

The Consumer Value Proposition for a Hypothetical Digital Canadian Dollar

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Abstract

Research into a hypothetical Digital Canadian Dollar has largely focused on public policy, financial technology innovations and public opinion. In this study, we explore the consumer value proposition of a hypothetical Digital Canadian Dollar, considerations for its adoption and the users who would benefit most from this potential new payment method. We employ a design-thinking consultation methodology, allowing participants to interact with research prototypes of increasing complexity to reveal user preferences, constraints, and adoption influences. Qualitative insights are corroborated using quantitative, large-population surveys and contrasted with results from a Bank of Canada open online public consultation.

We find that most participants would support the issuance of a hypothetical Digital Canadian Dollar, and we identify the segments most likely to be early adopters. However, broad early adoption is unlikely given that available payment methods meet the needs of most users. Financially vulnerable segments often have the most to gain from this new payment method but are most resistant to adoption. Important considerations for appeal and adoption potential include universal merchant acceptance, low costs, easy access, simplified online payments, shared payment features, budgeting tools, and customizable security and privacy settings. Participants cited these features far more often than offline functionality and the ability to make anonymous payments. Our results also show that cash remains an important method of payment and that certain groups may strongly resist a Digital Dollar if they conflate its launch with the end of cash issuance. We find a hypothetical Digital Canadian Dollar requires the support of an information campaign to be understood, valued and adopted.

Topics: Accessibility, Bank notes, Central bank research, Digital currencies and fintech

JEL codes: C9, D12, E42, E58, O3, O33

Résumé

Les recherches sur l'introduction hypothétique d'un « dollar canadien numérique » s'intéressent, pour l'essentiel, à des aspects comme la politique publique, les innovations dans le domaine des technologies financières et l'opinion publique. Dans cette étude, nous nous penchons plutôt sur la proposition de valeur d'un tel dollar pour les consommateurs en étudiant les facteurs déterminants de son adoption, ainsi que les utilisateurs qui bénéficieraient le plus de ce nouveau mode de paiement potentiel. Pour ce faire, nous avons recours à une méthode de consultation fondée sur la réflexion conceptuelle, dans le cadre de laquelle nous invitons les participants à manier des prototypes d'une complexité croissante afin de découvrir leurs préférences et préoccupations, et les facteurs influant sur l'adoption du dollar numérique. Les observations qualitatives sont corroborées par des enquêtes quantitatives menées auprès d'un grand nombre de personnes et comparées aux résultats d'une consultation publique ouverte réalisée en ligne par la Banque du Canada.

Nous constatons que la plupart des participants seraient favorables à l'émission d'un hypothétique « dollar canadien numérique », et nous identifions les groupes les plus susceptibles de faire partie des

premiers utilisateurs. Une adoption rapide à grande échelle est cependant peu probable, car les modes de paiement qui existent déjà répondent aux besoins de la plupart des utilisateurs. Les groupes vulnérables sur le plan financier sont généralement ceux qui auraient le plus à gagner de ce nouveau mode de paiement, mais les plus réticents à l'adopter. Parmi les principaux facteurs qui pourraient susciter l'intérêt et faciliter l'adoption, notons une acceptation universelle par les commerçants, des coûts peu élevés, un accès facile, des paiements en ligne simplifiés, des fonctions permettant de partager les paiements, des outils de gestion budgétaire et des paramètres de sécurité et de confidentialité personnalisables. Les participants ont davantage cité ces caractéristiques que la possibilité d'utiliser le dollar hors ligne ou d'effectuer des paiements anonymes. Les résultats de notre étude montrent aussi que l'argent comptant demeure un mode de paiement important et que certains groupes pourraient s'opposer fermement à l'équivalent numérique du dollar s'ils associent son lancement à la fin de l'émission d'espèces. Enfin, pour qu'elle soit bien comprise, considérée et adoptée, l'idée du « dollar canadien numérique » doit être soutenue par une campagne d'information.

Sujets : Accessibilité, Billets de banque, Recherches menées par les banques centrales, Monnaies numériques et technologies financières

Codes JEL : C9, D12, E42, E58, O3, O33

1. Introduction

In an era of rapid digitalization, the Bank of Canada needs to be ready if Canadians' payment preferences or needs change. As commerce becomes ever more digital, Canadians should continue to have all the benefits of money issued by the central bank. Whether and when Canada will need a Digital Canadian Dollar remains uncertain.¹ Ultimately, Canadians will decide—through their representatives in Parliament—if a Digital Canadian Dollar should be issued (Bank of Canada n.d.).

Research into a hypothetical Digital Canadian Dollar (i.e., a digital currency that could potentially be issued by Canada's central bank) has advanced on many fronts. The Bank has focused foremost on analyzing public policy considerations, such as the benefits of universal access to a Digital Dollar, competition in payments, resiliency and efficiency of payment systems. In parallel, Bank researchers are assessing innovations in financial technology to implement a system for a hypothetical Digital Dollar, with possible new functionalities such as offline payments and novel accessibility features (Minwalla et al. 2023; Miedema et al. 2020).

Understanding the potential value proposition of a hypothetical Digital Canadian Dollar for consumers is also crucial to its success. The Bank is studying the motivations and needs of end users such as consumers and merchants. In this paper, we discuss the findings of consultations to explore this value proposition for Canadians. We examine the opportunities for a hypothetical Digital Canadian Dollar. We also determine the concepts—i.e., the forms that an end-user device might take—that would encourage users to adopt a digital form of cash by offering an improved payment experience over other options.²

To this end, we use principles of design thinking and human-centred design.

Design thinking is a human-centred approach to innovation—anchored in understanding a customer's needs, prototyping rapidly and generating creative ideas—that transforms how to develop products, services, processes and even organizations. Design thinking encourages decisions based on evidence of what customers want instead of relying on historical data or instinct (IDEO 2024).

In our study's collaborative sessions, we shifted the focus directly on users, gathering participants in small groups, each group with a shared position on preferences and frustrations with existing payment methods. We introduced the concept of a hypothetical Digital Canadian Dollar by putting physical mock-ups of end-user devices in their hands. This allowed participants to see how a hypothetical Digital Dollar might look and imagine how they might use it. We then corroborated the findings of these in-person collaboration sessions by running our own large-population surveys.

¹ The term Digital Canadian Dollar is used throughout the study, and now ubiquitously by the Bank. We use this term rather than "central bank digital currency."

² If issued, a Digital Canadian Dollar would most likely be made available to Canadians through financial intermediaries and service providers rather than directly by the central bank. Nevertheless, the Bank is committed to the research of a hypothetical Digital Dollar that is accessible and meets the needs of Canadians.

Through this work, we assessed:

- the potential and spectrum for adopting a hypothetical Digital Canadian Dollar
- the critical factors that would influence adoption
- the users who would derive the highest benefit from adoption
- the challenges this hypothetical payment method could face

For information on what central banks in other countries have learned in their consultations with end users about a digital currency, see Appendix A.

In Section 2, we begin with a synopsis of the results for our consumer value proposition (CVP) study and offer qualifications for the study in Section 3. We describe our methodology in Section 4, explore the segmentation model in Section 5 and introduce the concepts created for this study of a hypothetical Digital Canadian Dollar in Section 6. In Section 7, we present results from our second survey, and, in Section 8, we describe the adoption spectrum predicted by our findings and list the critical adoption factors. In Section 9, we introduce the opportunity paradox and its impacts. In Section 10, we set out a broad summary of findings grouped by themes of privacy, security, trust, education and accessibility. Finally, we conclude in Section 11.

Within an evolving payments environment, we strive in this paper to answer the question: could a Digital Dollar address current barriers to—and future gaps in—payment methods to ensure no user is left behind?

2. Results snapshot (Canada)

The human-centred methodology used for this study included small groups working in collaborative sessions, surveys and specific mocked-up concepts for a hypothetical Digital Canadian Dollar. The study produced the following results.

Interest exists in a hypothetical Digital Canadian Dollar. However, interest does not necessarily translate to adoption. Most participants felt well served by current means of payment. Individuals who supported the issuance of a hypothetical Digital Canadian Dollar did not imagine themselves using it regularly. When asked, they anticipated using it as a back-up payment method or in emergencies. However, this finding differs from that of a larger online public consultation the Bank conducted in May and June of 2023. In that consultation, respondents were significantly opposed to a hypothetical Digital Canadian Dollar (Forum Research Inc. 2023).

The participants most likely to be **early adopters of a hypothetical Digital Canadian Dollar had a high level of trust in the concepts** presented and perceived great benefits to adopting. They expressed high levels of interest in trying *any* new payment method. This group includes teens, tweens and their families, students, young adults joining the workforce, Canadians experiencing homelessness, and those with cognitive or sensory disabilities. These participants expressed frustrations or constraints with existing payment options and saw these concerns addressed by the hypothetical Digital Canadian Dollar concepts presented.

A hypothetical Digital Canadian Dollar has the potential to offer the **greatest value, among end-user groups, to the financially vulnerable.** These users are the most likely to feel poorly served by existing

methods of payment, and participants in the study expressed specific frustrations. Paradoxically, participants within this segment were initially resistant to a digital form of cash and may adopt late. They predicted they will only feel comfortable with the new payment method once it is used everywhere and endorsed by peers.

Participants felt that, to adopt a hypothetical Digital Canadian Dollar, most **Canadians would require universal merchant acceptance** and a seamless integration into current payment and banking applications.

Other factors predicted in our study to have the most impact on adoption potential include:

- **low cost** (i.e., low or no fee to acquire and use)
- **shared payments** (e.g., bill splitting and co-managing accounts)
- **customizable security and privacy settings**

Participants frequently mentioned the integration of money management tools and ease of online payments as other top-of-mind considerations. And they assessed the ability to operate a hypothetical Digital Dollar without an internet connection (i.e., offline) as a desirable feature rather than a critical adoption factor.

Participants reported that **individuals who lack government-issued identification might find an unregistered hypothetical Digital Canadian Dollar appealing**. Those who demonstrate mistrust for governments may also value this feature. It is not predicted to be a critical adoption factor.

Based on the responses from participants in this study, we infer that most **Canadians would likely support the issuance of a hypothetical Digital Canadian Dollar**. However, a vocal minority of participants were rejectors because of their perceptions of government overreach.

Participants also noted that **cash continues to be important to Canadians and acknowledged the Bank of Canada will continue to support bank notes as long as Canadians want them**.³ They felt cash conveys a sense of security, ownership and control, particularly to those who may have low technological competence and low confidence in the financial system. The appeal of a hypothetical Digital Canadian Dollar is negatively influenced by participant concerns that it might eliminate cash.

Additional findings are explored in sections below.

3. Qualifications

Results of this study reflect the perceived value and adoption potential of a hypothetical Digital Canadian Dollar in 2022. These results have a **limited shelf life**. Environmental conditions, including the payments landscape, influence user opinion. As methods of payment evolve, this study's findings may need refreshing to continue to accurately reflect user preferences and needs.

³ Simply put, cash is a universally accessible form of public money. For this reason, the Bank of Canada will continue to support bank notes as long as Canadians want them (Morrow 2024).

We embraced an exploratory approach in this work, developing concepts without feasibility and viability constraints. We designed them to encourage thoughtful discussions and ideas, uncover user needs and gauge adoption potential. If Canada were ever to issue a hypothetical Digital Canadian Dollar, these and other constraints would need to be considered and this study updated with a new set of assumptions and concepts.

To reach participants, we leveraged an online panel exercise and two internet-based surveys. This certainly **biases study results in favour of participants with reliable internet access**. To understand the specific frustrations such users face, and to validate the appeal of an offline solution for a hypothetical Digital Canadian Dollar, participants with no or unreliable internet access would need to be consulted.

It would also be necessary to consult with **Canada's northern and Indigenous populations** to understand their unique and specific needs as well as the challenges they experience with current payment methods.

While we take an **accessible and inclusive design** approach, comprehensive research in these fields will be required. Additionally, any hypothetical Digital Dollar concept intended for public use will need to follow or exceed accessibility standards and established best practices for the payments industry. Specific user testing and refinement for accessibility will be required to ensure the end-user experience satisfies the Bank's core function of ensuring cash—and by extension, a potential digital form of cash—is accessible to all Canadians.

A hypothetical Digital Canadian Dollar is a complex notion to introduce. Despite our focus on engaging participants with stimulus material, grouping like-minded people into segments and making every attempt to avoid bias, we performed our work in a laboratory. Assessing the appeal of concepts and inferring real-world preferences and behaviours within a **laboratory setting** is challenging. These findings should be weighed against other research for a full picture of the appeal and adoption potential of a hypothetical Digital Canadian Dollar.

4. Consultation methodology

To establish the value proposition of a hypothetical digital Canadian dollar, the Bank partnered with seymourpowell, a design firm specializing in rapid prototyping and human-centred design. The study took just over two years to complete, culminating in August 2023.

Recognizing that Canada has a well-developed payments system, we aim to discover where a hypothetical Digital Canadian Dollar could fill gaps and relieve user frustrations rather than how to achieve significant early adoption. We want to find the user groups that might value a hypothetical Digital Dollar and the factors that would impact adoption.

We quickly recognized the challenge of engaging participants on a hypothetical Digital Canadian Dollar, a topic that is admittedly abstract. We developed a simple video to explain why the Bank was conducting research and how this payment method would differ from other available offerings. We developed images and simple renderings. Importantly, we put mocked-up end-user devices in the hands of participants, allowing them to understand what tangible forms a hypothetical Digital Canadian Dollar might take. Holding prototypes, participants were better able to visualize this new payment method and how they

might use it. They provided valuable feedback on the features that would improve their payment experiences. Even the simplest renderings, be they digital or three-dimensionally printed, were extraordinarily helpful to convey information and generate meaningful discussions.

Like-minded participants in small groups collaborated to review, discuss and prioritize tangible examples of product concepts. With direct input from Canadians, we developed hypothetical Digital Canadian Dollar use cases, payment scenarios and features. These helped create stimulus materials for discussions, including digital storyboards, videos and prototype end-user devices of increasing functionality. The Bank collaborated with Canadians to create its hypothetical Digital Canadian Dollar concepts.

Participant questions, interests and priorities guided the discussion. Every attempt was made to minimize bias by presenting stimulus material without scripted moderation. Participant questions were returned as discussion topics, rather than answered by facilitators. This helped reveal the user needs and expectations that prompted their questions without imposing constraints.

Allowing participants to steer discussions provided interesting results. Topics such as trust, security, privacy and accessibility emerged naturally. By observing the order in which topics emerged, we were able to understand each user group's most significant concerns. The time dedicated to each topic (e.g., privacy or security) provided interesting context and differentiation between user groups.

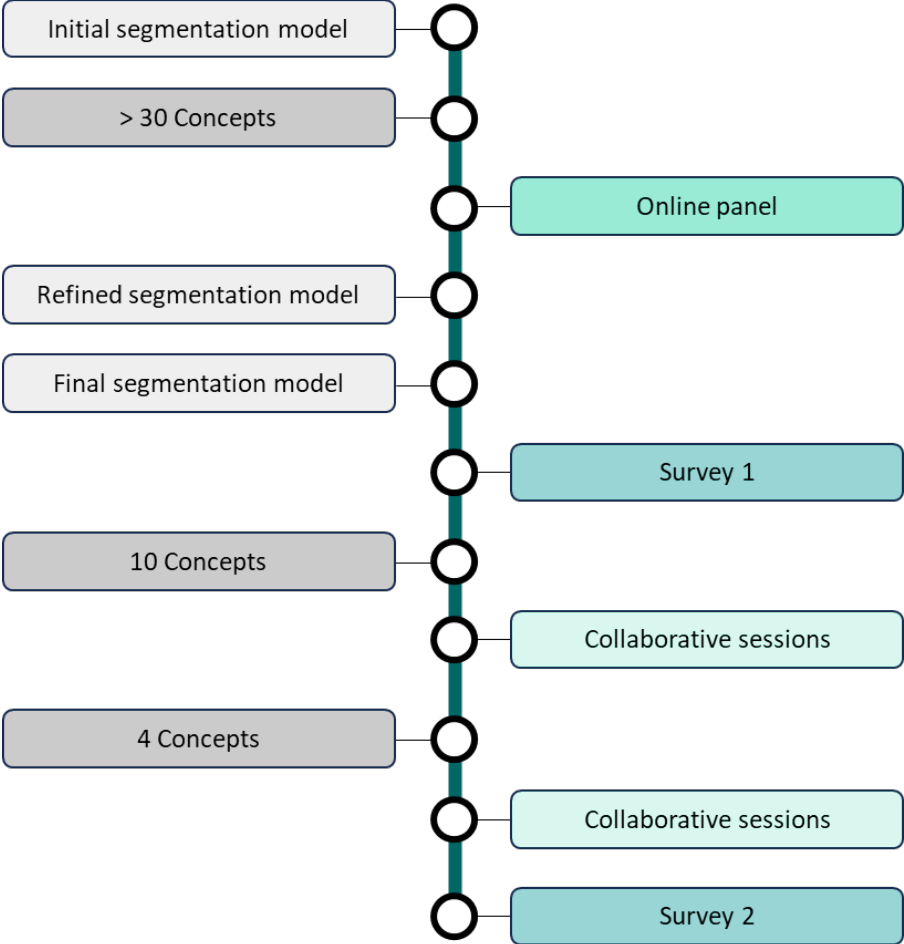
Grouping like-minded participants stimulated full, and in some cases emotional, testimonials on how a hypothetical Digital Canadian Dollar might impact their payment experience and their life.

Universal access is a key consideration for a hypothetical Digital Canadian Dollar and an important part of end-user research, so we felt it important to understand the needs of underserved user groups. For our surveys, we slightly oversampled participants with disabilities and those with low incomes. For collaborative sessions, we held these specifically for participants with disabilities. Separately, we also convened groups of expert panellists, such as disability support workers and shelter staff, to gain a broader sense of challenges faced by people with disabilities, people currently experiencing homelessness and the workers dedicated to their support.

In Survey 2, we also used the descriptive video. Given that participants were not present in person, we developed additional short videos and stills to show them the concepts, how each worked and how each could be tailored using options. These tools were far superior at describing the hypothetical Digital Canadian Dollar than words alone.

More than 150 Canadians participated in our collaborative sessions. More than 1000 Canadians contributed to the development of early concepts (Survey 1), and more than 1000 Canadians helped us corroborate our collaborative session findings (Survey 2) (**Figure 1**).

Figure 1: High-level steps in the consumer value proposition study

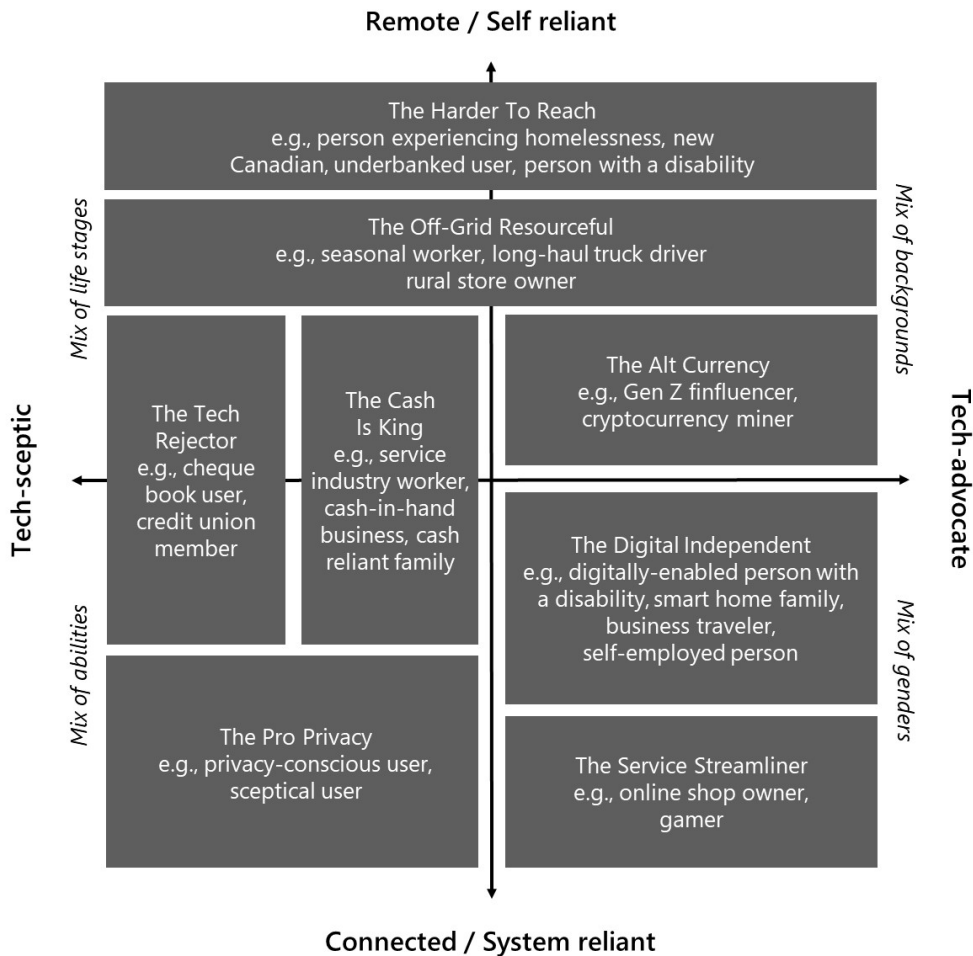


5. Segmentation model—an evolution

To guide our collaborative sessions, we developed a segmentation model (see **Figure 2**). We consulted 2021 population statistics to identify demographics such as region of residence, gender, age, first official language and immigration status (Statistics Canada. 2022), then used these to recruit representative participants. We slightly over-sampled participants with disabilities and those with low incomes to ensure that population segments that might be underserved, underbanked, hard to reach or heavily reliant on cash were well represented in our data.

We surmised these users with unmet payment needs might benefit more than other demographic groups from a hypothetical Digital Canadian Dollar: they do not use the range of payment methods available to most Canadians due to their preferences or to the constraints they face in accessing financial services and methods of payment (Henry et al. 2023).

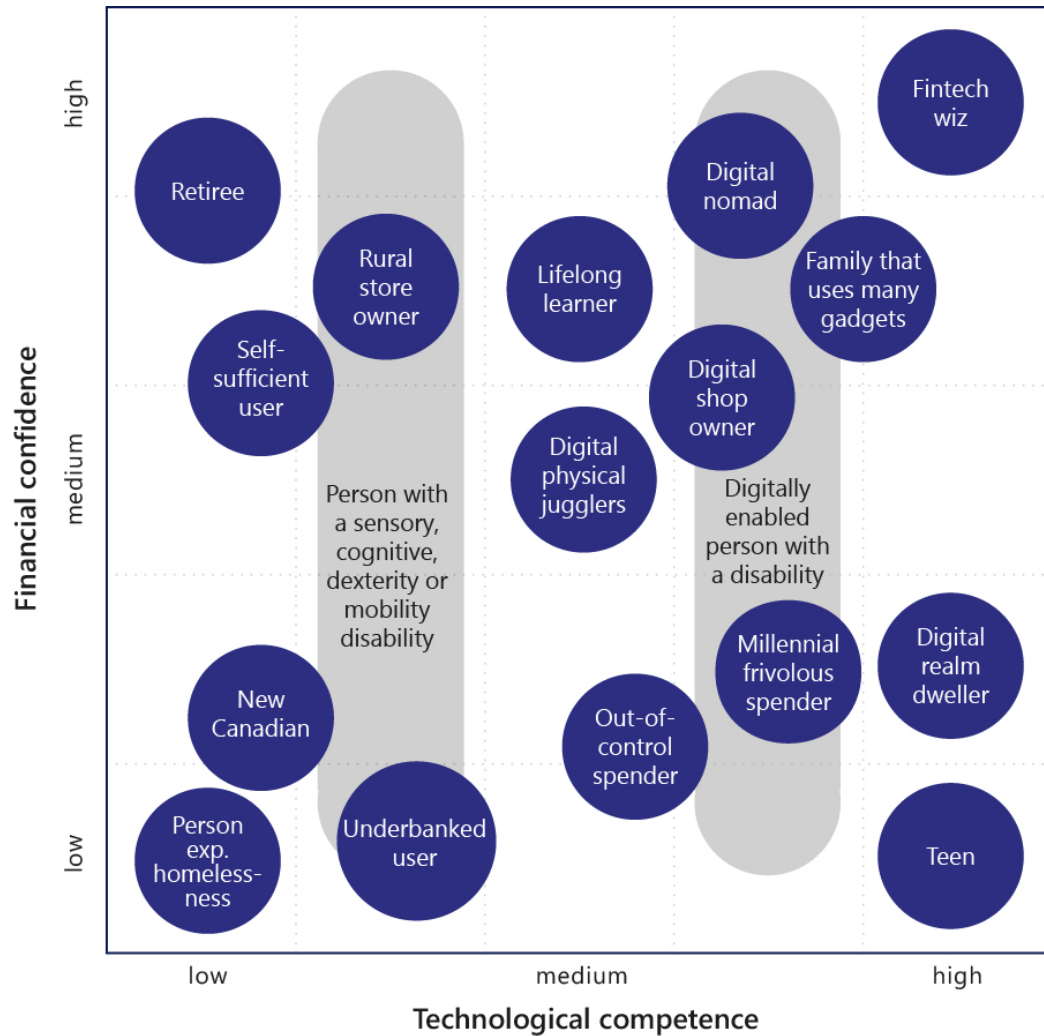
Figure 2: Initial segmentation model



Note: Gen Z refers to people born between the late 1990s and the early 2010s. A influencer is an influencer whose focus is to provide advice on financial products and investments. A smart home contains internet-enabled devices allowing remote monitoring and control.

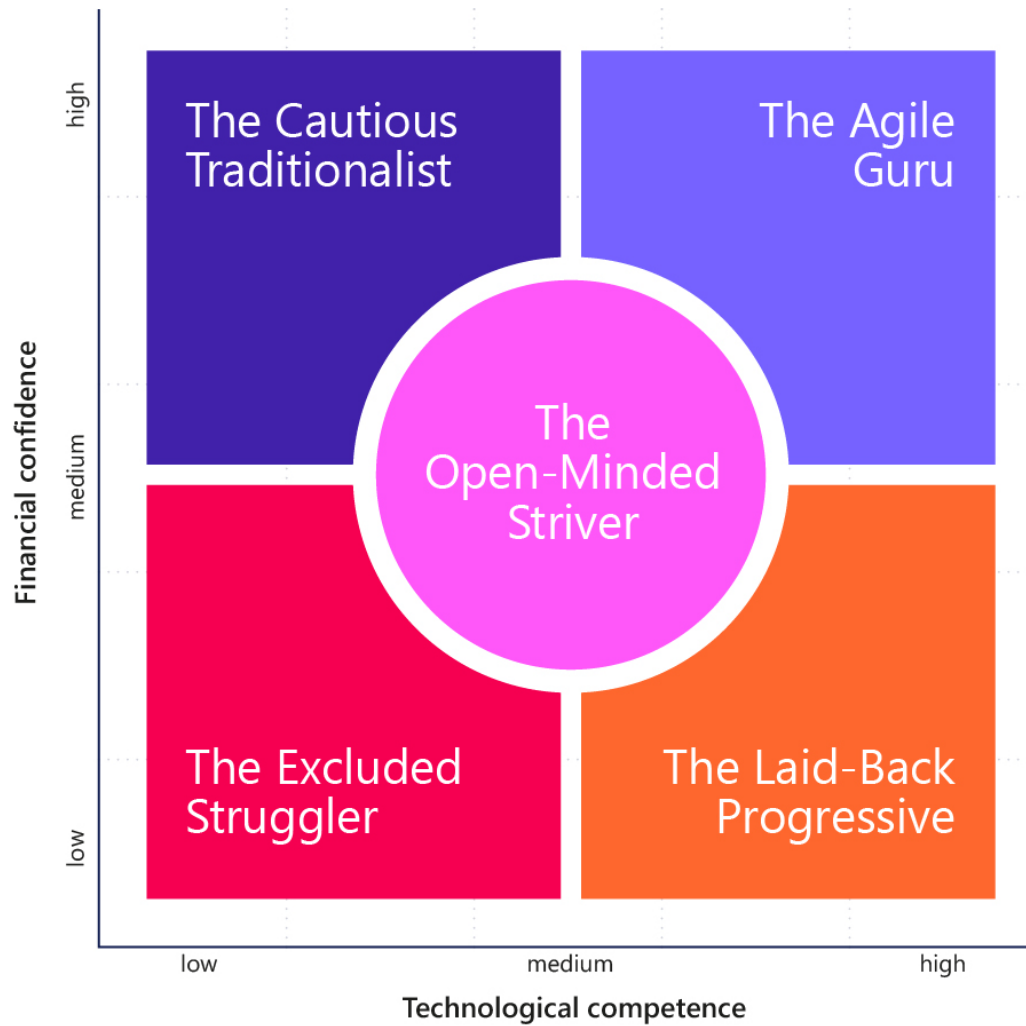
We used this model to recruit a small number of varied participants for an online panel, with a main goal of understanding frustrations and challenges with available payment methods. We explored topics including privacy, confidence, trust and the relationship Canadians have with cash. Using panel results, we broadened our segmentation model by identifying a larger number of specific user categories and evaluating where they would fit against different axes (e.g., age, education, income, financial confidence and technological competence), as seen in **Figure 3**.

Figure 3: Refined segmentation model



Although we were interested in all users identified, we recognized the challenges involved in having in-depth discussions with so many user groups. By evaluating the criteria common among groups of users, we simplified the segmentation without losing valuable user representation. Our final segmentation model identified **five user mindsets** (see **Figure 4**). We then mapped these against self-reported attitudes and behaviours about managing money and using technology.

Figure 4: Final segmentation model



Study participants answered seven multiple-choice questions on two variables: **financial confidence** (e.g., attitudes and behaviours about spending, financial and banking services, and budgeting) and **technological competence** (e.g., types of devices owned, attitudes and behaviours about purchasing a new smartphone, and enthusiasm for trying out new technologies). Participants were then assigned to a mindset based on their responses. These two variables were among the strongest predictors of participant reactions to a hypothetical Digital Canadian Dollar. In **Table 1**, we present a description of each segment, with an additional catch-all category, Broad Mainstreamers, for participants whose seven answers did not allow direct mapping to a specific mindset.

Table 1: Descriptions of mindset segments

Mindset	Financial confidence	Technological competence	Brief description
Excluded Struggler	LOW	LOW	<ul style="list-style-type: none"> • Has no formal banking in place • Tends to be low income • Is wary of new technology
Laid-Back Progressive	LOW	HIGH	<ul style="list-style-type: none"> • Is driven by convenience • Uses technology to make life easier • Is passive about their finances
Open-Minded Striver	MEDIUM	MEDIUM	<ul style="list-style-type: none"> • Is interested in new financial technologies and services • Uses a variety of payment methods
Cautious Traditionalist	HIGH	LOW	<ul style="list-style-type: none"> • Feels they may get left behind due to speed of technological change • Is careful with spending and makes their money work for them
Agile Guru	HIGH	HIGH	<ul style="list-style-type: none"> • Is very curious about new technologies • Tries to find the best financial and technology options • Mainly uses credit cards for rewards
Broad Mainstreamer	N/A		<ul style="list-style-type: none"> • Has no clear alignment to a specific mindset

We held collaborative sessions in a research lab environment with participants from each of these mindset groups. Participants were always recruited to represent a single mindset. We also held sessions with teens; tweens and their parents; people with cognitive, physical, and sensory disabilities; and people experiencing homelessness. In addition, collaborative sessions took place in-home with families, at a restaurant with teens and at a shelter with people experiencing homelessness. These in-the-field sessions helped approximate real-world scenarios by stepping out of the research lab and into the user environment.

In the initial segmentation, we thought of accessibility factors such as disabilities as distinct from other factors. However, users with disabilities did not emerge as distinct groups within the user segmentation model. Rather, people with disabilities are found in all mindset groups. As with all other users, their technological competence and financial confidence have significantly more impact on their mindset than any grouping based on disability.

6. Research concepts

The concepts—forms that end-user devices might take—played an important part in supporting our consultations. In the study’s earliest phase, we brainstormed more than 30 potential device ideas for a hypothetical Digital Canadian Dollar, based on participant reactions to current methods of payment. These concepts ranged from the more familiar (e.g., smart apps or payment cards upgraded with new features

such as screens) to the novel (e.g., biometric-enabled devices, two-part end-user devices or devices of different shapes and sizes).

Our first stage of collaborative sessions was supported by a selection of simple, three-dimensional prototypes. These models were printed with grey resin at the correct scale, but with few other details. While these were non-functional, rudimentary creations, they allowed participants to hold and manipulate the hypothetical Digital Canadian Dollar in various forms and imagine how they could be used for transactions. This allowed us to rank the concepts by preference and identify options that participants found helpful.

As the steps in our CVP study progressed, so too did the sophistication of our prototypes. For the second set of collaborative sessions, we selected the concepts with the broadest appeal to create four carefully designed, well-developed prototypes that participants could test within a simulated transaction environment created in the research lab. These helped identify the features critical to a positive user experience in a broad range of payment scenarios. Participants with disabilities provided guidance on how our final concepts would support an accessible digital currency.

The final four concepts selected were a payment card, a smart platform (app and online), a mini dot and a smart dot (see **Figure 5**). The payment card and smart platform are devices likely familiar to users. They could provide digital access to online hypothetical Digital Canadian Dollar accounts and allowed participants to explore new user options and describe additional features they would perceive as beneficial. The mini dot and smart dot devices may seem new to users but could provide a familiar, cash-like experience. They are unregistered devices that could allow transactions without internet connectivity (i.e., offline functionality).

Figure 5: Four research concepts for a hypothetical Digital Canadian Dollar



Note: The design thinking approach is immersive and iterative. It requires users to interact with products. These research concepts were created exclusively to support this study and are not actual payment tools.

Table 2: Descriptions of the four hypothetical Digital Canadian Dollar research concepts

Research concept	Description
Smart platform	The smart platform could connect to an online hypothetical Digital Canadian Dollar account to send and receive payments via a smart app. The platform could also be linked to other hypothetical Digital Canadian Dollar devices (e.g., a payment card, a mini dot or a smart dot). It could allow users to manage security and privacy options.
Payment card	Similar to a debit card, the payment card could provide access to an online hypothetical Digital Canadian Dollar account. It could be used unregistered and linked with the smart app and platform.
Mini dot	Hypothetical Digital Canadian Dollars could be stored directly on this offline, unregistered device. The mini dot could make or receive payments using the tap function.
Smart dot	Hypothetical Digital Canadian Dollars could be stored directly on this offline, unregistered device. The smart dot could make or receive payments using the tap function. It could have a simple touch-screen interface and could be protected with fingerprint access.

We explored the appeal of a universal access device (UAD) (Miedema et al. 2020). The UAD is intended to be a fully functional device specifically designed to mitigate digital, physical and cognitive barriers. However, it became clear that collaborative session participants had very little appetite for carrying a custom device. They showed an aversion to any product that could contribute to stigma or identify them as part of a specific group (e.g., users with a disability or experiencing homelessness). Indeed, this is also a challenge identified with certain government benefit cards. For these reasons, we adapted the UAD concept to the smaller mini dot and smart dot devices, which include accessibility features. Importantly, because these products would be available to all Canadians, they avoid introducing stigma.

7. Appeal—Survey 2 results

Most of the Canadians we consulted in our study had a degree of interest in the notion of a hypothetical Digital Canadian Dollar and supported research into it. In our qualitative collaborative sessions, the findings were largely favourable.

We understood the significant challenge of describing payment methods for the hypothetical Digital Canadian Dollar, and the four devices, using words alone. Therefore, when we conducted Survey 2, we incorporated a video to introduce this digital form of cash as well as videos and stills to describe the four user concepts. The favourable findings from our collaborative sessions were validated with results from Survey 2.

Results in **Table 3** show that 42% of participants in Survey 2 had favourable initial impressions of a hypothetical Digital Canadian Dollar.

Table 3: Survey 2 participants’ initial responses to a hypothetical Digital Canadian Dollar

Love it / Like it	Feel neutral	Don’t understand / Need more info	Dislike it / Hate it
42%	25%	13%	20%

Results in **Table 4** show that, when participants in Survey 2 had the opportunity to learn about each concept through images and videos, between 34% and 49% had a favourable response to the concepts. Notably, the more familiar devices had the highest broad appeal, whereas the newer concepts were more polarizing.

Table 4: Survey 2 participants’ final responses to a hypothetical Digital Canadian Dollar, by concept

Concept	Love it / Like it	Feel neutral	Don’t understand / Need more info	Dislike it / Hate it
Payment card	45%	23%	12%	20%
Smart platform	49%	20%	8%	23%
Mini dot	34%	24%	9%	33%
Smart dot	35%	25%	7%	33%

These results indicate that **many Canadians would consider adopting a hypothetical Digital Canadian Dollar**, but at the same time, a **significant number would reject it**. For some mindset segments, their lack of interest in a hypothetical Digital Canadian Dollar was heavily influenced by perceptions of government overreach. This perception was particularly strong in the Cautious Traditionalist segment and a key concern for participants in the Excluded Struggler segment. In the latter case, rejection is driven by a lack of trust in institutions. We infer from participant responses that trust in a hypothetical Digital Canadian Dollar and willingness to adopt would likely increase with widespread merchant acceptance, endorsement by trusted peers and increased familiarity.

Beyond what participants reported in the collaborative sessions or surveys that refer to specific concepts, there is significant opposition to a hypothetical digital Canadian dollar. Of particular note, the Bank's opt-in, online public consultation shows that participants were significantly opposed to a hypothetical digital Canadian dollar (Forum Research Inc. 2023). However, participants in that consultation did not have access to our concept mock-ups, videos and images.

8. Adoption spectrum

Interest in the concepts for a hypothetical Digital Canadian Dollar is a good indicator—but not an accurate predictor—of adoption. Our collaborative sessions indicated that adoption may not be as broad, as significant or as early as interest levels in Survey 2 suggested. We identified the user mindset groups most likely to be early adopters.

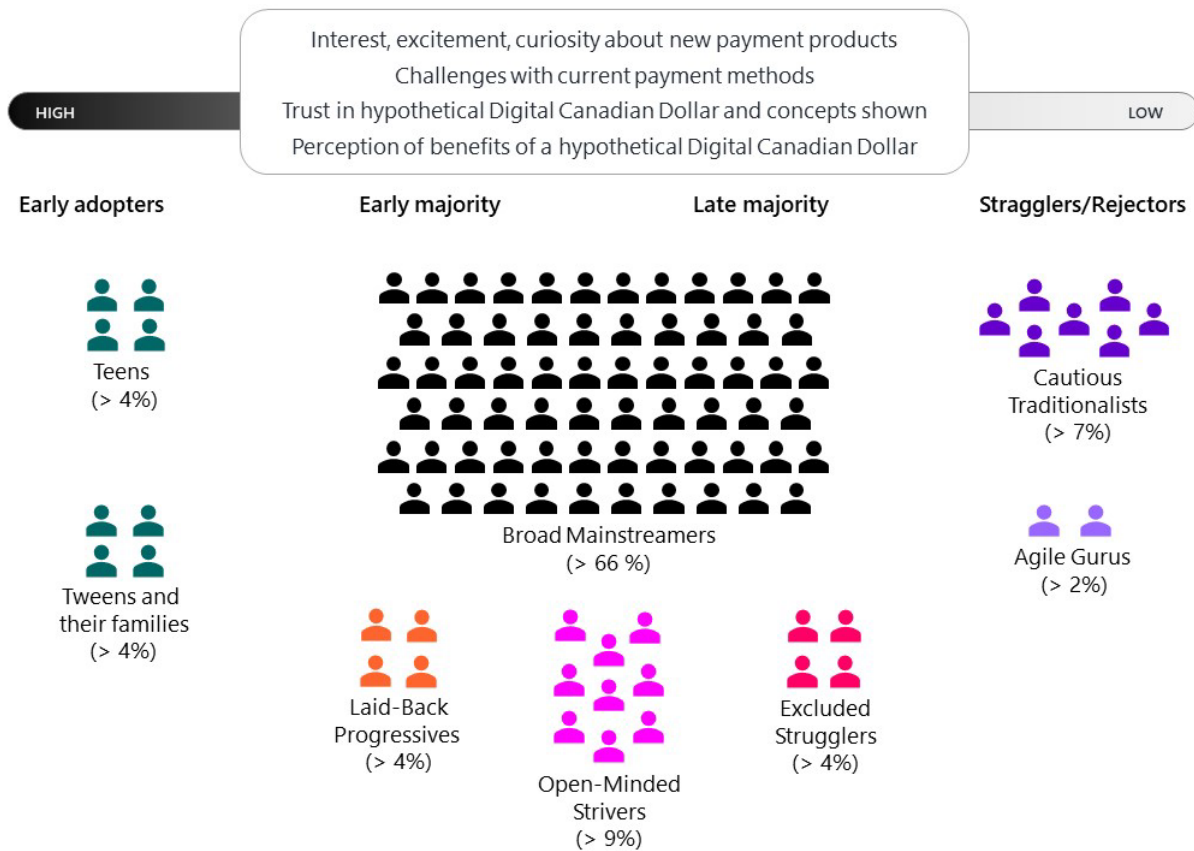
Results from Survey 2 were used to estimate the size of these segments in the general population. Note that the five segments do not fully partition the Canadian population because they capture attitudes closer to the extremes of financial confidence and technological competence scales. Survey 2 participants that could not be mapped directly to a mindset were collected in the catch-all Broad Mainstreamer segment.

Insights from the collaborative sessions and results from Survey 2 allow us to characterize adoption using these key factors:

- interest, excitement or curiosity about new payment technologies
- extent of the challenges with current payment methods
- trust in a hypothetical Digital Canadian Dollar and the concepts presented
- perception of benefits of a hypothetical Digital Canadian Dollar relative to existing payment methods

We then placed user segments along an adoption spectrum (**Figure 6**).

Figure 6: Spectrum of user segment positions on adoption



Most participants, represented by the **Broad Mainstreamers** category, felt they are well served by current payment methods. They would only adopt and trust a hypothetical Digital Canadian Dollar once it is universally accepted and its benefits are touted by trusted sources. This group’s challenges with current payment methods or the perceived benefits of a hypothetical Digital Dollar were not significant enough to compel them to adopt.

Teens as well as tweens and their families demonstrated the greatest potential to become early adopters. This group may include students, young adults joining the workforce and families with tweens. They showed great enthusiasm for a hypothetical Digital Canadian Dollar that was free to acquire and use. They saw strong benefits of a digital form of cash relative to other payment methods. As well, since they tend to lead a frugal lifestyle and rely on others to support them financially, money management features emerged as a crucial trait and an unmet need. Their ages can limit access to the full breadth of financial services. They showed a strong interest in shared payment features, for use with their friends and family. Parents were interested in the concepts for the hypothetical Digital Canadian Dollar that can foster wise spending habits in their children. There was an emphasis on the importance of adjustable levels of control, managed through the smart platform, to suit appropriate levels of autonomy.

Open-Minded Strivers expressed curiosity in adopting a hypothetical Digital Canadian Dollar for certain specific use cases, such as providing funds to children, sharing payments and performing offline payments

in remote locations. However, they need universal acceptance of this payment method before they are willing to adopt it.

Laid-Back Progressives may be in the early majority of adopters because participants in this segment perceived benefits in a hypothetical Digital Canadian Dollar, particularly one that is free to access and use and offers reliable money-management tools. This segment ranked high on the scale for technological competence and were generally curious about the concepts and options. They prioritized ease of use and convenience. If a hypothetical Digital Dollar were to operate with existing systems, tools and devices for payment, this group would be more likely than not to adopt it.

Excluded Strugglers have more to gain from a hypothetical digital Canadian dollar than any other segment. However, this group expressed the most challenges with current payment methods and were initially among the least interested in such a form of digital cash. They were apprehensive about new technology, with low trust in the hypothetical Digital Canadian Dollar concepts (particularly the mini dot and smart dot) and substantial privacy concerns. However, their interest grew over the course of our collaborative sessions. As they came to understand the concepts and built trust with the study moderators, the appeal of a hypothetical Digital Dollar increased. Consequently, we believe there is potential to move some Excluded Strugglers toward the early majority with targeted information sharing and support. A feeless version of a hypothetical Digital Canadian Dollar appeared to offer the greatest value to this segment, as participants tended to emphasize the importance of avoiding account and transaction fees. Paradoxically, Excluded Strugglers valued an unregistered payment solution, but they admitted that they are unlikely to use it given their desire to be able to recover funds from a lost or stolen device.

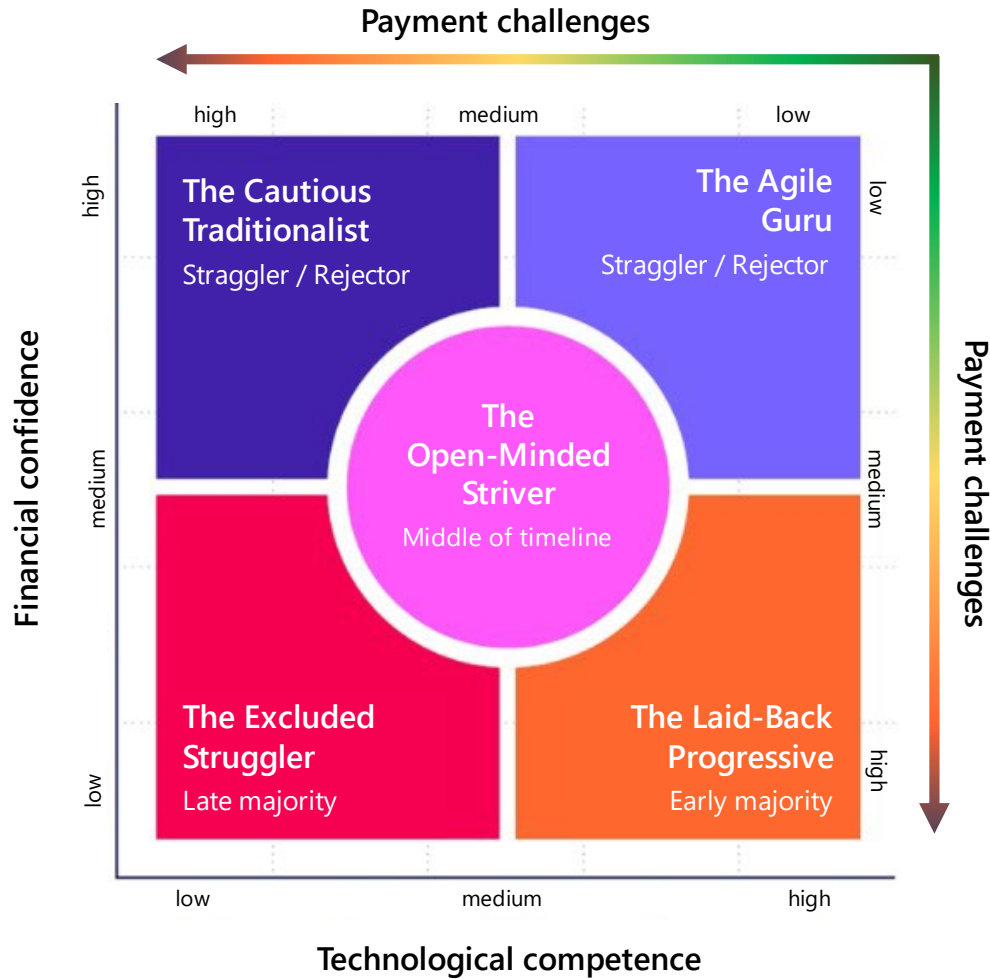
Cautious Traditionalists had difficulty perceiving the benefits of a hypothetical Digital Canadian Dollar over existing payment methods. They were skeptical of the need for this new form of money and of its reliability. They did not trust that the concepts were secure or that their personal information would be kept private. Many Cautious Traditionalists exhibited a general mistrust of government organizations, viewing a hypothetical Digital Dollar as a potential tool for government surveillance.

Though most **Agile Gurus indicated a high interest** in a hypothetical Digital Canadian Dollar, discussions in the collaborative sessions revealed that this interest is born of curiosity rather than need. Most did not perceive the benefits that would encourage adopting a digital form of cash for daily use. They also tended to be skeptical about the security and reliability of new features, such as the offline function and enhanced privacy. This group was most likely to prioritize rewards and incentives in their choice of payment method, and therefore saw low value in adopting a hypothetical digital Canadian dollar since it would not reward loyalty.

9. Opportunity paradox

The opportunity paradox for a hypothetical Digital Canadian Dollar can be summarized quite simply: mindset segments underserved by current methods of payment and for whom a digital form of cash would have the greatest positive impact may trust it the least and be among the most reluctant segments to adopt it (see **Figure 7**).

Figure 7: The opportunity paradox:
Users with high payment challenges may be late adopters of a hypothetical Digital Canadian Dollar



In our study, the paradox was especially strong when we first presented the abstract idea of a hypothetical Digital Canadian Dollar. Participants expressed fears that such a digital payment method would eliminate cash, or that it would be volatile, similar to cryptocurrency. However, when participants were offered the opportunity to ask questions, voice their concerns and discuss a hypothetical Digital Canadian Dollar with the like-minded participants in their group, the idea was demystified and became more palatable. With physical concepts in hand, participants had a better understanding of how the user devices could deliver an enhanced payment experience and specific benefits. They began to imagine scenarios where the concepts could enhance their transactions. By the end of the collaborative sessions, participant views often evolved from their initial reluctance. They perceived value in a hypothetical Digital Dollar and said they would be far more likely to adopt it.

If leveraging a hypothetical Digital Canadian Dollar to improve financial inclusion were ever desired, this paradox would be especially important to understand. To reduce the challenges and barriers facing users underserved by available methods of payment, the Bank would need to invest in a targeted information

and awareness campaign. This may compress the adoption spectrum and reduce the gap between early and late adopters. The sooner underserved users adopt a hypothetical Digital Dollar, the faster the measurable impact on financial inclusion could be perceived.

10. Key findings by theme

10.1 Adoption factors

Many segments repeatedly and consistently raised the following primary adoption factors:

- **The most important consideration was that a hypothetical digital Canadian dollar would be free to acquire and use.**⁴ Those with low financial confidence were motivated by the possibility of avoiding bank account fees and transaction fees. Participants were interested in the ability to open and control multiple accounts—and linked accounts—on a smart platform without incurring multiple fees.
- **A shared payments feature** (e.g., bill splitting and co-managing shared accounts) was of interest to participants with shared living arrangements or who are likely to participate in or organize group activities. Shared payments appealed to users who financially support others, such as children or an elderly family member or friend.
- Participants wanted to be able to **customize the settings related to security, privacy, notifications and accessibility**. They liked having options that provide a sense of control, even as they admitted they may never use these options.
- **There was great appeal for payments that settle instantly.** Payment delays can be a significant challenge for those on a tight budget, and settlement was a frequent consideration for those with lower financial confidence, which generally coincided with lower income.
- Participants were interested in incorporating simple, **personalized money management and budgeting tools** into the smart platform for a hypothetical Digital Canadian Dollar. They wanted such a platform to offer tips and to connect them to government-backed, reliable financial information resources. Users valued options that made them feel in control of their finances.
- Participants would expect a **hypothetical Digital Canadian Dollar to provide the seamless contactless payment experience offered by current payment methods**. They expressed an interest in easier online, person-to-person payments where current options are limited. Users wanted the ability to transact online with peers without having to share personal information (such as a phone number, email address, security question, etc.).

⁴ We did not introduce the idea that a hypothetical Digital Canadian Dollar would be free to access and use. This was universally presumed by participants when this digital payment method was described as cash-like and issued by the central bank.

- **A hypothetical Digital Canadian Dollar was often thought of as a back-up payment option.** Participants did not imagine it replacing their primary payment method.
- The option of a **non-registered hypothetical Digital Canadian Dollar reassured some participants about their privacy**, even if most imagined using a fully registered solution. For some, a non-registered option alleviated concerns about government monitoring. This view was strongest for participants with limited access to banking services and who would like access to a hypothetical Digital Dollar without providing their personal information. However, they felt that a bigger concern is the inability to recover funds from a non-registered device that is lost or stolen.
- Most participants stated a **preference for a hypothetical Digital Canadian Dollar issued by the Bank of Canada** over a digital currency issued by a third party.

The adoption rate (i.e., the time gap between early and late adopters) can be influenced by targeted information initiatives and broad merchant adoption. The sooner reluctant adopters see a hypothetical Digital Canadian Dollar in use and have it endorsed by trusted peers and advisors, the earlier they would be motivated to adopt it.

10.2 Universal access

The value proposition for users with disabilities and those experiencing homelessness tended to match that of other participants within their mindset segment. Participant perception of a hypothetical Digital Canadian Dollar correlated far more closely among mindset groups than disability groupings. For that reason, the adoption spectrum does not explicitly identify disability or low-income groups.

The following design recommendations arose as particularly important for accessibility of a hypothetical Digital Canadian Dollar:

- **Avoiding stigmatization** was a key theme for people who are blind, have low vision or experience homelessness. Participants wanted a hypothetical Digital Canadian Dollar that is inclusive of their needs without drawing unnecessary attention to them.
- Users with physical or sensory disabilities, as well as physical disability experts, **valued familiar concepts**. This was explicitly stated with respect to the payment card, which participants saw as being easy to learn and incorporate into current routines. Familiarity was also expressed in the feedback for the smart platform. Participants with sensory disabilities use accessibility functions on their phones that are tailored to their needs. They preferred an application that is compatible with their phone and accessibility features, rather than having to learn an entirely new system.
- **Participants with sensory disabilities wanted simple transactions**. They sought to avoid the anxiety caused by poorly designed user devices and the perception that their slow transactions delay other customers at payment terminals.

10.3 Privacy

Anonymous payments were not a focal point of discussion: when participants rated their interests in a hypothetical Digital Canadian Dollar, anonymity was not high on the list. The primary concerns surfaced about privacy were the following:

- **Participants were much more concerned with large data leaks and hacking of institutions**, rather than the ability to transact anonymously. At the same time, they gave some attention to the statement that a hypothetical Digital Canadian Dollar could be designed so that the central bank would have limited user and payment information.
- **Participants were very concerned with maintaining their privacy during in-person and online transactions.** They felt it necessary to protect their personal information and account balance from others, including friends and family.
- Many indicated they **accept that third parties are using personal information** in exchange for better user devices and services. These participants expressed minimal concern about authorized users having access to their payment data.
- **Many liked the ability to choose the level of information shared with third parties** because it provides them with a sense of control, even if they don't end up using this feature.
- Participants raised strong **concerns that a lost, stolen or damaged hypothetical Digital Canadian Dollar device may result in the loss of their private information.** They wanted reassurance that their information is protected and will remain private.

10.4 Trust

The concerns that emerged on the topic of trust were the following:

- In this study, **a significant proportion of participants seemed to trust the central bank.** They expressed trust in commercial banks and networks (e.g., Visa, Mastercard) for the security and reliability of current payment methods and accounts. The central bank is just as trusted as an organization, particularly when it comes to protecting the financial interests of Canadians. Participants expected that the central bank would pay attention to security but had some degree of skepticism about its ability to implement a reliable system for a hypothetical Digital Canadian Dollar.
- **A minority group expressed negative views of government** and concerns about privacy and government control. These participants associated the Bank of Canada with the federal government. They tended to be in the Straggler/Rejector segment of the adoption spectrum. They were concerned about the government forcing a hypothetical Digital Canadian Dollar upon them and phasing out cash. This view was proportionally highest among the Cautious Traditionalists than the other mindsets.

- **Participants did not want to know *how* a hypothetical Digital Canadian Dollar could be made secure or private.** For most, trust was based on the reputation of the provider rather than on the technology.
- For most participants, **anything new and unfamiliar was perceived as less trustworthy.** Concepts for a hypothetical Digital Canadian Dollar were met with great caution. Participants had significant concerns about the management and potential sharing of their personal and transaction information with unauthorized parties.

10.5 Information campaign

Collaborative sessions demonstrated that a strategic information campaign would have a considerable positive impact on adoption of a hypothetical Digital Canadian Dollar. This is especially so for segments caught in the opportunity paradox who stand to gain the most from this form of digital cash but are least likely to adopt it early. The findings on information and awareness were the following:

- During our discussions, the initially resistant segment Excluded Strugglers became more open to a hypothetical Digital Canadian Dollar as they learned about the various concepts and how they worked. They stand to benefit the most from a hypothetical Digital Canadian Dollar and would likely need the most knowledge and support to adopt it. An information campaign developed with this specific segment in mind may move them forward on the adoption spectrum. Therefore, by building familiarity and curiosity, **information can encourage adoption.**
- **Participants understood the benefits of devices and features of a hypothetical Digital Canadian Dollar when we compared them to those of payment options available today.** That said, participants often struggled to understand the differences between a hypothetical Digital Dollar and their debit card. They required a lot of discussion and information to grasp any new feature and its related benefit. Familiarity will help with adoption, particularly for user groups with low financial confidence and low technological competence.
- **Physical prototypes of the devices allowed participants to better understand exactly what a hypothetical Digital Canadian Dollar could be and how it might be used.** Without these, participants tended to fill gaps in their understanding with negative narratives about cryptocurrencies.
- **The use of clear and familiar terminology** helped participants understand concepts. We avoided the term central bank digital currency (CBDC) in our study, preferring to use hypothetical Digital Canadian Dollar. Early testing showed this term had a more positive connotation than CBDC, which was all too often conflated with cryptocurrency and quickly roused negative sentiment.
- **Trustworthy resources** for building people's financial knowledge will affect their adoption, financial confidence and overall confidence in a new payment method.
- Most participants considered **financial institutions as the most reliable source of information on new payment methods and services.** However, certain segments had more trust in local community

advocates or charitable organizations than in banks or large corporations. The dissemination of information through local resource and advocacy groups would help improve trust, which would in turn improve adoption.

11. Conclusions: the consumer value proposition

For this study, we used a human-centred methodology, which included collaborative sessions and surveys, and specific prototypes of concepts for a hypothetical Digital Canadian Dollar. Our results raise the following general conclusions about such a payment method.

Most participants in our study had some interest in the notion of a digital form of cash and supported research into it. They were likely to support the issuance of a hypothetical Digital Canadian Dollar, but there was a vocal minority of rejectors. However, the likelihood for early adoption is far lower. It must be recognized that respondents to the Bank's other public consultation methodology, discussed in **Appendix B**, showed significant opposition to a hypothetical Digital Canadian Dollar (Forum Research Inc. 2023).

Early and significant merchant acceptance of the hypothetical Digital Dollar would be critical for Canadians to successfully adopt and use it. Since retail transactions take place in a two-sided market that includes the consumer and the merchant, a method of payment can only be used if both parties are willing to accept and adopt it (Huynh, Nicholls and Shcherbakov 2019). This finding supports results from a recent Bank study determining that, for a variety of new payment scenarios, the predicted usage rate does not reach 10% until at least 60% of merchants accept the new payment method (Huynh et al. 2020). Given the importance of merchant acceptance, the Bank is undertaking research to understand the merchant perspective on a hypothetical Digital Canadian Dollar. This research will use the four concepts, or physical mock-ups, co-refined by participants of our study to understand the merchants' value proposition for this potential form of digital cash. The concepts will be coupled with scenarios to gather feedback on hypothetical Digital Dollar models and develop an understanding of factors that could influence merchant adoption.

Adoption is likely to require the Bank to invest **significant and sustained funding, time and outreach**. One of the most important adoption factors raised in our study was that a hypothetical Digital Canadian Dollar should be free to access and use. In addition, to ensure an early and significant rate of merchant acceptance, the Bank may need to incentivize merchants.

Based on participant comments, adoption of a hypothetical Digital Canadian Dollar is likely to be gradual, given the small size of the early adopter group and the need for significant merchant acceptance.

The **perceived benefits of a hypothetical Digital Canadian Dollar were not significant enough to compel most participants to adopt early**. They would wait to adopt until such a digital form of cash becomes widely accepted and used.

The end-to-end system for a hypothetical Digital Canadian Dollar, including end-user devices, must **demonstrate flawless reliability from day one**. This includes universal merchant acceptance. Participants indicated that for payments, their expectations are high for:

- ease of use
- personal information privacy
- security of transaction data
- convenience
- user experiences that are superior to those offered by current payment methods

Trust could be easily broken if the system were not to meet these expectations.

Within this study, participants indicated **offline functionality was not critical for adoption**. They had some interest in an offline hypothetical Digital Canadian Dollar as a back-up payment method, but cash was still perceived as the best option for emergencies, when other payment methods do not work or are not accepted. Payment service disruptions were not raised as a major challenge, but rather, more of an occasional nuisance.

An unregistered hypothetical Digital Canadian Dollar was a desirable option for some, but not critical for most participants consulted in this study. However, it is an important consideration for financial inclusion, making a hypothetical Digital Dollar accessible for those with limited access to banking services or who lack identification documents. It is also important for increasing trust with certain segments of the population. Results in this area are difficult to disentangle and require more research. Most participants indicated a preference for a registered version of the hypothetical Digital Canadian Dollar, prioritizing the recovery of funds from a lost or stolen device.⁵

Both a **payment card and smart platform would be required** from the outset of a hypothetical Digital Canadian Dollar being launched. Study results indicate these familiar devices would contribute to supporting its adoption, particularly for users with low technological competence.

Even though cash use in Canada is declining, the appeal of cash remains high. It is still the favoured back-up payment method. However, based on an interpretation of a hypothetical Digital Canadian Dollar as cash-like, participants expressed a general **concern that it will replace cash**. This interpretation immediately reduces the appeal of a hypothetical Digital Dollar.

Study results revealed a **hypothetical Digital Canadian Dollar would require an extensive information and awareness campaign** for Canadians to understand it, perceive its value and adopt it for daily use. A carefully created campaign would support broad adoption, particularly for those users with a strong reluctance to adopt despite being the very users that such a digital payment method would serve best.

⁵ Research into digital currencies and their models often explores the question of whether a cash-like digital currency should offer offline functionality and unregistered solutions. Our study results indicate that these two features are not highly desirable and would have a limited influence on adoption. In contrast, the results of the digital euro consultation (European Central Bank 2020) showed considerably more appeal for an offline solution.

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Appendix A: Worldwide consultations on a central bank digital currency

Several central banks are presently conducting their own research or connecting with research hubs to understand their countries' payment environments and how a central bank digital currency (CBDC) might fit in, from an end-user perspective. Consultations are revealing findings that are unique to each country. However, common themes are also emerging: concerns about privacy and security, trust in government authorities and misgivings about the extinction of cash. Central banks can select from several distinct research methods to develop their engagement strategies. Three of these methods, along with the countries that have used each method for CBDC research, are the following:

- **Online public consultations** allow many respondents the opportunity to provide their views. However, because participants are self-selected, they are not representative of the broad population and therefore introduce participation bias. Public consultations naturally tend to attract individuals who are highly motivated and willing to make the time to express themselves. If initiatives are promoted using social media, their responses may be influenced by how the surveyed topic is being discussed online or by the survey leader. As a homogeneous group, they may yield uniform survey results that do not accurately represent diverging views.

Countries that have employed online public consultations as part of their CBDC engagement strategy include the United States (Board of Governors of the Federal Reserve System 2023), members of the European Union (European Central Bank 2021), the United Kingdom (Bank of England and HM Treasury 2024) and Canada (Forum Research Inc. 2023).

- **Surveys** recruit participants such that their samples represent an overall population. In this way, their samples may yield a more accurate reflection of the range of public opinions. They allow an evaluation of responses from the perspectives of different user groups. While overall sentiment may trend in one direction, surveys allow a central bank to identify the mindset groups that hold other opinions, for example those who perceive value in a CBDC.

Countries besides Canada that have employed surveys as part of their CBDC engagement strategy include Brazil (SICPA 2022) as well as Mexico, Nigeria, India and Indonesia (Narula, Swartz and Frizzo-Barker 2023).

- **In-person discussions**, whether they follow the principles of design thinking or a more traditional interview approach, allow for a bilateral exchange of information. They invite a fuller discussion where participants can get information and clarifications and where views and concerns can be explored in depth. This approach allows for thoughtful deliberation, resulting in a nuanced understanding of consumer views on a given topic. This type of research is particularly important for underserved or underrepresented groups.

Countries besides Canada that have employed in-person discussions as part of their CBDC engagement strategy include Brazil (SICPA 2022), Sweden (Sveriges Riksbank 2023) and members

of the European Union (Kantar Public 2022) as well as Mexico, Nigeria, India and Indonesia (Narula, Swartz and Frizzo-Barker 2023).

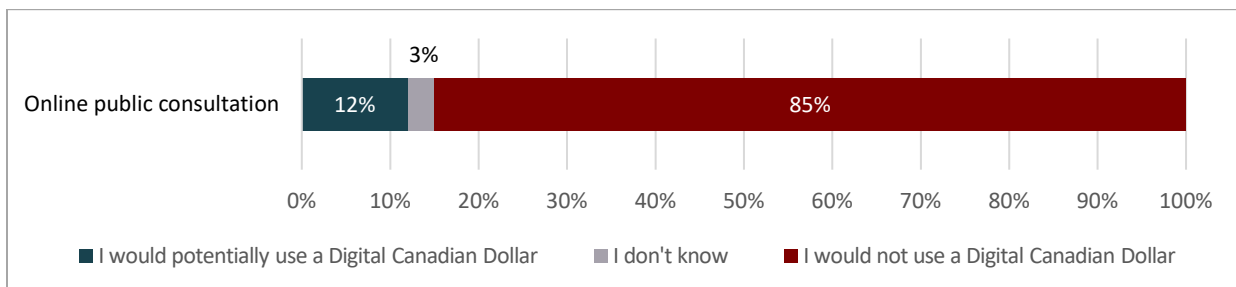
Appendix B: Differences between our consumer value proposition study and the opt-in, online public consultation results in Canada

The Bank of Canada has approached its recent consultations on a hypothetical Digital Canadian Dollar using two methods: our consumer value proposition (CVP) study and an online, opt-in public consultation (Forum Research Inc. 2023). Common themes emerge from the two approaches, such as the importance of universal access, the need for widespread merchant acceptance, concerns about privacy and a general indifference toward an offline solution.

Results differ on the assumed cost of a hypothetical Digital Canadian Dollar and how cost would affect its adoption: CVP participants generally assumed it would be free to acquire, noting this would encourage adoption and support accessibility. In contrast, only 1% of respondents to the online public consultation mentioned affordability as a feature that would enhance accessibility.

We would be remiss if we didn't mention one notable area where results of the two studies differ significantly. Online public consultation respondents were largely opposed to a hypothetical Digital Dollar. When asked where they would prefer using a hypothetical Digital Dollar instead of their current payment methods, 85% of online public consultation respondents said they would never adopt a digital form of cash (**Chart B-1**).

Chart B-1: Online public consultation results on adoption of a hypothetical Digital Canadian Dollar



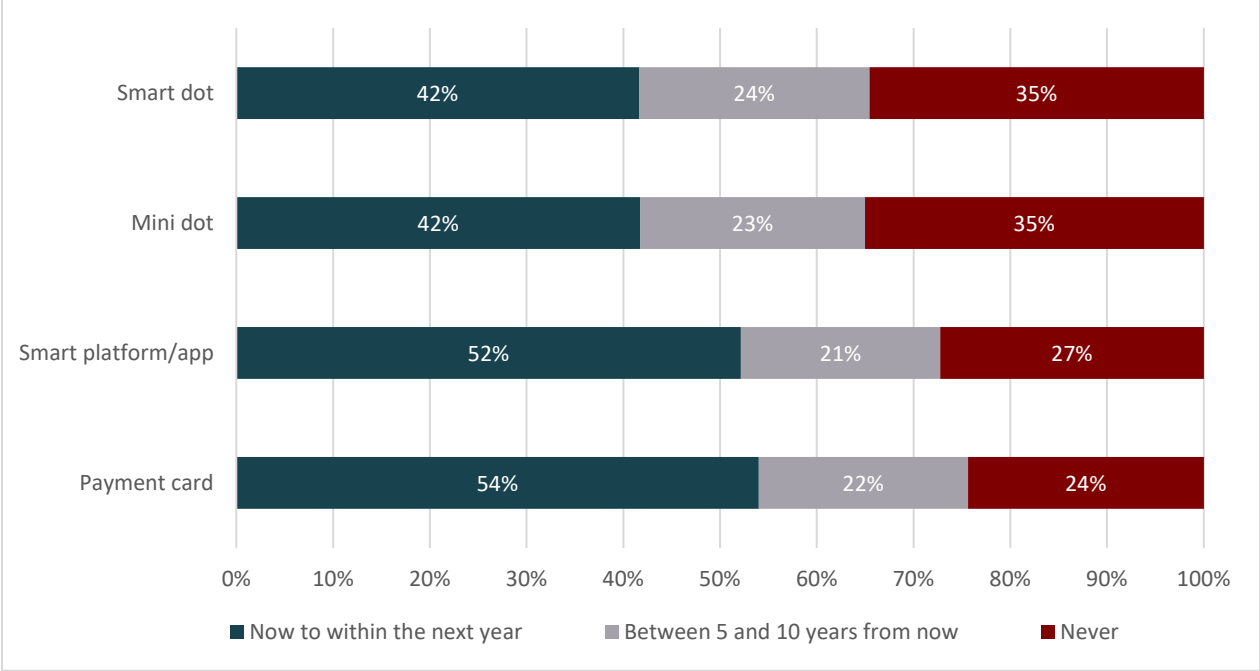
Source: Forum Research Inc. 2023

Last observation: July 2024

Our CVP study revealed a more neutral sentiment about a hypothetical Digital Canadian Dollar. In Survey 2, participants learned about the payment card, smart platform, mini dot and smart dot. Images and videos conveyed detailed information on each concept, allowing participants to imagine how each could be used in daily transactions. **When we asked participants if and when they would adopt the concepts presented, they responded far more favourably than those in the online consultation (Chart B-2).** Depending on the concept, between 41% and 51% of our study participants indicated they would adopt a hypothetical Digital

Canadian Dollar within its first year. Even for the least favoured concepts (the mini dot and smart dot), only 35% of Survey 2 participants indicated that they would *never* adopt the hypothetical Digital Dollar.

Chart B-2: Results from Survey 2 of the consumer value proposition study on adoption of a hypothetical Digital Canadian Dollar, by concept



Source: Bank of Canada

Last observation: July 2024

We infer that the differences in methodology for the two studies, and the amount of descriptive detail on the hypothetical Digital Dollar concepts, influenced these differing results. Results from the online public consultation represent only the respondents who elected to opt in. Groups with a mindset that perceives value in a hypothetical Digital Canadian Dollar may not have participated in the survey. Certainly, it is unlikely that user groups with low technical competence participated in the online survey.

Our CVP study specifically recruited participants to represent a range of regional populations, genders, ages, first official languages and immigration statuses (Statistics Canada 2022). We slightly over-sampled participants with disabilities and those with low incomes. Because we recruited carefully and consider all participant perspectives, the study results indicate the broad sentiment about a hypothetical Digital Canadian Dollar.

It is also notable that the online public consultation presented the hypothetical Digital Canadian Dollar as an abstract idea. No devices, concepts or images were presented. In contrast, CVP study participants were shown four mocked-up concepts. These were described in detail using a variety of media. Holding and manipulating the devices helped demystify the hypothetical Digital Canadian Dollar and allowed collaborative session participants to imagine far more clearly how they would use it in their day-to-day transactions. In some cases, they recognized that these accessible concepts may provide enhanced user experiences and advantages over existing payment options.