POLICY & GOVERNANCE REVIEW | PGR

Go Nakagawa
Okinawa International University, Japan.
(email: gon@okiu.ac.jp)

Submitted: 29 November 2024; **Revised:** 29 January 2025; **Accepted:** 30 January 2025

Go Nakagawa is a Lecturer at Okinawa International University. He can be reached at gon@okiu.ac.jp.

Accelerated Digital Transformation and Development of Digital Talent in Local Governments under Japan's Bureaucratic Policies

Abstract

This study examines at the role of digital talent in Japan's local governments amid the COVID-19 pandemic-induced increased drive for digital transformation (DX). As local governments work to standardize their information systems by 2025, a serious scarcity of digital expertise presents a huge obstacle. The study takes a mixed-methods approach, examining both qualitative interviews and quantitative surveys performed by the Japan Municipal Research Center, which included representatives from 815 municipalities, to evaluate strategies for acquiring and nurturing digital talent. The findings show that local governments typically use two strategies: acquiring experienced IT workers and building digital knowledge among existing civil servants through extensive training. The effectiveness of these strategies varies, with some municipalities successfully improving their digital capabilities while others continue to struggle due to insufficient alignment with organizational needs and a lack of understanding of local government functions among externally recruited professionals. The study shows that, while technical abilities are required, digital talent's ability to coordinate and integrate within the municipal environment has a substantial impact on the success of DX programs. Effective digital transformation necessitates not only the recruitment of persons with strong ICT abilities, but also the development of robust coordination and negotiating skills among digital staff in order to encourage holistic governance and combine digital plans with larger municipal duties. This approach emphasizes the importance of a diverse skill set among digital talent in navigating the intricacies of public sector digitization under Japan's bureaucratic norms.

Keywords:
digital transformation; digital talent; local government

Introduction

During the COVID-19 pandemic, Japan faced challenges in effectively sharing information concerning infected individuals among various entities such as the central government, local governments, health centers,

Policy & Governance Review
ISSN 2580-4820
Vol. 9, Issue 1, pp. 93-105
DOI: https://doi.org/10.30589/pgr.v9i1.1220

hospitals, and individual citizens. One reason for this is that each local government uses its own systems and data management practices. In response, in 2020, the Ministry of Internal Affairs and Communications announced a plan to standardize local governments' systems by the end of the fiscal year 2025. Since then, Japanese local governments have made rapid progress in preparing standardized systems despite not having sufficient digital talent.

The ministry's initiative was also intended to categorize individuals spearheading policies in local governments, referred to in this paper as digital talent. The Ministry of Internal Affairs and Communications classified these individuals into four distinct roles: (1) Producer, which entails leading agency-wide DX initiatives and must possess the skills to gain insight into national policy trends and overall policy formulation. (2) Project manager: This individual is responsible for planning and promoting specific projects, and this role requires skills in conceptual planning, schedule management, and cost management. (3) Service designer: This position is tasked with designing and operating services for each project; individuals in this role should possess expertise in business process reform, service design, and UI/UX. (4) Engineer: Those with this capacity are charged with implementing technology in projects; individuals in this role should be proficient in robotic process automation, low-code development, and related technologies.[1] The ministry emphasizes the need for digital talent to possess specialized knowledge and experience in their domain. It also encourages local governments to actively secure or develop digital talent whose skills are match these categorized roles (Ministry of Internal Affairs and Communications, 2022).[2]

[1]These posts are structured within a hierarchical system. The Producer occupies the top position in the hierarchy, and the Engineer has the lowest one.

[2]At that time, the Ministry of Internal Affairs and Communications appeared to emphasize that local governments required digital talent with experience in IT companies and technical skills in ICT.

At present, local governments in Japan primarily addressed the shortage of digital talent using two approaches. The first involves the recruitment of individuals having IT company experience or similar roles, who bring specialized knowledge and experience through mid-career recruitment. The second method entails the cultivation of existing civil servants into digital talent through the provision of training and hands-on experience. Local governments' strategies for the securing and developing of digital talent rely on the central government's digitalization and digital transformation (DX) policies. This study examines the present state of digitalization and DX policies led by the central government, in particular by entities like the Ministry of Internal Affairs and Communications and the Digital Agency. Additionally, it will explore how local governments have addressed the challenge of securing and developing digital talent since the onset of the pandemic, and it will evaluate the strategies and outcomes of these efforts.

Literature Review

Strategies for ICT and DX in the public sector

Strategies for ICT in the public sector differ from those in the private sector. In the public sector, such strategies have often leveraged reform programs intended to reduce inefficiencies that were caused by bureaucratic burdens (Cordella & Tempini, 2015). In addition, the DX of the public sector has appeared to not only provide efficient delivery of services for citizens, but also changing the mind of civil servants. This change has contributed to changing inefficient organizations in the public sector. This framework is called Digital Era Governance (Dunleavy et al., 2006).[3] The core argument posits that technology itself cannot alter organizations; rather, it is the manner in which the organizations operate and their use of technologies that can transform work practices.

[3]In Japan, this approach appeared to have been incorporated since 2020.

Therefore, whether strategies for ICT in the public sector can enhance the efficiency, rationality, and accountability of public organizations depends on how these strategies are used by civil servants.

Digital talent in the public sector

In Japan, the Ministry of Internal Affairs and Communications does not tend to differentiate between the digital talent possessed by a worker in the private sector and that of a civil servant in the public sector. However, previous study of digital talent has indicated that distinctions can be drawn between labor in the private and that in the public sectors. In the private sector, in its fullest form, DX leads to the emergence of entirely new business models that can challenge traditional methods of service delivery. In this realm, digital talent focuses on the development of new services for customers (Mergel et al., 2019). By contrast, in the public sector, digital talent prioritizes the enhancement of the efficiency and accessibility of service delivery (Meijer & Bekkers, 2015). Additionally, DX dynamics vary between the private and public sectors, necessitating robust government strategies for DX (Mergel, 2019; Clarke, 2020).

Leaders having digital expertise in the public sector

Recently, digital talent in the public sector has emerged as a critical element for the management of public organizations and the enhancement of service delivery. In particular, leaders who have digital expertise in the public sector play a pivotal role in decision-making, organizational oversight, and the recruitment and nurturing of digital talent. Some articles have emphasized the significance of strong leadership skills here (Kane et al., 2019). Moreover, if leaders working in the public sector lack authority over budgets, they may struggle to effectively secure and develop digital talent.[4] Previous research has shown that in the UK, the budgets that are allocated for the implementation of DX strategies have gradually fallen after peaking (National Audit Office, 2017).[5] Consequently, sustainable development for ICT or DX initiatives appears undervalued, in spite of the ongoing prevalence of Digital Era Governance through the foreseeable future (Peters, 2006).[6]

Method

This paper utilizes a mixed-methods research approach that combines both quantitative and qualitative approaches (King et al., 1994; Mahoney, 2010; Tarrow, 1995). The aim of this approach is to compare differences in the results and analyze the ways in which the representatives of local governments strategize to secure and develop digital talent in the context of Japan's bureaucratic policies.

In 2023, Japan Municipal Research Center conducted study groups intended to publish reports and executed a questionnaire survey on standardized systems for 815 local governments (Japan Municipal Research Center, 2024). Then, in 2023 and 2024, it conducted interview surveys with the individuals responsible for standardized systems in local governments. Face-to-face interviews have been conducted with representatives of 15 cities, and representation of 20 cities have been interviewed via online meetings.[7] These interview surveys have produced, insights have been gained into the individuals that local governments are seeking to establish standardized systems. The interview surveys revealed that certain local governments adopt two distinct strategies to secure and

[4]In Japan, this problem is particularly prevalent in local areas.

[5]In 2023, the central government of Japan decided to allocate budgets for the childcare assistance. Consequently, budgets for securing and developing digital talent are expected to decrease over the coming years.

[6]In Japan, there do not appear to be any civil servants linked with the Niskanen model. They lack dominant control over the budgets of local governments.

[7]Interview surveys were conducted to mitigate bias concerning the region, population, and number of local civil servants.

develop digital talent. Some local governments have attracted professionals having over 5 years of experience in IT companies, coupled with ICT qualifications (strategy 1). Meanwhile, others are cultivating talent internally, focusing on individuals who have been with the given local government since graduating from universities (strategy 2). Such strategies are intended to bolster the municipality's digital capabilities through different avenues.

In the first approach (strategy 1), the representatives anticipate that the digital professionals will leverage their specialized ICT expertise to establish standardized systems. For instance, the city government of Higashi-Hiroshima recruited over 30 digital experts from IT firms, enabling the city to implement standardized systems more rapidly than its counterparts. In interviews with representatives from the Higashi-Hiroshima city government, researchers asked, "How does the local government attract top-tier digital talent?" In response, representatives highlighted the critical link between talent acquisition and immigration and settlement strategies. They emphasized that, while attractive job opportunities may exist in local governments, the appeal of such positions is greatly influenced by the overall living environment. If a city does not offer an appealing lifestyle, digital professionals may not be eager to join its workforce. By contrast, cities that have desirable living conditions tend to attract more talent, drawing migration to the region that is governed by the municipal authority. According to this strategy, social incentives outweigh economic ones, in particular because digital professionals prioritize their family's well-being over their own job prospects.

Several local governments, such as Higashi-Hiroshima, Kobe, and Fukuoka, have adopted the strategy of offering professional positions that are specifically tailored to attract digital professionals. By contrast with more general positions, these professional roles have higher salaries and allow individuals to specialize in ICT and in the establishment of standardized systems, without the need for departmental transfers. However, smaller local governments often lack the budget to create this type of professional position, which limits their ability to compete for digital talent. Even in major local governments that can afford to offer professional positions, it remains a challenge to secure digital professionals. Private enterprises are also competing for these professionals to manage their digital systems, often offering higher salaries than local governments can. In spite of the competition, local governments prioritize social incentives over economic ones in attracting digital talent. They understand the importance of having appealing work environments and opportunities for professional growth in enticing digital professionals to join their ranks. For example, smaller local governments, such as those of the northern Japanese communities of Yurihonjo, Sakata, and Nagai, have successfully attracted digital professionals who have positions such as chief digital officer (CDO) in local government while maintaining their role in private businesses. Some local governments and private companies have begun to construct cooperative systems to address this challenge. In this way, local governments have attracted digital professionals thanks to support from the central government. The central government has created a system to facilitate the transfer of professionals from agencies of the central government, private companies, and universities to local governments, where they can serve in the roles of deputy mayor, CDO, and other positions.

In the second approach (strategy 2), the representatives focus on nurturing digital talent in on-the-job training and workshops. One example of this can be seen in the city government of Kanazawa, where digital talent is developed over a minimum of 10 years across three departments using intensive workshops. Such workshops, which are officially managed by representatives, last for 200

hours over seven months.[8] Participation is largely encouraged through specific invitations extended by city representatives. In these workshops, participants delve into various aspects of digital service design, with the intention of mitigating vendor lock-in by means of collaborations with IT companies. Some local governments have met with challenges regarding vendor lock-in, due to a lack of expertise digital service design. In addition, representatives have expressed concern regarding the adaptability of digital professionals to the work environment of the local government. Local civil servants possess different skill sets and experience than digital professionals' specialized ICT skills. Local civil servants are bound by the duties outlined in the Japanese Constitution to serve the entire population, but digital professionals who are working in private enterprises do not such obligations. As a result, some local government representatives lean toward nurturing digital talent from scratch, favoring individuals who have a background in pure civil service over specialized digital professionals. They believe that this approach can ensure alignment with the core duties and responsibilities of a local government service.

Representatives of local governments must carefully consider the core purpose of civil service, recognizing that their responsibilities go beyond simply securing and developing digital talent to establish standardized systems for citizens. Local governments have obligations that go across a wide array of sectors, including welfare, education, water and sewage management, crisis management, and more. Thus, the establishment of standardized systems is no longer merely a technological task but is an inherent duty of municipal governance, intertwined in the broader spectrum of civic responsibilities. In reality, some local governments are reluctant to allocate budgetary resources to securing and developing digital talent. However, it is imperative to acknowledge that finding and nurturing digital talent is inherent to the mandate of the local government. This clarifies the critical importance of consensus-building with various stakeholders, including the mayor, city council members, civil service, and citizens. The achievement of alignment and agreement among such actors is important to successfully execute strategies to secure and developing digital talent. Indeed, the effectiveness of these strategies can hinge on the presence of exceptional local civil servants serving as control towers, demonstrating strong skills in coordination. These individuals have a pivotal role to play in driving forward initiatives related to digital talent acquisition and development in local governments.

Data and Empirics

In this paper, data from both questionnaire surveys and interview surveys are analyzed to identify the most crucial skills possessed by digital talent in local governments. The surveys showed that individuals are responsible for standardized systems in local governments that prioritize strong coordination skills with regard to specialized ICT skills. While the Ministry of Internal Affairs and Communications could advocate for local governments as they seek to secure or develop digital talent having specialized ICT skills, the findings of this study suggest that local governments require digital talent having diverse skill sets to effectively establish standardized systems.

Table 1.
Collection Result: Investigation by DX Department & Human Resources Division.

Target	Number of Responses	Recovery Rate
Information Technology & DX Department	233	28.6%
Human Resources Department	237	29.1%

Source: Japan Municipal Research Center (2024)

[8]The participants are generally adults in their 30s and 40s, totaling approximately 20 individuals every fiscal year.

Table 2.
The Prioritized Aspects in the Utilization: Information Technology & DX Department.

Item	Number of Responses[9]	Rate of Requirement
Enhancing efficiency, streamlining administrative tasks	217	93.1%
Public service provision: residents' perspective	156	67.0%
Reducing or mitigating financial costs	117	50.2%
Addressing local or community issues	109	46.8%
Boosting staff motivation	19	8.2%

Source: Japan Municipal Research Center (2024)

The questionnaire survey identified that the Information Technology and Digital Transformation Departments of local governments requires digital talent to possess skills that not only enhance and streamlining administrative tasks but also to reduce or mitigate financial costs (Tables 1 and 2). These skills are closely intertwined with management capabilities that are essential for effective governance at the municipal level.

Table 3.
Challenges Associated with the Utilization of Digital Technology and Data: Information Technology & DX Department.

Item	Number of Responses[10]	Rate of Outstanding Issue
Personnel shortages	163	70.0%
Difficulty in securing financial resources	135	57.9%
Departmental lack of understanding	101	43.3%
Uncertainty regarding implementation effectiveness	92	39.5%
Difficulty in matching available tasks for utilization	88	37.8%

Source: Japan Municipal Research Center (2024)

There is a subtle distinction to be drawn between the needs of the Information Technology and DX Department and the Human Resources Department: the former requires digital talent that has predominantly technical skills, such as ICT, information security, and design skills, while the latter also necessitates digital talent but with stronger coordination and negotiation skills, to be able to manage effective governance at the municipal level (Tables 4 and 5). However, the Information Technology and DX Departments face

Table 4.
Required Knowledge and Skills for Digital Talent: Information Technology & DX Department.

Item	Number of Responses[11]	Rate of Requirement
Innovative proposal for integrating ICT in business operations	127	54.5%
Understanding information security	82	35.0%
System and business process design skills	77	33.0%
Coordination and negotiation skills for ICT utilization within the organization	75	32.2%
Understanding of implemented systems and tools	52	22.3%

Source: Japan Municipal Research Center (2024)

Table 5.
Required Knowledge and Skills for Digital Talent: Human Resources Department.

Item	Number of Responses[12]	Rate of Requirement
Innovative proposal for integrating ICT in business operations	131	55.3%
Understanding information security	76	32.1%
Coordination and negotiation skills for ICT utilization within the organization	58	24.5%
Understanding of implemented systems and tools	56	23.6%
Negotiation and coordination skills with external businesses	55	23.2%

Source: Japan Municipal Research Center (2024)

[9]Maximum of 233.

[10] Maximum of 233.

[11]Maximum of 233.

[12]Maximum of 237.

significant challenges in securing skilled digital talent (Table 3). Financial resources to secure such talent are so far lacking in most local governments. Without increased resources, it would be difficult to secure excellent digital talent.

Table 6.
Challenges in Acquiring Digital Talent Externally: Human Resources Department

Item	Number of Responses[13]	Rate of Outstanding Issue
Organizing tasks assigned to digital talent	68	34.2%
Uncertainty about required talent	62	32.1%
Uncertainty about salary and compensation levels	59	28.7%
Uncertainty about talent recruitment effectiveness	46	26.2%
Difficulty in finding desired talent	44	24.9%

Source: Japan Municipal Research Center (2024)

Table 7.
Strategies for Developing Digital Talent: Human Resources Department

Item	Number of Responses[14]	Rate of Implementation
External training offered by institutions	156	65.8%
Internal training programs within the organization	146	61.6%
Selection and placement of IT leaders	74	31.2%
Recommendations and support for obtaining ICT-related qualifications	36	15.2%
Deployment of staff to other governments	30	12.7%

Source: Japan Municipal Research Center (2024)

The Human Resources Departments of local governments appear to lack a concrete strategy for securing and developing digital talent (Tables 6). A lack of certainty can be observed, regarding which type of digital talent must be secured and how to go about doing this. Until this point, the department has primarily relied on external and internal training programs (Tables 7). However, interview surveys show that a significant proportion of local civil servants are unable to participate in training sessions during working hours, due to the demands of their everyday tasks. The decision to attend these training sessions largely depends on their freedom.

Discussion

The questionnaire survey indicates that Information Technology and DX Departments primarily emphasize the need for digital talent including technical skills, drawing on interview surveys bring to light the importance of coordination skills, as highlighted by representatives.[15] They clarify the necessity for digital talent that is proficient in coordination and negotiation, not only in the effective utilization ICT within the organization but also in negotiation and coordination with external businesses. Consequently, this paper adopts an analytic framework categorizing coordination skills into three key areas (1) Communication skill: the ability to effectively promote digitalization and DX policies while engaging with colleagues in the department (whether DX or digital), underscoring strong communication skills. (2) Leadership: capacity to articulate the purpose and intent of advancing digitalization and DX in the agency to staff members who are outside the DX or digital department, gaining their support. (3) Negotiation skill: proficiency in establishing amicable relationships with external organizational stakeholders, in particularly IT companies, securing favorable contracts for the local government side, highlighting adept negotiation skills. Hence, the necessity for local governments to seek employees who have coordination skills stems from the direct

[13] Maximum of 237.

[14] Maximum of 237.

[15] Representatives require digital talent with transformational abilities rather than just digital skills.

correlation between these skills and the myriad challenges that are encountered in advancing digitalization and DX (Nakagawa, 2024).

The primary challenge here lies in augmenting staff capabilities in overseeing the DX or digital department. drawing on feedback gathered from surveys, assuming a single central figure in the DX or digital department, the given individual not only manages the tasks that are associated with the aforementioned abilities (1, 2, and 3) but also engages in activities, including creating specification documents. However, creating specification documents typically demands the involvement of at least three staff members any local government setting, making it impractical for a single member of staff to handle. Thus, alongside the central figure, the DX or digital department should include a minimum of two additional ones who are proficient in tasks related to abilities (1, 2, and 3) and the creation of specification documents. The central figure must ensure the recruitment and grooming of at least two staff members who could managing such responsibilities. In local governments, unless they have specialized positions, staff members within the DX or digital department need to rotate every three to five years resulting from personnel shifts. Therefore, the central figure needs to possess the capability to nurture individuals who lack lacking expertise and experience in digitalization and DX from the ground up. Hence, the central figure plays a pivotal role in daily communication with staff and in spearheading initiatives to bolster their motivation. In particular, in scenarios where established training systems for digitalization and DX are lacking, where staff members are treated similarly to other employees, intrinsic motivation deriving from the central figure becomes paramount. A higher proportion of motivated staff members in the DX or digital department tends to alleviate the workload of the central figure workload, facilitating sustainable, high-quality task execution.

The second challenge here relates to the difficulty fostering effective cooperation from staff members who are outside the DX or digital department. Currently, local governments are actively advancing digitalization and DX initiatives in their agencies, seeking to standardize and consolidate municipal information systems by fiscal year 2025,[16]. However, these initiatives are often perceived to be additional tasks that lie alongside the daily staff operations other than the DX or digital department, leading to the apprehension of increased workload. In addition, staff's entrenched knowledge and experience in their respective tasks often lead to a reliance on existing analog processes and a fostering of skepticism and objections toward the digitalization efforts. For example, employees in departments such as civil engineering and welfare, which prioritize fieldwork, may find it challenging to align with the agency's digitalization and DX initiatives. Overcoming this challenge requires the ability to foster consensus, a skill that is integral to effective leadership. Indeed, both the Information Technology and DX Department and the Human Resources Department consider management coordination and negotiation skills as important to facilitate the implementation of digitalization and DX policies (Tables 8 and 9). Comprehensive efforts are needed for agency-wide digitalization and DX initiatives. With the guidance of the central staff member, staff from the DX or digital department needs to communicate the rationale behind digitalization and DX within the agency effectively to garner support from other staff members. This involves providing explaining why national digitalization and DX policies for local governments are recommended, demonstrating the potential benefits of staff as the agency progresses in digitalization and DX efforts.

[16]Many local governments have recently announced that they cannot achieve the establishment of standard systems by fiscal year 2025.

Table 8.
Required Knowledge and Skills for Position of Management: Information Technology & DX Department

Item	Number of Responses[17]	Rate of Requirement
Coordination and negotiation skills for ICT utilization within the organization	133	57.1%
Coaching skills to foster awareness of ICT utilization within the organization	132	56.7%
Driving force for establishing evidence-based policy making within the organization	111	47.6%
Understanding information security	103	44.2%
Innovative proposal for integrating ICT in business operations	37	15.9%

Source: Japan Municipal Research Center (2024)

Table 9.
Required Knowledge and Skills for Position of Management: Human Resources Department

Item	Number of Responses[18]	Rate of Requirement
Coordination and negotiation skills for ICT utilization within the organization	135	57.0%
Understanding information security	110	46.4%
Coaching skills to foster awareness of ICT utilization within the organization	108	45.6%
Driving force for establishing evidence-based policy making within the organization	85	35.9%
Understanding of laws pertaining to ICT utilization	54	22.8%

Source: Japan Municipal Research Center (2024)

Based on the findings of interview surveys, several local governments have implemented strategies to raise staff awareness in training programs. These initiatives emphasize the accumulation of small successes in digitalization and DX instead of presenting overly ambitious plans; instead gradually shift staff perceptions. Staff from the DX or digital department should strategize initiatives to encourage cooperation from other staff members and work toward building within-agency consensus. Increased cooperation in the majority of staff members accelerates the progress of digitalization and DX initiatives in the agency.

The third challenge revolves around the difficulty of mitigating vendor lock-in. Local governments, through their pursuit of the standardization and consolidation of municipal information systems increasingly rely on outsourcing systems implementation and maintenance to private companies. However, challenges arise in contractual agreements between local governments and private enterprises. Local governments seek contracts to enable the delivery of public-oriented administrative services in limited budgets, private companies prioritize profit maximization.[19] This disparity is rooted in differing organizational management conditions because private companies face a high risk of bankruptcy if their profits decline, which leads them to aggressively seek advantageous contracts. One bottleneck for local governments has its root in the occurrence of information asymmetry that regards systems implementation and maintenance tasks.[20] Unlike contracts between IT companies, where both parties possess specialized knowledge, expertise, and experience, contracts between local governments and IT companies tend to span one year or longer. This extended duration makes it challenging to integrate any adjustments, even when necessary.

As a result, local governments lack a full understanding of outsourcing contracts with IT companies, inadvertently enabling such

[17]Maximum of 233.

[18]Maximum of 237.

[19]Private companies may also prioritize social profits over financial gains (Husted & Salazar, 2006).

[20]A market for lemons appears to exist between local governments and private companies.

companies to exploit information asymmetry, with a contribution to vendor lock-in. To tackle this challenge, staff in the DX or digital department must have negotiation skills that enable them to cultivate amicable relationships with external entities, such as private enterprises, and to secure favorable contracts for the local government body. During contract negotiations, it is imperative to assert oneself as a formidable counterpart, extracting favorable conditions from IT companies. Moreover, where staff are equipped with specialized knowledge and experience in systems implementation and maintenance tasks with respect to the local government side, it impedes IT companies from exploiting information asymmetry, securing advantageous contracts. Therefore, the staff of the DX or digital department must engage in active information exchange using external entities such as IT companies to acquire valuable insight. Over the long run, it is crucial for local governments to avoid becoming vulnerable targets for IT companies, ensuring sustainable and equitable contractual agreements. Representatives from the Kobe, Kanazawa, Toyonaka, and Suita city governments emphasize that they have been able to avoid this issue by developing digital talent capable of holding their own alongside IT company professionals. Additionally, other local governments are fostering their own digital talent, drawing on the human resource development practices of these cities.

Conclusion

Although the Ministry of Internal Affairs and Communications is urging local governments to recruit individuals who have specialized ICT skills to develop standardized systems, it is evident that securing individuals who have strong coordination skills is equally crucial. The representatives of local governments who were interviewed, which have made relatively significant progress in their mission of establishing standardized systems highlighted in interview surveys that individuals who have strong coordination skills tend to make more substantial contributions to this endeavor than those who have specialized ICT skills or qualifications. In southern Japan, the community of Miyakonojo, a smaller local government, has achieved significant success, winning the DX award in Japan for two consecutive years. Although it does not attract professionals with over five years of experience in IT companies, or those with ICT qualifications (strategy 1), the local government is accelerating the establishment of standardized systems by developing in-house talents (strategy 2). In the government, one standout digital talent has emerged, showing exceptional coordination skills and the ability to communicate effectively with the mayor, coworkers, and business operators. This individual has made a particularly significant contribution by securing sufficient budgetary resources. By grace of this effort, other cultivated talents in the government can utilize the budget to develop standardized systems and implement policies related to DX, including operational reforms for application procedures. Japanese communities of Hamamatsu, Murayama, and Toyonaka also boast standout digital talents, similar to Miyakonojo. These local governments appear to be making smooth progress in establishing standardized systems, driven by the contributions of their in-house digital experts.

On the other hand, some local governments struggle to establish standardized systems, implement DX-related policies, and improve operational reforms, despite having digital professionals in place (strategy 1). The reason for this is clear. While these digital professionals possess exceptional skills, knowledge, and experience—often surpassing those of in-house digital experts—and can take on roles such as producer, project manager, service designer, and engineer as classified by the Ministry of Internal Affairs and Communications, they lack

an understanding of how local governments in Japan function. They are unfamiliar with the ways in which local civil servants serve citizens and how the budget for developing standardized systems and related policies is distributed across various departments. Interviews with representatives from the Yurihonjo, Sakata, and Nagai city governments—communities that appear to be successfully establishing standardized systems—reveal that strong relationships between digital professionals and in-house digital experts are key to their achievements. By leveraging their respective strengths and compensating for each other's weaknesses, they work effectively together. However, if the digital professionals are reluctant to understand the purpose of local governments or the role civil servants play in serving citizens, they struggle to build productive relationships with in-house experts.

Local governments have obligations across a wide array of sectors, including welfare, education, water and sewage management, crisis management, and more. Consequently, the establishment of standardized systems is not merely a technological task but an inherent duty of municipal governance that is intertwined with the broader spectrum of civic responsibilities. In reality, some local governments show reluctance to allocate budgetary resources to the obtaining and development of digital talent. However, it is imperative to acknowledge that the task of attracting and nurturing digital talent is inherent to the mandate of local governments. This underscores the critical importance that consensus-building among various stakeholders holds, including the mayor, members of the city council, the civil service, and citizens. Achieving alignment and agreement among these actors is vital for the successful execution of strategies that are intended to secure and develop digital talent. Indeed, the effectiveness of these strategies often hinges on the presence of exceptional local civil servants serving as control towers, demonstrating strong coordination skills. Recently, local governments have had to foster strong relationships among a wide range of stakeholders. Therefore, digital professionals and in-house digital experts should embrace the concept of "Holistic Governance" and consider how to effectively engage stakeholders in their projects (Perri 6, 2002).

Many stakeholders are not aware of the local civil servants who are fundamentally responsible for establishing standardized systems, but they are invariably concerned with regard to the outcomes of local government efforts and the contributions of local civil servants to their lives as taxpayers. At present, there is a growing interest in timelines for completing standardized systems and the ways that these systems enhance their lives in Japan. Local government representatives are under pressure to expedite tasks, necessitating exceptional digital talent for its successful implementation. However, without robust recruitment strategies for attracting and developing digital talent, the progression of tasks may encounter obstacles. Indeed, some local governments have expressed concerns that they may be unable to complete the transition to standardized systems by the fiscal year 2025. This challenge is particularly pronounced in larger local governments, which face significant hurdles in migrating their major systems to new standardized frameworks. In contrast, approximately 90% of other local governments are expected to complete their missions by the deadline. Now, it is imperative for local governments to consistently evaluate the caliber of digital talent available, devising strategies to secure and foster their development and completing their missions under Japan’s bureaucratic policies.

References

Abreu, M., Comim, F., & Jones, C. (2023). A capability-approach perspective on regional

development. *Regional Studies*, 1-13. https://doi.org/10.1080/00343404.2023.2276332

Adcock, R., & Collier, David. (2001). Measurement validity: A shared standard for qualitative and quantitative research. *American Political Science Review, 95*(3), 529-47.

Akerlof, G. A. (1970). The market for "Lemons": Quality uncertainty and the market mechanism. *Quarterly Journal of Economics, 84*(3), 488–500.

Alford, J., & O'Flynn, J. (2009). Making sense of public value: Concepts, critiques and emergent meanings. *International Journal of Public Administration*, *32*, 171-191. https://doi.org/10.1080/01900690902732731

Caporaso, J. A. (1995). Research design, falsification, and the qualitative-quantitative divide. *American Political Science Review, 89*(2), 457-460.

Collier, D. (1995). Translating quantitative methods for qualitative researchers: The case of selection bias. *American Political Science Review, 89*(2), 461-466.

Cordella, A., & Tempini, N. (2015). E-government and organizational change: Reappraising the role of ICT and bureaucracy in public service delivery. *Government Information Quarterly*, *32*(3), 279-286. https://doi.org/10.1016/j.giq.2015.03.005

Digital Agency. (2023, February 10). *Digital agency activity report*. https://www.digital.go.jp/assets/contents/node/basic_page/field_ref_resources/ed91c288-7d40-4a9b-9d86-1007f256ada6/7256b4fc/20230210_en_annual_report_01.pdf

Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006). New public management is dead - long live digital - era governance. *Journal of Public Administration Research and Theory*, *16*(3), 467-494. https://doi.org/10.1093/jopart/mui057

Dunleavy, P., Margetts, H., Tinkler, J., & Bastow, S. (2006). *Digital era governance: IT corporations, the state, and e-government.* Oxford University Press.

Husted, B. W., & Salazar, J. J. (2006). Taking Friedman seriously: Maximizing profits and social performance. *Journal of Management Studies, 43*(1), 75-91.

Japan Municipal Research Center. (2024, April 17). [Survey on the current state of digitalization and digital transformation (DX) in urban municipalities: Compilation of materials] Toshijichitai no dejitaruka DX no jittai ni kansuru anketochosa: Shiryohen (in Japan). https://www.toshi.or.jp/publication/19089/

Kane, G. C., Phillips, A. N., Copulsky, J. R., & Andrus. G. R. (2019). *The technology fallacy how people are the real key to digital transformation*. The MIT Press.

King, G., Keohane, R., & Verba, S. (1994). *Designing social inquiry: Scientific inference in qualitative research*. Princeton University Press.

King, G., Keohane, R., & Verba, S. (1995). The importance of research design in political science. *American Political Science Review, 89*(2), 475-481

Lieberman, E. S. (2015). Nested analysis as a mixed-method strategy for comparative research. *American Political Science Review, 99*(3), 435-452.

Lijphart, Arend. (1971). Comparative politics and the comparative method. *American Political Science Revi*ew, 65(3), 682-693.

Mahoney, J. (2010). After KKV: The new methodology of qualitative research. *World Politics, 62*(1), 120-147.

Meijer, A., & Bekkers, V. (2015). A metatheory of e-government: Creating some order in a fragmented research field. *Government Information Quarterly*, *32*(3), 237-245. https://doi.org/10.1016/j.giq.2015.04.006

Mergel, I., Edelmann, N., & Haug, N. Nathalie. (2019). Defining digital transformation:

Results from expert interviews. *Government Information Quarterly*, *36*(4), 1-16. https://doi.org/10.1016/j.giq.2019.06.002

Michels, A., & Meijer, A. (2008). Safeguarding public accountability in horizontal government. *Public Management Review*, *10*(2), 165-173. https://doi.org/10.1080/14719030801928490

Ministry of Internal Affairs and Communications. (2022, June 3). [*Municipal DX external personnel skill standards*] Jichitai DX gaibujinzai sukiruhyojun nitsuite (in Japan). https://www.soumu.go.jp/main_content/000818221.pdf

Nakagawa, G. (2024). [A study of the competencies and attributes sought in digital talent by urban municipalities]. Toshijichitai ga motomeru dejitarujinzai no noryoku to shishitsu ni kansuru ichikosatsu (in Japan). [*City and Governance*]. Toshi to Governance (in Japan), *41*, 170-176.

National Audit Office. (2017, March 3). *Digital transformation in government*. Report Value for money. https://www.nao.org.uk/wp-content/uploads/2017/03/Digital-transformation-in-government.pdf

Perri 6. (2002). *Towards holistic governance: The new reform agenda* (2nd ed). Palgrave.

Peters, G. (2006). *Politics of bureaucracy* (5th ed). Routledge.

Porter, M., & Heppelmann, J. (2015). How smart, connected products are transforming companies. *Harvard Business Review, October 2015*, 97-114.

Rogowski, R. (1995). The Role of theory and anomaly in social-scientific research. *American Political Science Review, 89*(2), 467-470.

Rooks, G., Matzat, U., & Sadowski, B. (2017). An empirical rest of stage models of e-government development: Evidence from Dutch municipalities. *The Information Society*, *33*(4), 215-225.

Tarrow, S. (1995). Bridging the quantitative-qualitative divide in political science. *American Political Science Review, 89*(2),471-474.

Verba, S. (1967). Some dilemmas in comparative research. *World Politics, 20*(1), 111-127.

Western, B., & Jackman. S. (1994). Bayesian inference for comparative research. *American Political Science Review, 88*(2), 412-423.