is key. China's regulations remain inadequate. First, China should establish foundational privacy protection regulations, balancing control to protect private rights against government power, thereby motivating participation. Second, the central government should develop user participation policies linking to top-level open data design, clarifying local government tasks and accountability. Local governments should gradually formulate specific regulations on public finance, platform operations, data management, human resources, inter-departmental coordination, and project cooperation.

5.5 Constructing Dual-Side Implementation Mechanisms

Singapore's dual-side approach offers important lessons for China. First, government should cultivate user capabilities through project-based activities and training, particularly for marginalized groups, to prevent "Matthew effects" and ensure equity. Second, government must strengthen self-adaptability, using outsourcing and service procurement to improve professional management of user participation. To break departmental protectionism and data monopolies, supervisory networks with top-level oversight and local leadership responsibility should enable real-time monitoring and accountability. Finally, civil servant training should incorporate digital governance, open data, and online citizen interaction courses to continuously optimize staff data service capabilities.

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Note: Figure translations are in progress. See original paper for figures.