Digital Transformation: A Cross-Level Analysis of Canadian Federal, Provincial and Municipal Governments

Isabelle Sperano Follow 15 min read · Aug 22, 2024

Isabelle Sperano, Associate Professor in Digital Experience Design, MacEwan University, Edmonton, Canada

Vik Chu, Design Student, MacEwan University, Edmonton, Canada

Robert Andruchow, Associate Professor, Associate professor in Digital Experience Design, MacEwan University, Edmonton, Canada

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This is exploratory research we conducted to give our team an overview of digital transformation initiatives at various levels of government in Canada.

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Abstract

This article examines the state of digital transformation (DT) initiatives in all three levels of government across Canada. Data was collected from government websites, identifying 12 significant initiatives that pertain to the digital transformation of public service delivery. These initiatives were classified into five categories: strategy, guidelines and standards, open government portals, public communications, and digital units. This exploratory study reviews and analyzes the initiatives based on their geographical locations, revealing that the more populous provinces and territories have a more significant number of initiatives. Open data portals and visual guidelines and standards were found to be the most commonly implemented initiatives. This analysis aims to provide insights into government DT initiatives and practices and foster discussions for advancements in digital transformation strategies and digital service delivery to citizens.

1. Introduction

Most public organizations are currently undergoing digital transformation (DT) (Clarke 2020).

The digital transformation (DT) of government is a complex process that aims to deliver government services and to give access to information through various digital channels (Mergel, et al., 2019).

In an effort to unravel practices related to DT of public service delivery in government, we conducted an exploratory analysis to delineate part of the digital transformation (DT) landscape within the Canadian government by identifying and analyzing significant digital transformation initiatives across three levels of government: federal, provincial, and municipal. Additionally, we wish to position these initiatives within the governmental structure, shedding light on the decision-making processes and parties responsible for their implementation. A further goal is to uncover potential indicators of maturity in digital transformation, which could enable the assessment of the progress and effectiveness of ongoing initiatives.

With this multi-dimensional approach, we hope to understand, foster discussions and encourage advancements in implementing digital transformation strategies and delivering digital services to citizens. Intending to contribute beyond the academic sphere, this review aims to inform and help various professional fields embedded in digital transformation processes. Specifically, those practices that orchestrate the delivery of digital services to citizens — spanning domains like service design, information architecture, user experience design, content strategy and communications overall — can draw insights from this research to inform their practices. Moreover, this information can benefit government officials, policymakers, and other stakeholders involved in DT implementation, as it can guide initiatives to be put forward.

2. Methodology

The data collected for this inventory was gathered from publicly available information on government websites. Our premise is that most governments in Canada would communicate their main initiatives with the public. This aligns with Canada's commitment to transparency in public policies (Government of Canada, 2022). One benefit of this approach was that the information was easily accessible, and a significant amount of information was available. This is particularly relevant in an exploratory process, as it can allow for more breadth, which can help gather initial insights that can be developed later in further research. Also, the fact that the data was collected in a real-world context can provide a more accurate, unbiased picture of real-world context, as it was not generated in a controlled environment.

2.1 Selecting Governments

In our analysis, we selected governments at the federal, provincial, and municipal levels, aiming to achieve a more holistic understanding of digital transformation across the multifaceted landscape of the Canadian government. The government of Canada and each of its ten provinces and three territories were included (Canada is divided into sub-national administrative divisions called provinces and territories). We also included all 6 Canadian municipalities that have a population of over 1 million residents. Consequently, our analysis encompassed 20 Canadian governments in total.

Lastly, we included the UK federal government. As they have been pioneers in digital transformation, and their strategies and initiatives have inspired many governments worldwide (Clarke, 2020), the UK government can constitute an appropriate benchmark against which the digital transformation initiatives under investigation can be compared and assessed.

2.2 Finding Initiatives

Our methodology involved leveraging official government websites as the principal data source to pinpoint the relevant initiatives. We started by scrutinizing each website's home page for any prominently displayed initiatives. Subsequently, we employed the website's search functionality, inputting key phrases such as "digital transformation," "digital innovation," "digital strategy," "digital," "transformation," and "innovation" to further uncover pertinent initiatives. Moreover, we examined the website's sitemap and personnel directories for any additional relevant information. Finally, we executed web searches using the keywords mentioned above to ensure a comprehensive identification of initiatives. The data compilation took place during a two-month period spanning from January to March 2022.

2.3 Selecting Initiatives

This approach resulted in a list of initiatives of various types. We uncovered a total of 37 digital transformation initiatives, which varied in their level of granularity and relevance. We implemented a filtering process to identify the main initiatives that clearly aimed to establish a digital transformation strategy (vision, mandate, or guidelines) or reported on progress and success in the digital transformation of public service delivery. We only retained initiatives that met these criteria. Once the final list of initiatives was determined, we went back to all the government websites to search specifically for those.

2.4 Limit of the Analysis

It is worth noting that this inquiry was subject to certain limitations, mostly arising from the availability of information. While we aimed to identify trends and patterns in digital transformation initiatives implemented by Canadian governments, we recognize that our results may not provide a perfect depiction of reality. It is possible that some governments have implemented additional initiatives that are not publicly disclosed. We also observed variations in the level of transparency across different Canadian jurisdictions, which may have impacted our ability to identify and analyze all relevant digital transformation initiatives.

3. Results

3.1 Overview

A total of 12 significant initiatives that pertain to the digital transformation of public service delivery were identified (see Figure 1). These initiatives were subsequently classified into five distinct categories:

1. **Strategies**: documents outlining plans and approaches related to digital transformation.
2. **Guidelines and standards**: documents that establish procedures for digital communications and digital service delivery to the public.

3. **Open government portals**: platforms that make open government data available and accessible to the public.
4. **Public communications**: blogs or social media (e.g. Facebook, Twitter) that focus on sharing updates, case studies, progress, successes, and other information related to digital transformation.
5. **Digital unit**: teams dedicated to digital transformation and digital service delivery.

3.2 Initiatives Analysis

Figure 1 displays the 12 initiatives identified, classified into five categories and arranged based on their geographical locations (country, province, territory, city).

Document Type vs. Location

		Strategies			Guidelines & Standards (G&S)					Open Data Portal	Public Communications		Digital Units	Total Initiatives
		Open Government Strategy	Digital Strategy	Smart Government Strategy	Visual G&S	Accessibility G&S	Content G&S	Technology G&S	User Centered Design G&S		Blog (DDT)	Social Media		
Countries	United Kingdom	●	●		●	●	●	●	●	●	●	●	●	11
	Canada	●	●		●		●			●	●	●	●	8
Provinces	Ontario	●	●		●	●	●	●	●	●	●	●	●	11
	British Columbia	●	●		●	●	●	●	●	●		●		9
	Quebec	●	●		●	●				●	●		●	7
	Saskatechewan				●	●	●	●	●	●				6
	Alberta	●			●	●				●	●		●	6
	Prince Edward Island	●	●		●	●				●				5
	Newfoundland and Labrador	●	●		●					●			●	5
	New Brunswick	●	●		●					●			●	5
	Nova Scotia	●								●	●			3
	Manitoba				●	●				●				3
Territories	Yukon				●	●	●	●	●	●	●			7
	Northwest Territories	●	●		●	●	●			●				6
	Nunavut				●									1
Cities (Population >1 Million)	Montreal		●	●	●					●	●	●	●	7
	Vancouver	●	●	●		●				●				5
	Toronto	●		●	●			●		●				5
	Edmonton	●	●	●	●					●				5
	Calgary		●	●	●	●				●				5
	Ottawa			●										1
Total Locations		13	12	6	17	11	6	5	4	18	7	4	7	

Figure 1: Initiatives in relation to geographical locations

3.2.1 Geographical Locations and Initiatives

We first analyzed the initiatives based on their geographical location (country, province, territory, city) (see Figure 1).

Overall, Ontario (11), British Columbia (9), and Canada (8) had the highest number of initiatives, while Nunavut (1), Ottawa (1), and Manitoba (3) had the lowest.

Among the provinces and territories, Ontario (11), British Columbia (9), Yukon (7), and Quebec (7) emerged as the frontrunners, whereas Nunavut (1), Manitoba (3), and Nova Scotia (3) had the fewest initiatives. Regarding cities, Montreal (7) appeared to be the leader, whereas Ottawa (1) had the least number of initiatives.

As for the UK, 11 of the 12 initiatives were identified in that government. According to our corpus, the only initiative not identified was the smart government strategy, which appears to be used by cities exclusively. This observation seems to indicate that the initiatives selected indeed represent crucial components of digital transformation efforts within governments.

The geographical distribution of the initiatives reveals some interesting trends. It appears that the more populous provinces and territories, such as Ontario, British Columbia, and Quebec, have a greater number of initiatives, which could be attributed to their larger budgets and greater resources. It's also worth noting that Montreal, being one of Canada's largest cities, has the most initiatives among the cities examined. However, it's somewhat surprising that Ottawa, as the nation's capital, has only one initiative listed, given its central role in the federal government. This may indicate a need for greater investment in digital transformation in the capital region or more transparency about existing government initiatives. Indeed, they may have implemented digital transformation initiatives that are not publicly disclosed and thus not captured in this analysis.

We observed a disparity in the number and types of digital transformation initiatives implemented between levels of government (correlations between cities within a province). For example, while the province of Ontario has 11 initiatives, the cities in the province have significantly fewer (Toronto [5], Ottawa [1]). Also, the province of British Columbia has nine initiatives, but the city of Vancouver only has five. The identified disparities may suggest a lack of knowledge-sharing and best practices among both similar and distinct levels of government. This highlights a potential need for more extensive dialogue and collaborations to foster a more coordinated and consistent approach to digital transformation nationwide.

3.2.2 Initiatives Frequency

We also analyzed the frequency of each initiative. Open data portals (18 out of 20 Canadian geographical locations, or 90%) and visual guidelines and

standards (17 out of 20 Canadian geographical locations, or 85%) appear to be the most commonly implemented initiatives.

When examining the presence of initiatives from the strategy documents category, we found that 16 out of 20 (80%) Canadian geographical locations included at least one type of strategy document. Six of the ten provinces (60%), one of the three territories (33%), and four out of six cities (66.67%) had a digital strategy document publicly available, potentially highlighting a commitment to digital transformation across various levels of government. It is worth noting that smart government strategies were exclusively identified in cities, which could suggest either a particular focus specific to the municipal level or the adoption of a city-specific language to talk about digital transformation.

Establishing guidelines and standards appears to be an important initiative across various governments. These guidelines encompass visual design, accessibility, content generation and strategy, technology utilization, and user-centered design, underlining the role of good design practices in effective digital service delivery. These guidelines are primarily associated with the development and deployment of digital products within governments. A clear emphasis is seen on the formation of visual and accessibility guidelines, with these initiatives being the most common. Specifically, 85% (17 out of 20) of Canadian locations have visual guidelines, and 55% (11 out of 20) have accessibility guidelines in place.

The analysis revealed that 40% (8 out of 20) of Canadian locations employ some form of digital public communication initiative to share their progress in digital transformation. Among these, 30% (6) use blogs, 20% (4) use social media, and 15% (3) use both. All the organizations that have implemented at least 7 out of 12 identified initiatives have a dedicated blog or social media platform or both for discussing digital transformation. However, only two organizations with 6 or fewer initiatives have adopted this practice (Alberta with 6 and Nova Scotia with 3). From this analysis, it seems like organizations with a higher number of initiatives are more likely to utilize public communication channels such as blogs and social media to discuss their digital transformation advancements and undertakings. This could indicate that these organizations are more advanced in their transformation journey and actively seeking ways to communicate their progress to their stakeholders. It also highlights the importance of public communication channels to raise awareness of and promote transparency in digital transformation.

Digital units were found in 35% (7 out of 20) of the Canadian geographical locations, including Canada, five provinces, and one city. The presence of digital teams appears to be more common at the federal and provincial levels, which may be due to population and government size. Many governments have established digital government units to manage digital transformation and the digital services offered, with the first digital unit in Canada created in 2017 by the Government of Canada (Clarke, 2020). While exact creation dates for most of the digital units were not found, they seem to be relatively recent initiatives. Notably, the absence of a digital unit does not necessarily indicate a lack of digital transformation efforts, as some organizations may have distributed responsibility for digital initiatives

across various departments or teams. For example, while British Columbia does not seem to have a specific digital unit, their digital government website indicates a collaborative effort among various stakeholders (Province of British Columbia, 2022).

3.3 Placement within the Governmental Structure

Our analysis then examined the placement of these initiatives within the governmental structure (see Figure 2). Identifying the initiatives within governmental structures can hold significant value. This aspect can uncover the decision-making pathways and bureaucratic control around these digital endeavours and highlight which entities bear the ultimate responsibility for steering digital transformation. Furthermore, in the context of digital service delivery and user experience, the placement of initiatives could reflect the government's focus and commitment to putting user needs at the forefront of its digital strategy.

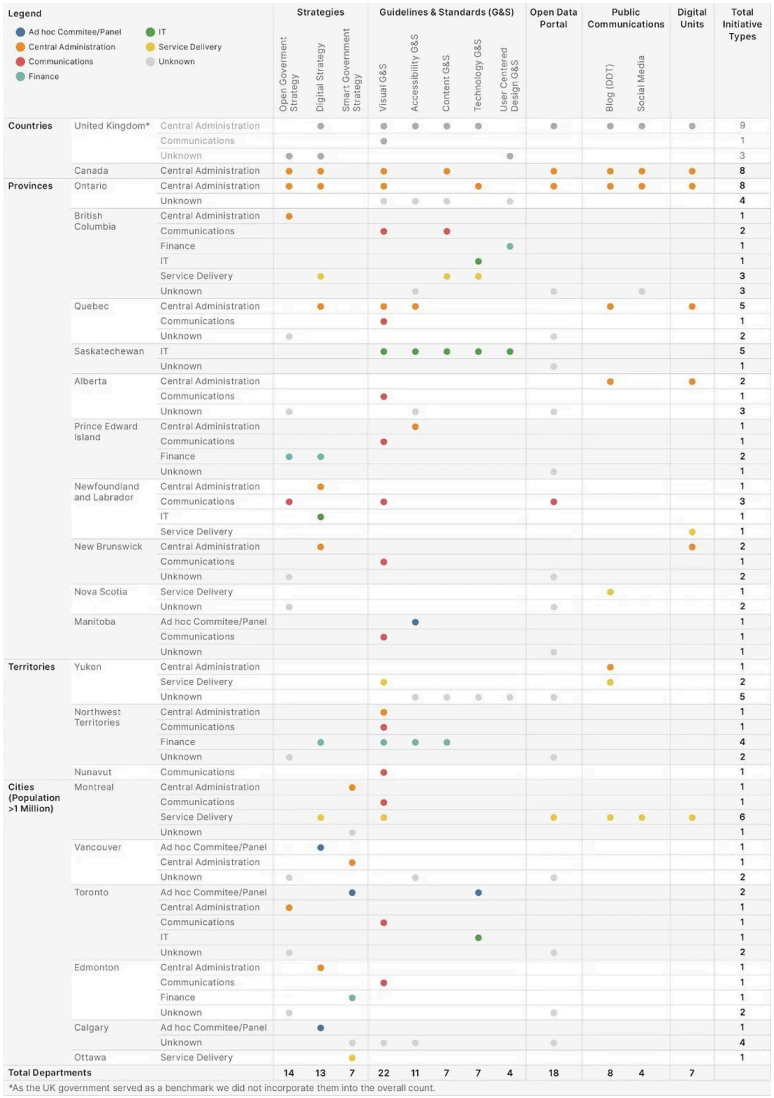

Figure 2: Placement of Initiatives within a government structure

3.3.1 Accountabilities of the Initiatives

First, we looked at which divisions were responsible for at least one initiative. Notably, Central administration was identified in most governments (15 out of the 20 Canadian geographical locations, 75%). The

other divisions are Communications (11, 55%), Service Delivery (6, 30%), Finance (4, 20%), IT (4, 20%), Ad hoc Panel (1, 5%) and lastly, Unknown (15, 75%). It is noteworthy that certain governments, such as Canada, Ontario, Montreal, and Saskatchewan, have chosen to adopt a centralized strategy for their digital transformation projects, with most of the initiatives being handled by a single division. However, British Columbia and Toronto appear to have embraced a more interdepartmental approach that involves multiple divisions. For comparative purposes, it appears that the central administration in the UK is also the most prevalent division responsible for DT initiatives. Additionally, this government also seems to adopt a centralized strategy in its approach to digital transformation.

Digital transformation entails a strategic shift towards value creation using digital resources, necessitating adjustments in core competencies and prioritization in management agendas. Therefore, this centralized approach seems relevant as it can allow organizations to navigate and accelerate this transformation. It may lead to greater efficiency in managing resources and expertise, avoiding duplication of efforts (Firk, et al. 2021). Furthermore, centralization may facilitate the establishment of common standards, policies, and procedures, ensuring consistency and interoperability across different departments and agencies (Firk, et al. 2021). While a centralized approach can offer significant benefits, it may not always be the best approach. For instance, relying solely on a single division or entity can increase complexity in top management teams, which might limit flexibility and creativity (Jreisat 2018, p.73). Additionally, some projects may require the input and expertise of multiple divisions or agencies, which a centralized approach may not be able to leverage effectively (Firk, et al. 2021). In such cases, an interdepartmental approach, like the one adopted by British Columbia and Toronto, may be more effective in achieving the desired outcomes.

3.3.2 Digital units

Digital units were examined in more detail. Digital units play a crucial role in implementing digital strategy initiatives (Clarke 2020, Firk et al. 2021). They are responsible for managing and coordinating digital transformation projects and ensuring that the government's digital services meet the needs of citizens and businesses. They usually embrace an agile, user-centered approach by launching prototypes early and improving them iteratively in response to user feedback and needs (Clarke, 2020). This closely mirrors system and service design principles, emphasizing co-creation, prototyping, and iterative improvement based on user input (British Columbia Government, 2016). Indeed, service design considerations are crucial to these units, shaping the user journey and improving the overall user experience of government digital services (Clarke, 2020).

Five of the Digital Units initiatives identified are under the purview of central administration, and two (Montreal and Newfoundland and Labrador) are under service delivery. Central administration is often responsible for setting policy, developing strategies, and managing resources across the government (Bryer, 2021). As such, they seem well-positioned to oversee and coordinate digital transformation initiatives across different departments and agencies.

3.3.3 Many “Unknowns”

It is worth noting the high number of “unknowns” in our findings are significant. Indeed, for 80% (16 out of 20) of the Canadian geographical locations, at least one initiative could not be tied to a specific division by looking at the publicly available information. Additionally, the process of identifying the divisions responsible for each initiative was challenging and somewhat confusing. Finding that information for most Canadian geographical locations was a time-consuming process, requiring extensive searches and digging deep into government websites. In some cases, it was even necessary to examine the website’s code to find the relevant information. This lack of transparency raises concerns about accountability and efficiency in the implementation of digital initiatives. Considering Canadian governments prioritize transparency (Government of Canada, 2022), it is reasonable to expect a more open disclosure of responsibility for such initiatives. In contrast, the UK government serves as a positive example by making this information easily accessible on its website in a coherent and consistent manner for most of the initiatives.

On that note, we originally wanted to identify when those initiatives were implemented. However, the publicly available information was either insufficient or too ambiguous to locate. The limited data we were able to gather did not enable us to discern trends or conduct substantial comparisons. Consequently, we decided to exclude this particular information from our analysis.

4. Digital Maturity and Digital Transformation Initiatives

Through the analysis of these initiatives, one of our aims was to investigate if they could offer some insights into the maturity of digital transformation within public organizations. Digital transformation maturity can be described as the level of development and integration of digital technologies, processes, and culture within an organization or industry. It encompasses various aspects, such as the adoption of digital tools, the transformation of business processes, the digitization of data, and the development of a digital-first culture (Teichert, 2019).

The number of initiatives implemented by an organization identified in this analysis may suggest a higher level of maturity in its transformation journey and can be seen as an indicator of its progress in digital transformation because it shows the level of commitment to digital transformation and innovation within the organization. Implementing these initiatives requires an investment of resources, including financial, human, and technological. Governments from our corpus that have implemented many of these initiatives seem to show commitment to leveraging digital to improve their operations and services. Moreover, we observed that the UK government has also implemented most of the initiatives selected in this study. This country’s status as a pioneer in digital transformation could suggest that these initiatives might be particularly valuable indicators of digital transformation maturity.

However, it is important to note that the number of initiatives alone is certainly not a complete indicator of the level of digital transformation maturity. The specific types of initiatives adopted and their effectiveness in

achieving the intended outcomes can vary widely. Thus, it is important also to consider other factors, such as the level of integration and coordination between initiatives, the degree of cultural and organizational change, and the overall strategy and vision for digital transformation. It would also be important to examine the initiatives themselves to understand how they align with the organization and how they contribute to the organization's transformations. Particularly, the analysis of digital transformation strategies documents could provide a deeper understanding of an organization's digital transformation journey and maturity level.

5. Conclusion

This analysis aimed to provide insights into what digital transformation initiatives are being implemented and how they are communicated by Canadian governments. By identifying various types of initiatives, the analysis aimed to provide insights and information that can support governments in Canada and other countries on their digital transformation journey. Although the analysis is subject to limitations, it provides a useful snapshot of key digital transformation initiatives implemented by Canadian governments. The insights gained can be used to understand the role of digital service delivery and overall communications in supporting digital transformation efforts and inspiring design strategies that facilitate the adoption and support of digital transformation initiatives to improve the user experience of citizens.

Moreover, the findings may foster collaboration among different levels of government and public organizations currently undergoing digital transformation processes. While the Canadian federal government seems to be quite advanced in its digital transformation journey, regarding the initiatives identified, the results suggest that there is still room for improvement in ensuring that all regions integrate these initiatives. While some provinces have made significant strides in implementing many digital transformation initiatives, others have not progressed as far. Greater collaboration and knowledge-sharing between different levels of government can promote a more consistent and coordinated approach to digital transformation initiatives, which will help to ensure that all regions in Canada can benefit from the opportunities presented by digital transformation, including enhanced service delivery, increased efficiency, and improved quality of life. We hope the findings and insights can provide a basis for future research efforts that seek to gain a more profound understanding of DT in the delivery of public services.

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