



PERU

TECHNICAL ASSISTANCE REPORT—CENTRAL BANK DIGITAL CURRENCY (CBDC) STAKEHOLDER ENGAGEMENT

November 2023

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TECHNICAL ASSISTANCE REPORT

PERU

Central Bank Digital Currency Stakeholder
Engagement

October 2023

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GLOSSARY

ACH	Automated Clearing House
AML/CFT	Anti-Money Laundering and Combating the Financing of Terrorism
API	Application Programming Interface
BCRP	Banco Central de Reserva del Perú
BN	Banco de la Nación
CBDC	Central Bank Digital Currency
CCE	Cámara de Compensación Electrónica (automated clearing house network)
DevSecOps	Development, Security, and Operations
FMI	Financial Market Infrastructure
FSB	Financial Stability Board
IT	Information Technology
ITC	Information and Communications Technology
KYC	Know Your Customer
MoF	Ministry of Finance
MOU	Memorandum of Understanding
ML	Money Laundering
NPS	National Payments System
PIX	Instant Payment System in Brazil
PoC	Proof of Concept
PNGD	Plataforma Nacional de Gobierno Digital
RENIEC	Registro Nacional de Identificación y Estado Civil
SBS	Superintendencia de Banca
UPI	Unified Payments Interface (India)

PREFACE

At the request of the Banco Central de Reserva del Peru (BCRP), the International Monetary Fund (IMF) conducted a second Technical Assistance mission (TA) to support the authorities in their engagement with stakeholders as part of a research and development program on Central Bank Digital Currency (CBDC). The initial mission concluded in January 2022 and provided valuable guidance to the BCRP. The guidance involved approaching existing market weaknesses (such as lack of interoperability between some payment schemes) and CBDC development as parallel activities, adopting a structured approach to strengthen foundational elements of the project, understanding risk factors, and emphasizing stakeholder engagement in the subsequent project phase.

This need for stakeholder engagement prompted the request for this new mission, which started with remote assistance from December 2022 to April 2023, followed by an in-person mission from June 12 to June 16, 2023. Effectively unpacking stakeholder concerns and gauging early commitment to explore CBDC remain one of the critical success factors for central banks. To further support the efforts, staff members from ITD and CSF joined the mission, with an external expert and an innovation expert from ICD joining the virtual mission.¹

The BCRP counterpart was led by Paul Castillo, General Manager of Monetary Operations and Financial Stability Department and Milton Vega, Deputy Manager, Payments System.

The mission wishes to thank the BCRP for their cooperation, productive discussions, and excellent organization of the workshops with stakeholders.

¹ Many thanks to Aleem Walji (ICD) and Lariza Galindo Hernandez (CFS) for significant insights on the innovation challenge processes and approaches to stakeholder engagement

EXECUTIVE SUMMARY

The goal of the mission was to continue to support the BCRP in its effort to research the conditions for success for a CBDC, as well as the role of various stakeholders. The IMF has been providing Technical Assistance to BCRP on the topic of CBDC since 2021. The initial TA mission supported the central bank during the first phase of the project, called the Preparation phase, which involved clarifying the context, key questions, and potential approaches to study a CBDC. The second phase of the BCRP's CBDC project, known as the Proof of Assumptions phase, started with the publication of a paper by the central bank, supported by the current mission. The white paper outlined the context, goals and challenges related to a potential CBDC in Peru. Consistent with recommendations from the first mission, the BCRP recognized the need to focus on an initial engagement with stakeholders, including representatives of the banking sector, payment service providers, and the Fintech and technology sector.

To facilitate this engagement, the BCRP initiated a questionnaire based on the white paper to gather initial feedback, expectations, and concerns from the industry. The in-person mission was then organized to further engage with stakeholders, specifically around the policy goals of a potential CBDC for Peru. The primary goal of this engagement was to foster candid and open discussions, enabling exchange of ideas between stakeholders and central bank representatives to better understand their expectations and concerns. The mission team employed a design-thinking methodology² over the course of two days, which helped to fully achieve this goal (section IV).

The in-person mission also provided hand-on capacity building by (i) equipping the CBDC team with tools and methodologies to further engage with stakeholders, and (ii) tailoring activities to help surface practical recommendations that would inform the policy choices and decision-making process regarding the next phase of the project, known as the Prototyping phase. These goals were accomplished through close collaboration with the central bank team, including workshop preparation, conducting a post-workshop knowledge transfer exercise, and engaging in discussions to deliver recommendations.

The BCRP's research on CBDC was found to have strong foundations by the mission team. Stakeholders in the banking and payment sector appreciate the BCRP's willingness to engage with them. The team has taken a measured and structured approach, balancing their desire to learn quickly with the recognition that certain key elements cannot be rushed.

The mission team provided a list of recommendations (summarized in Table 1) to enhance the BCRP's ability to continue its research and make an informed decision about moving into the development phase. The first set of recommendations focuses on adopting inclusive, agile, and transparent project management practices and governance. The second set aims to establish the central bank's role in leading a "baseline product" with market participants. The final set of recommendations urges the central bank to view the CBDC as a national product and leverage existing elements and participants at the government level.

² Design thinking is a problem-solving approach that focuses on understanding user needs and developing innovative solutions. It is a human-centered and iterative process that helps organizations or individuals tackle complex problems and create products, services, or processes that are user-centric

Table 1. Peru: Main Recommendations

Main Recommendations	Responsibility	Priority	Date
<i>Sustain an agile program approach, and establish project governance framework</i>			
1. Promote broader participation and engagement of diverse stakeholders. Consider impact of regional differences.	BCRP	Medium	ST
2. Implement an adaptive and ongoing risk assessment and mitigation framework, considering that new risks continually emerge.	BCRP	High	Ongoing
3. Embrace an agile methodology and the ability to pivot rapidly as new information emerges.	BCRP	Medium	Ongoing
4. Develop a comprehensive communication strategy to ensure continuous clarity regarding the CBDC project's roadmap, progress, industry engagement.	BCRP	High	ST
<i>Co-create "baseline product" with market participants</i>			
5. Build strategic roadmap of use cases, to reduce risks of misalignment with market infrastructure and value chain.	BCRP/Industry	High	ST
6. Study CBDC end-to-end value chain and the roles and responsibilities of relevant stakeholders. Consider regional differences.	BCRP	High	ST
7. Identify the potential business models and services that can be facilitated through a well-designed CBDC.	BCRP/Industry	High	ST
<i>Elevate strategy at national level</i>			
8. Consider opportunities to leverage the existing digital public infrastructure	BCRP, PCM	Medium	MT
9. Work with PCM's innovation lab to leverage their large network and capacity	BCRP, PCM	Medium	MT

* The table highlights the main recommendations (with additional sub-recommendations expanded on in the report).

1 ST: Short term (less than 6 months); MT: Medium term (results within 18 months); LT: Long term (results within 30 months).

I. THE CBDC JOURNEY IN PERU

Previous mission – August 2021 to January 2022

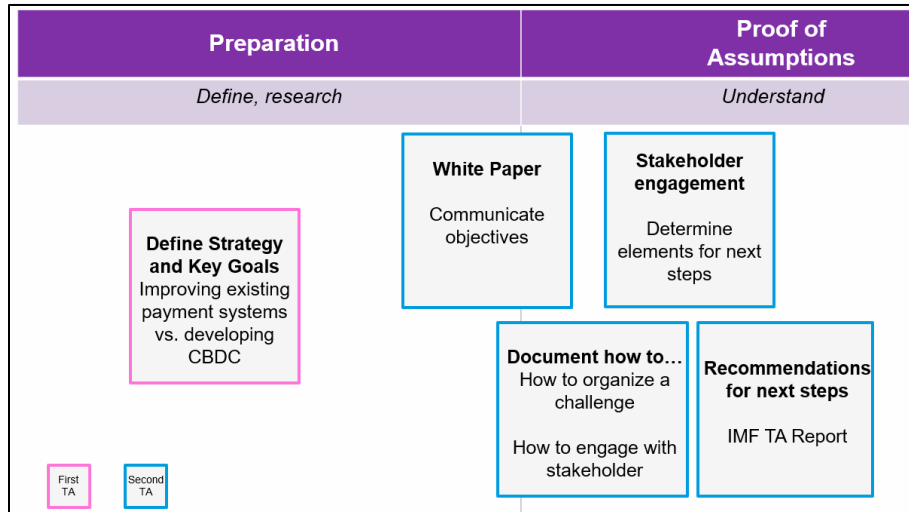
1. **The IMF’s capacity development journey with the BCRP began in 2021, with a first mission which aimed to assess the feasibility of CBDC as a payments system solution in Peru.** The goal of this initial mission was to understand better what problems were driving the central bank to pursue CBDC. To do so, the mission team applied Design Thinking methodology to conduct a series of interactive discovery workshops with the BCRP staff in late summer of 2021. Over the course of two days of virtual workshops, the IMF and BCRP worked together to identify the fundamental pain points on both the demand and supply-sides, as well as the central bank’s perspective of the current state of payments in their country.
2. **A lack of interoperability in the payments system, the dominance of cash usage despite associated high costs and security risks, and high levels of informality were suppressing the development of digital payments in Peru.** Specifically, the central bank shared their vision for CBDC as a remedy for low levels of financial inclusion driven by fee aversion, lack of financial and digital literacy, and lack of trust in non-cash instruments and the financial system as a whole.
3. **Following the guidance of the IMF’s mission team, the central bank coordinated the outreach to payments system stakeholders and end consumers.** The outreach was managed through two parallel qualitative studies carried out by the IMF in November of 2021. These studies aimed to achieve 3 broad goals: 1) validate whether the initial discovery accurately reflected the issues surrounding digital payments in Peru, 2) investigate the barriers and enablers influencing consumers’ behavior regarding digital payments usage, and 3) understand how stakeholders perceived the dynamics of the payments system might influence consumer adoption of digital methods.
4. **The findings of both studies revealed a multitude of environmental and behavioral factors that influence consumer decisions regarding the use of digital payment tools versus cash.** These factors included perceptions of cash as more secure and convenient compared to digital tools, a lack of trust in digital payment methods, and limited opportunities to use and build positive associations with digital tools (for example, due to a lack of acquiring infrastructure such as point-of-sale terminals within consumer’s usual circles of activities). A subsequent TA report on the feasibility of CBDC was produced by the IMF, including material on the detailed findings of these studies.

Current mission, virtual segment – December 2022 to April 2023

5. **After identifying the initial questions, assumptions and risks, the BCRP needed to establish a clear path to validate the hypothesis and to conduct concrete research on the implications of a CBDC.** In this context, the IMF assisted the BCRP in August 2022 with developing a strategic roadmap for the central bank’s future course of actions. The roadmap provided a structure for the central bank’s work and facilitated their transition from the Preparation phase to the Proof of Assumptions phase of their CBDC project. Working collaboratively, the IMF and BCRP devised a strategy which emphasized the need to address and validate remaining assumptions regarding the suitability and implementation of CBDC in Peru. It also emphasized the importance of involving stakeholders in these “proofing” exercises.
6. **To achieve these goals, the central bank embarked on drafting a white paper outlining their vision for CBDC, with support from the IMF.** The white paper was published in February 2023 and

was a significant milestone.¹ Additionally, the IMF created an operating manual to guide the central bank in organizing and executing an innovation challenge as a potential modality for conducting Proof of Assumptions exercises. In the spring of 2023, the IMF delivered the manual, along with additional supporting documentation regarding action items, capability requirements, and stakeholder engagement guidelines, to the central bank.

Figure 1: Current mission, in-person segment – June 12 to 16, 2023



7. **The primary goal of the physical mission was to assist the BCRP to further engage stakeholders (face-to-face) to gauge their support and/or concerns related to a potential CBDC.** Like other central banks exploring CBDC (such as Bank of England), such engagements are key in communicating central bank policy objectives related to CBDC, assessing the major issues and in agreeing modes of future industry engagement. Fundamentally, Peru differs from several advanced economies (such as Europe) in their motivation for a potential CBDC. Although much progress has been made in advancing digital payments, a significant percentage of the population remains unbanked. To solve the digital payment “adoption challenge”, effective stakeholder and change management is first order. Taking stakeholders along the CBDC journey, and co-creating the solution is a necessity if a successful CBDC ecosystem is to emerge. This initial stakeholder engagement was thus essential to concretely unpack stakeholder concerns AND obtain their insights on priority areas of focus for future engagements.
8. **The CBDC project is set-up to enable BCRP to effectively navigate the “proof of assumptions” phase in collaboration with key stakeholders.** By leveraging the outcomes of successful stakeholder engagement and the practical strategies, tools, and techniques employed during the design thinking workshops, as well as the nine recommendations outlined in this report, BCRP can progress with confidence. These recommendations are specifically tailored to enhance the chances of fulfilling the policy objectives outlined in the white paper, while also ensuring that key stakeholders contribute their expertise and resources towards resolving Peru's digital divide.

¹ The paper highlighted the consumer and merchant pain points, as well as supply-side challenges. It also presented an initial set of use cases that CBDC could address, including targeted consumer segments.

II. DELIVERED OUTPUTS

Virtual mission

9. The virtual part of this mission delivered four main outputs:

9.1. *Operating Manual for preparing and executing a CBDC Challenge (see annex II)*

The document's objective was to equip BCRP with a comprehensive understanding of the strategic and tactical aspects involved in designing, preparing, and executing an innovation challenge (IC). In addition to outlining the process and mechanics of conducting an IC, the manual delved into the specific contextual considerations pertaining to the challenge for CBDC in Peru.

9.2. *Capabilities and skills to organize a CBDC Challenge*

The document complemented the operating manual by offering guidance to BCRP on criteria for evaluating proposals and capability requirements.

9.3. *Input and review of White Paper*

The document was enriched by expanding on the challenges faced by Peru in transitioning from a cash-based economy to a digital payments-oriented, emphasizing specific policy milestones that need to be achieved to address the challenges, and expanding the characteristics of a potential CBDC for Peru. These improvements intended to provide a more informed and comprehensive analysis of the feasibility and potential benefits of adopting a CBDC for the specific Peruvian context.

9.4. *Input and review of stakeholder questionnaire*

The questionnaire was enhanced by integrating 8 closed-ended questions, which facilitated the collection of quantitative data to enable the identification of trends and provided valuable supplementary information to improve BCRP comprehension of the qualitative insights gathered from the open-ended questions.

In-person mission

10. The physical mission delivered three main outputs:

10.1. *Inaugural Stakeholder Engagement Workshops*

The program of interactive workshops spanned two days and fostered a collaborative environment for payments system stakeholders and central bank staff to engage in dynamic idea sharing and co-creation. The agenda of the first day revolved around creating a safe and open space for stakeholders to express their reactions and priorities regarding the implementation of CBDC in Peru, building upon the insights derived from the publication of the BCRP's white paper. The second day provided a platform for both groups to collaboratively design a program for ongoing engagement, focusing on the areas of priority identified during the initial discussions on the first day. These two days exemplified the central bank's strong commitment to nurturing a robust collaborative relationship with stakeholders, and successfully captured a wealth of knowledge and expertise from the participating private sector representatives.

10.2. *Transfer of knowledge to central bank*

During the week in Peru, the IMF delivered five presentations. Three of these were exclusively delivered to BCRP staff on the first day for capacity development and knowledge exchange. The first

two were delivered remotely by MCM staff from IMF HQ.² One focused on explaining the mechanisms and policy implications of Wholesale CBDC versus Retail CBDC. The second provided insights into the macro policy implications of CBDC for financial inclusion and shared an econometric model that identified key factors influencing user adoption. The final presentation was delivered in-person at the central bank by CSF staff, highlighting behavioral findings from the earlier stages of the IMF's engagement with Peru. This presentation emphasized the importance of a human-centered approach in assessing the suitability of CBDC for the Peruvian market, offering valuable insights for decision-making based on human behavior and optimized for end user adoption.

Two more presentations were delivered as part of the agenda for the stakeholder engagement workshops. The first described some of the IMF's perspective of CBDC projects in other jurisdictions globally. The second detailed the "5 P's" process advocated by the IMF for such projects and provided stakeholders with the necessary context of where the BCRP was in their journey relative to others.

10.3. *Nine key recommendations to advance this phase*

Three concrete strategic actions related to building stronger public sector partnerships to leverage emerging digital public infrastructure (such as digital identity schemes), moving to detailed product design, and strengthening program management (and governance) emerged, supported by nine material recommendations from the mission team.

III. KEY OBSERVATIONS

Central bank:

11. **The Mission engaged with the BCRP before and after the industry workshops and included several bilateral conversations with staff and management.** Three observations stand out:

11.1. *Strong management support for CBDC project and collaborative BCRP culture*

The BCRP senior management demonstrated strong top management support for the CBDC project. Management were present and actively engaged for all sessions. The importance of the project was reiterated by the General Manager. Management also encouraged staff participation, sought alternate perspectives, and created space for younger staff to challenge emerging issues (such as priority focus areas forward). Other Divisions including the Legal and Risk Departments were also invited to participate, and blend in their issues and perspectives.

11.2. *Gradual and iterative multi-pronged approach to payment system problems*

The BCRP have taken on board the first Mission's main recommendations. A slower and gradual approach has been adopted. In addition, the recommendation to pursue alternative options to CBDC to address payment system problems has advanced. For instance, interoperability between closed loop digital wallets has been mandated. Increased interoperability has already reaped benefits of increasing digital wallet adoption, including new merchants, and increased "off-us" payment transactions.

² Many thanks to Brandon Tan and Manisha Patel for presentation on CBDC and financial inclusion, and Differentiating Wholesale vs Retail CBDC

11.3. *Increased agility and capacity*

Following from the first mission an initial concern was insufficient capacity to address the needs of a complex CBDC project. The mission observed that capacity within the CBDC team has increased (to now include at least 5 staff) and attracted younger talent. Staff skills and experience include dealing with agile methodologies, business analysis skills and information technology know-how. Despite this progress, the mission team has noted that additional capacity would be required moving forward (see recommendation 2).

Financial sector stakeholders:

Private sector

12. The Mission engaged in several bilateral engagements with private sector players, including two major fintech firms, a card scheme and a CBDC technology provider. Three observations stand out.

12.1. Appreciation for the highly collaborative engagement

Stakeholders unanimously acknowledged the unique and highly engaging approach by the BCRP. Many expressed that expectations were not only met but surpassed. A welcome outcome of the techniques employed was the substantial amount of input gathered and the rapid synthesis of insights through efficient in-flight qualitative coding and clustering. The techniques helped develop common understanding of the issues and concerns despite the large size of the group.

12.2. Respected leadership, credibility, and presence

The BCRP has established a strong presence in the industry and demonstrates respected leadership. Moreover, the addition of leadership capacity at the General Management level has further enhanced the organization. The General Manager, known for having extensive experience and expertise in the commercial banking sector, is highly regarded by the industry. The senior management team is also well-respected and held in high esteem by both the private sector and fellow regulators. The BCRP's credibility has been further bolstered through its handling of complex challenges, such as addressing the issue of interoperability within existing solutions

12.3. Strong support from fintech sector

Fintech firms (interviewed) are supportive of the CBDC effort, recognizing both opportunities and current challenges. During interviews, a prominent online merchant aggregator or “super merchant” highlighted the high cost of entry to certain payment systems, which are perceived as barriers established by current payment scheme incumbents. Fintech firms suggest that CBDC has the potential to modify these barriers and enable more direct participation with lower costs compared to existing schemes. Moreover, the interviewed providers demonstrate significant expertise in onboarding micro-businesses and merchants with minimal transaction volume. They also propose that CBDC could foster competition in both the acquiring and issuing aspects of the payments market.³

³ Currently the card acquiring business has only two major providers, whilst more than twenty issuers exist

Public sector:

13. The Mission met with the senior authorities from the Secretariat of Digital Government and Transformation of the Presidency of the Council of Ministers of Peru (PCM),⁴ which fosters digital trust and digital transformation in the country. A few elements of Peru's digital transformation program have emerged as potentially relevant to a successful CBDC research and development effort:

13.1. *Digital identity*

Peru has introduced a new national platform called IDGov.pe, which serves as an online identity verification system for both Peruvians and foreigners. This platform is designed to enhance the existing national registry of identity and civil status (RENIEC) by incorporating additional identity registries. It is worth mentioning that individuals or companies that have previously received financial assistance from the government (G2P) or have made payments to the government (P2G) possess a registration number at the Banco de la Nación (BN). In addition, the use of a secret identity scheme, equivalent to a signature, is being tested on the tax administration's web site.

13.2. *Data sharing*

The government of Peru leverages a national digital platform across all agencies to foster interoperability and security of data. This National Digital Government Platform (PNGD) aims to facilitate the digitalization of government services and to promote security and high resilience.

13.3. *Data repository*

The government has implemented a two-tiered cloud infrastructure for data management. Firstly, a public cloud has been established to support citizen-facing services, ensuring accessibility and convenience for the general public. Secondly, a private cloud has been set up specifically for storing and safeguarding confidential information. This private cloud is hosted on servers located within the premises of the Banco de la Nación (BN), ensuring the physical security and integrity of sensitive data.

13.4. *Digital trust*

The trust in digital services is further supported by several laws and regulations, two of which stood out as potentially relevant to CBDC. First, the Digital Trust Law is quite comprehensive. It's complemented by the Digital Government Law, which regulates 4 pillars of cyber risks: (I) cybercrime, under the Ministry of Interior, (ii) cyber intelligence under the Ministry of Defense, (iii) cybersecurity and (IV) the overseeing framework, both under PCM. Second, the law also establishes proper management of digital identity, digital services, digital architecture, interoperability, and data privacy. PCM has established a governance that assigns protection of data to the Ministry of Justice, and digital consumer protection to INDECOPI.⁵ Moreover, the National Center of Digital Security (CNSD) manages the operation, education, promotion, and collaboration on digital security at the national level.

⁴ <https://cdn.www.gob.pe/uploads/document/file/2277469/1.%20Transformaci%C3%B3n%20digital%20en%20el%20Per%C3%BA%20-%20Marushka%20Chocobar.pdf>

⁵ National Institute for the Defense of Free Competition and the Protection of Intellectual Property

13.5. Lab

PCM oversees the work of a laboratory of innovation, which hosts projects and research of national interest. The Laboratory is well connected to a large network of innovators, including the OECD's Observatory of Public Sector Innovation, over 8,000 global innovators, and 98 labs in Peru.

Workshop participants:

14. **Invitations to participate in the stakeholder workshops were extended to a wide range of players in the Peruvian payments ecosystem** — including but not limited to payment services providers, card networks, Fintechs, and members of the banking sector. Also invited were government authorities from the banking regulator, SBS (Superintendencia de Banca, Seguros y AFP), and the stock market regulator, SMV (Superintendencia del Mercado de Valores), as well as a number of technology providers in the crypto and e-money markets. The tables below provide a breakdown of participating organizations and the ranks of the representatives in attendance.

Table 2. List of Participants Broken Down by Type and Rank

Representatives	Type	Organization
15	Central Bank	BCRP
2	Associations	ASBANC, ASOMIF
3	Payments System Providers	PDP-Bim, CAVALI
3	Regulators	SBS, SMV
3	Public Bank	Banco de la Nación
3	Private Banks	BCP, Interbank, BBVA
5	Card Networks and Acquirers	Niubiz, Mastercard, Visa
2	Fintechs	B89, Tarjetas Peruanas
5	Crypto Tech Providers and Exchanges	eCurrency, Block4e, Binance, Banexcoin
2	Telcos	Bitel Perú
1	Cloud Services Provider	AWS
1	Tech Consultant	Minsait an Indra company
1	Specialized Legal Firm	Vodanovic Legal

Representatives	Rank
9	Directors, General Managers
7	C-level Officers (Chief Product Officer, Chief Business Officer, Chief Security Officer, Chief Commercial Officer, etc.)
3	CEOs and Founders
3	Heads of Departments (Fintech, Open Banking, New Payment Services, etc.)
1	Assistant Manager
1	Regional Manager
1	External Advisor

10. **To facilitate robust conversations during the activities, the room was split into 5 smaller breakout groups (by table) of between 6 to 10 people depending on the total number in attendance.** In order to foster a multi-disciplinary dynamic, the seating arrangements were preassigned ensuring a mix of different types of participants at each table. Central bank staff were also in attendance and were distributed evenly amongst the tables to be embedded in the

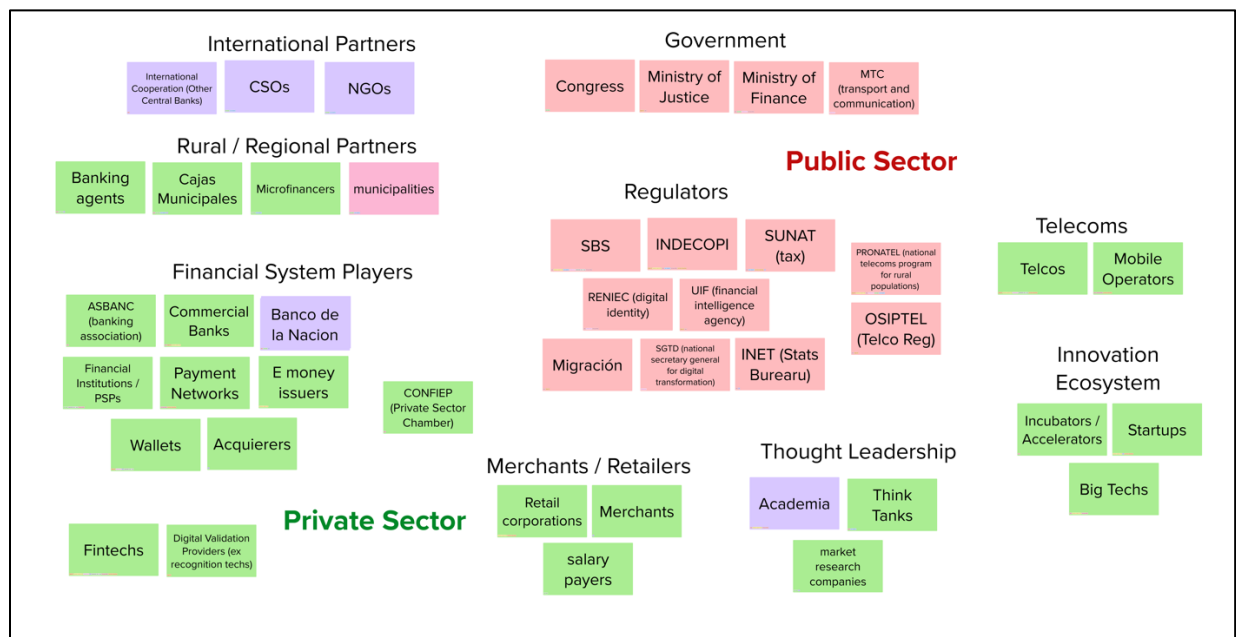
conversations, not as active participants, but rather as hosts and facilitators, tasked with keeping conversation flowing and prompting with follow up questions or activity guidance if needed. This mix further emphasized the collaborative nature of the event and proved effective in encouraging participants to set aside market hierarchies and silos and contribute actively within their groups.

15. The group discussions resulted in the identification of 10 main themes of concern for stakeholders when considering a future CBDC implementation:

- Business Model for Payment Services
- Priority of Use Cases
- User Acquisition / User Adoption
- Elements of Optimal User Experience
- Merchant Onboarding (formal and informal)
- The Role of Digital Identity in CBDC
- Critical Enabling Infrastructure
- Roles and Responsibilities of Stakeholders Across Value Chain (division of labor)
- How to Create Interoperability
- CBDC Data: Opportunities and Risks (taking into account privacy)

16. Through the course of the workshops, attending stakeholders identified additional parties whom central bank must take into consideration as important collaborators in future workshops and proof of assumption activities. This list is represented visually in the image below, grouped by type. In particular, it was noted that additional participants outside of the already heavily digitalized group present in these workshops would be important when considering issues of adoption by financially excluded populations. For example, *cajas Municipales* and other players with a strong presence in rural communities.

Figure 1. List of Additional Stakeholders Identified in Meetings



Other observations

17. Overall, the Mission has observed the following key elements essential to a successful CBDC research and development program:

Table 3. Key Mission Observations

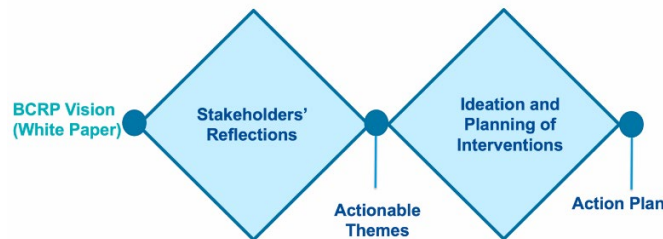
Supportive	Neutral	Current barriers
<ul style="list-style-type: none"> The BCRP and the currency enjoy a solid reputation both domestically and in the region. The project team has adopted a paced and rigorous approach, based on the 5P methodology, which carefully validates assumptions by engaging with stakeholders. The stakeholders consulted by the Mission were generally supportive of continuing CBDC research. Some firms, including incumbents and Fintech firms even expressed high interest. 	<p>BCRP’s leadership is expected in the next step to provide clarity on business models, roles and responsibilities.</p> <p>The White Paper issued by the central bank posed the foundation for a solid debate on use cases, business models and roles and responsibilities.</p> <p>At the country level, some foundational digital infrastructure elements, including digital identity, could be leveraged</p>	<p>The central bank may face challenges to acquire resources and competencies necessary for the next step of the project.</p> <p>Essential elements for the success of the CBDC are outside of the control of the central bank, including digital identity, and national infrastructure.</p>

IV. METHODOLOGY / APPROACH

18. **The mission team applied human-centered design and design thinking methodology to organize and facilitate the week-long mission with the BCRP, including the two days of workshops engaging payment system stakeholders.** This methodology emphasizes gathering inputs from diverse perspectives in a horizontal and open manner as well as building empathy with end user populations, which is particularly relevant in the context of adoption issues such as those related to CBDC and financial inclusion challenges.
19. **The dynamic nature of design thinking workshops created a fertile ground for creativity and collaboration between the central bank staff and stakeholders from all participating organizations.** Individuals were encouraged to participate under the protection of Chatham House Rules — meaning their inputs could not be attributed back to themselves or their organizations. This created a safe space for participants to share their diverse perspectives and expertise, facilitating the breakdown of silos and hierarchies.
20. **Additionally, the in-person format of the workshops, facilitated more dynamic collaboration.** Participants actively engaged using sticky notes, adding an exciting and energizing element to the sessions, encouraging participants to think visually, and expressing their ideas freely. This interactive approach created a departure from traditional meeting settings and enabling a more engaging and productive experience for all involved. The outcome of two workshops included in part consensus on

10 special areas of focus for the central bank to pursue in its exploration of CBDC and 35 potential research activities that could be deployed in the Proof of Assumptions phase to develop clarity around these topics.

Figure 2. The Double-Diamond Model of Design Thinking



21. **These outcomes were the result of process of divergence and convergence characterized by the double-diamond model (illustrated above).** Initially, following the publication of the BCRP’s white paper, the mission team and the central bank began to “diverge” by widening their understanding of the possibilities for CBDC exploration and actively gathering the diverse perspectives and reflections of stakeholders. This was done first through the questionnaire (administered pre-mission), the results of which were analyzed jointly by IMF and BCRP inside the central bank on the first day of the mission, and then during the first day of stakeholder workshops. Subsequently, the Mission synthesized those insights and converged to define a set of ten key themes on which to focus (detailed in sections above). This set of clearly defined themes provided a common foundation on which the group could then diverge once more to brainstorm methods of collaboration and research activities on day two.
22. **This brainstorming resulted in a list of 35 potential activities which the central bank may take forward and prioritize, thus converging into an actionable game plan for the remainder of the Proof of Assumptions phase.** The Mission prepared the central bank for this last process of convergence by modeling exercises that the central bank might use to prioritize the activities into a more manageable selection. In fact, all of the mission engagement were designed to model replicable methodology which the central bank could then continue to leverage throughout its iterative CBDC journey in the future. This methodology, which includes the use of adapted Lean canvases and matrices (described in Annex I), equips the central bank with a systematic approach to breaking down complex topics into manageable and meaningful research questions. By utilizing this methodology, the central bank can repeatedly ideate targeted and actionable activities (either with stakeholders or internally), effectively prioritize them based on their relative importance and difficulty.
23. **Overall, the workshops sent a powerful message to stakeholders about the central bank’s commitment to collaboration.** By actively involving stakeholders in the process, the central bank conveyed its dedication to inclusive decision-making and partnership. The workshops provided a platform for open dialogue and equal participation, allowing stakeholders to contribute their expertise and shape the outcomes. This inclusive approach built upon the already high levels of trust in the central bank as an institution, strengthened its relationships with the private sector around the topic of CBDC, and demonstrated the central bank’s credibility and seriousness in collaborating with stakeholders moving forward.

V. RECOMMENDATIONS

24. **The Mission has identified nine recommendations to support the central bank in the current phase⁶ of its CBDC research program.** The decision to move to the development of a CBDC platform would need to be supported by a strong collaboration with stakeholders, convincing business models, and appropriate internal capacity. The recommendations are grouped into three categories:
- A. **Establishing clear project governance:** Ensure transparency, collaboration, and effective resource management.
 - B. **Providing clarity to market stakeholders:** clearly define the roles, responsibilities, and expectations of various stakeholders involved in the CBDC ecosystem. Help study profitable business models to foster engagement from market participants.
 - C. **Elevating the CBDC strategy at the national level:** leverage existing government-led activities and capacity in areas such as security, data sharing, infrastructure, and innovation.

A. SUSTAIN AN AGILE PROGRAM APPROACH, AND ESTABLISH PROJECT GOVERNANCE FRAMEWORK

25. **As the central bank progresses in the research and development of the CBDC, it is important to assess the capacity, resources and skills required for the forthcoming stages of the project.** Establishing a strong governance framework to effectively manage these limited resources effectively, while also broadening collaboration with external partners, can help mitigate the risks associated with inadequate capacity and enhance the project's chances of success.

Recommendation 1: Promote broader participation and engagement of diverse stakeholders. Consider impact of regional differences

26. **Organize Regular Engagements and Workshops** – Building upon the success of the engagement/workshop held on June 13 and 14, 2023, the central bank should continue to organize similar events involving traditional market participants, incumbents, Fintech firms, and technology companies. These engagements provide valuable insights, foster collaboration, and promote the integration of diverse perspectives, which would increase the chances of adoption.
27. **Foster an Open Forum** – In addition to targeted engagements, the central bank should create opportunities for a more open and inclusive discussion by organizing events like hackathons or innovation challenges. These platforms enable a wider audience, including individuals and organizations beyond traditional market participants, to contribute innovative ideas and solutions. Opening the discussion to a diverse range of participants helps identify the “unknown-unknowns,” promoting creativity, fresh perspectives, and identifying new partnership opportunities. This is especially important when considering regional differences.
28. **Account for Regional Differences** – Recognizing the regional diversity within Peru, the central bank should consider the unique characteristics, needs, stakeholders and infrastructure readiness of different regions. Understanding how the use cases and the CBDC strategy can be tailored to address regional differences, would help the central bank to ensure inclusivity and relevance for all stakeholders and users across the country.

⁶ The BCRP has adopted the IMF’s 5P Framework, which defines the current phase as the “proof of assumptions” stage, aimed to understand and test key questions, assumptions and concepts.

29. Consider Executing an Innovation Challenges or Other Form of Stakeholder Engagement –

BCRP could consider executing an innovation challenge or a similar initiative to further engage stakeholders and foster collaboration. Based on the report delivered by the mission team at the beginning of the virtual mission (Annex II) and the additional information collected through the recommendations listed in this report, the central bank would be well-positioned to launch an inclusive and open challenge. The challenge, or series of challenges can incentivize participation, attract new stakeholders, and generate novel solutions to address specific use cases (Recommendation #3) or questions which would inform the development phase. To a communication perspective, launching an innovation challenge demonstrates the central bank's commitment to inclusivity and actively involves a wider audience in shaping the CBDC strategy. As mentioned in Recommendation #2, such an initiative could be done in collaboration with CPM's Laboratory.

Recommendation 2: Implement an adaptive and ongoing risk assessment and mitigation framework, considering that new risks continually emerge.

30. **Consistent with one of the primary recommendations from the initial mission, it is advisable to perform an ongoing risk analysis that aligns with the specific phase of the project.** The risk analysis should consider all pertinent macroeconomic, financial, legal, regulatory, technology, governance and operational risks and gaps, relevant to the phase of this project. Box 1 serves as a reminder of the risks that have been previously emphasized.

Box 1. List of Risks to CBDC Issuance

Technology and operational:

- Cybersecurity attacks and risks
- Vendor technology lock-in and dependency on vendors who provide CBDC technology⁷
- Dependencies on user-facing private-sector providers in a two-tiered CBDC architecture
- Dependency and vulnerabilities related to telecommunications providers
- Localized or systematic technological failure (software, hardware, network, etc.)
- Systems instability resulting from the technological immaturity and pioneering nature of most current CBDC implementations

Economic:

- Aggravation of financial exclusion and inequality in access to financial tools and services
- Risk of financial disintermediation or a “digital run” to quality of CBDC from commercial banks, including impacts to domestic lending activity and bank balance sheets and profitability⁸
- Potential effects of CBDC to monetary policy transmission
- Impact to capital flows and foreign currency exchange
- Unintended consequences with respect to impacting private-sector payment providers

Regulatory and compliance:

- Risk of CBDC use in illicit activities²⁰
- Compliance with international financial frameworks

⁷ EBA, Guidelines on outsourcing arrangements, February 2019.

⁸ Bank runs and central bank digital currency, Eric Monnet, Angelo Riva, Stefano Ungaro, 2021 <https://voxeu.org/article/bank-runs-and-central-bank-digital-currency>

- Risks related to data privacy, such as unwanted data dissemination⁹

Other risks:

- Central bank reputational risk
- Unintended environmental consequences
- Cross-border and geopolitical side-effects

31. **Three risks have emerged for the current phase** mainly related to change management and stakeholder engagement.

- **First, any delays or the absence of a clear and prioritized set of next steps may undermine the commitment gained during the initial workshop.** There are high expectations for continued collaboration and co-creation of the design with stakeholders. The BCRP has built strong trust and credibility with stakeholders, and it is crucial to involve all key stakeholders and maintain momentum.
- **Second, the lack of requisite BCRP skills and capacity for this phase may cause inertia.** A significant number of activities have been identified, and their successful execution requires specialized skill sets such as agile project management, business and process analysis, product design, and business model analysis. Although capacity of the CBDC team has been bolstered, additional capacity may be needed. However, the BCRP may face constraints in terms of its internal hiring policies. It is important to assess and mitigate this risk accordingly.
- **Third, the absence of clear project governance poses a risk of overlooking or inadequately managing project risks.** To address this, in line with one of the primary recommendations from the initial mission, it is recommended that the BCRP establish a clear governance framework for the CBDC project. This includes defining governance structures, decision-making processes, and criteria for advancing to subsequent phases. Such clarity would ensure accountability both internally and with external stakeholders. Additionally, as the project progresses to future phases, it is important to maintain distinct oversight of payment systems and financial market infrastructure, separate from the operational functions of a CBDC scheme or any other financial market infrastructure (including the RTGS).

Recommendation 3: Embrace an agile methodology and the ability to pivot rapidly as new information emerges

32. **Adopt an iterative methodology that allows for short and impactful sprints¹⁰** – Given the highly exploratory nature of the current Proof of Assumptions phase, the constrained resources of the central bank, and the necessity to rapidly validate, invalidate, or address a large number of questions,¹¹ it is recommended to adopt an Agile methodology for the management of this phase. This approach will enable the project team to achieve quick wins, adapt to evolving circumstances,

⁹ EDPS, TechDispatch #2/2021 - Card-based Payments, https://edps.europa.eu/data-protection/our-work/publications/techdispatch/techdispatch-2021-card-based-payments_en

The public, the private and the secret: Thoughts on privacy in central bank digital currencies, 2021, David Ballaschk, Jan Paulick

¹⁰ In the context of Agile methodology, a sprint refers to a short, fixed period of time during which a team focuses on completing a set of predefined tasks and goals. Sprints provide a structured approach to iterative development, enabling teams to deliver incremental value and regularly review and adapt their work

¹¹ The workshop with stakeholders led to the identification of 35 potential activities. It is likely that further engagement with a wider group would unveil additional relevant activities.

and make informed decisions based on new information. The experience of the Interoperability Team in BCRP with Agile methodology has been largely positive, and many lessons learned, and best practices could be applied to the CBDC project.

33. **Maintain a backlog of tasks or activities and prioritize them based on value and feasibility¹² to enhance resource optimization** – This mechanism optimizes limited resources by allocating them efficiently to tasks and deliver the most significant impact and value to the CBDC project. By adopting reasonably short cycles – or sprints – the CBDC team may be able to deliver quick wins while building experience and avoiding unnecessary delays or resource wastage.

Recommendation 4: Develop a comprehensive communication strategy to ensure continuous clarity regarding the CBDC project's goals, roadmap, progress, successes, industry engagement

34. **A communication strategy can support the BCRP CBDC project team in maintaining transparency and facilitating engagement with partners both internally and externally.** The communication strategy should be comprehensive, considering potential goals such as provide detailed insights into the specific players who can actively participating in the CBDC ecosystem, serve as educational campaigns to raise awareness and knowledge about CBDC in order to facilitate understanding and active involvement from a diverse pool of stakeholders, provide continuous updates and progress reports, address key concerns raised by participants in the stakeholder workshops — such as participation, roles and responsibilities, and regulatory and value chain implications.
35. **The strategy can also provide detailed insights into the specific players who can actively participating in the CBDC ecosystem, ensuring that all relevant stakeholders are engaged in shaping the future of digital payments.** The role of the central bank and other regulators should be clearly defined, outlining their responsibilities in overseeing the CBDC project and establishing a regulatory framework. Emphasizing the role of the private sector is also important, highlighting the gaps to be filled and opportunities for innovation within the context of CBDC implementation. By providing guidance on the rules of the game, participants will have a clear understanding of the boundaries within which they can operate and innovate.
36. **To widen the pool of participants, the communication strategy should outline initiatives to attract and engage new stakeholders.** This can include targeted outreach programs, awareness campaigns, and educational initiatives to ensure that additional participants can self-activate and contribute to the CBDC ecosystem. The strategy should also outline the central bank's expectations and provide clear definitions of key terms like interoperability, fostering a common understanding among all stakeholders. In particular, the implications of CBDC on existing value chains and business models are of interest to stakeholders and are an important factor in the perceived transparency of the BCRP's project.

¹² The mission team delivered to the CBDC team a methodology to allows to assess, as a team, the relative value and feasibility of tasks, along two axes. A third axis, or a relative “weight” for each activity, would allow to recognize the resource constraints to refine priorities.

37. **To ensure successful collaboration within the CBDC ecosystem, the central bank can leverage any of several communication tactics that stakeholders recommended in the session.** For one, emphasizing the fostering of a collective approach, opportunities for consortium-based collaboration, and establishing public-private partnerships are motivators stakeholders indicated a receptiveness towards. Emphasizing a spirit of co-creation and the development of a public good will encourage stakeholders to actively participate and contribute their expertise. Collaboration might also lead to access to new clients, increased market share, tax incentives, and the development of new business models. By incorporating these tactics into the communications strategy, the central bank can further motivate stakeholders to contribute to the success of the CBDC project to avoid missing out on valuable opportunities.
38. **There are also several risk factors to consider to ensure a clear and meaningful communication around the CBDC project.** Firstly, the central bank should position themselves as a clear project leader and if cases arise where central bank leadership is not appropriate, an alternative should be clearly nominated and endorsed. Next the central bank should strive to eliminate ambiguity around budget, whether by providing subsidies or mandating that private sector participants cover costs (which should itself be carefully considered as it may impact participation). Along these same lines, the central bank should be mindful of the incentives or lack thereof for the private sector to participate, and coordinate activities and eventual deployment so as to mitigate the risk of inefficient private sector monopolies or a lack of adoption.

B. CO-CREATE “BASELINE PRODUCT” WITH MARKET PARTICIPANTS

39. **The white paper published by BCRP in March 2023¹³ provided important insights into the dynamics and issues facing the current payment system in Peru.** It outlined potential benefits that could arise from the introduction of a CBDC. Such advantages could include increased efficiencies, and lower barriers to financial inclusion. The paper also recognized the challenges in terms of regulatory support, technology choices, and public acceptance.
40. **During the workshop, participants expressed their positive response to the white paper.** However, they also emphasized the importance of BCRP's leadership in addressing three key questions regarding the role and impact of CBDC within the existing ecosystem:
- What roadmap would allow for the gradual introduction of CBDC use cases? This approach would aim to minimize risks while working towards the ultimate goal of financial inclusion.
 - How would a CBDC impact different parts of the payment value chain? What are the expected roles and responsibilities of existing and new stakeholders?
 - What are the elements of business models that can incentivize the participation of existing and new stakeholders?

Recommendation 5: Build strategic roadmap of use cases

41. **Workshop discussions highlighted the need to identify a minimum set of use cases with which to begin the implementation of CBDC.** The challenge before the BCRP is to identify which use cases might imply sufficient incentive to motivate behavior change in users transitioning from

¹³ <https://www.bcrp.gob.pe/docs/Sistema-Pagos/cbdc/cbdc-presentation.pdf>

cash-only habits to financially included, digital payment behaviors. To that end, the following learning goals are outlined:

41.1. *Identify Use Cases*

Begin by thoroughly defining the use cases for CBDC. This involves identifying areas where CBDC can provide value and address specific pain points in the existing payment ecosystem. It's also important to note that many highly relevant use cases may not be evident from the central bank's vantage point at the center of the payments system. Some use cases may only be visible from a very particular point of view (i.e., rurally, or from previously unconsidered market players like pharmacies, lottery sellers, etc.). Building in mechanisms to encourage participation and innovation from a wide variety of market actors in an attempt to capture these "blind-spot" use cases can be impactful (see recommendation #6).

41.2. *Evaluate Impact on Market*

Determine whether CBDC will replace existing payment products or complement them.

41.3. *Identify Underdeveloped Niches (e.g., Government Payments)*

Identify niches within the payment ecosystem where people face challenges in making payments, such as specific P2G transactions or social welfare programs (G2P).

42. **Additionally, the BCRP should adopt a strategic approach that prioritizes use cases with lower-risk assumptions while delivering significant value to users.** This approach ensures a balance between risk mitigation and user-centric benefits, fostering support from the ecosystem. The high-level process for implementing this approach involves:

- i. Evaluate the assumptions, risks, level of effort associated with each use case and prioritize the use cases with lower risks and maximum impact for initial implementation.
- ii. Value proposition development for each use case that highlights specific benefits to be received by users.
- iii. Prioritize moving to the PoC those use case with higher potential impact and lower-risk assumptions while identifying which assumptions must be tested.
- iv. Stakeholder engagement: engage with stakeholders as part of brainstorming assumptions and benefits leveraging their expertise and gaining support for the solution.

Box 2. Examples of Low Risk Starting Points

The following examples are for illustration only. The BCRP should build a use case roadmap according to a process involving all relevant stakeholders.

Example 1: Start with G2P and P2G use case

By enabling direct digital transfers of government funds (G2P) and person-to-Government payment (P2G), CBDC could reach individuals who may not have access to traditional banking services and stimulate digitalization of informal economic activity that could derive in financial inclusion. Also, the easy access to funds via digital wallets could foster financial literacy since users can track their transactions and balances in real-time.

Example 2: Start with low-value wallet and low-value payments

Below a certain limit (to be decided by BCRP), the central bank may consider the benefits and the risks of allowing complete anonymous payment (example: bus, market etc.).

Example 3: Start with a wholesale CBDC

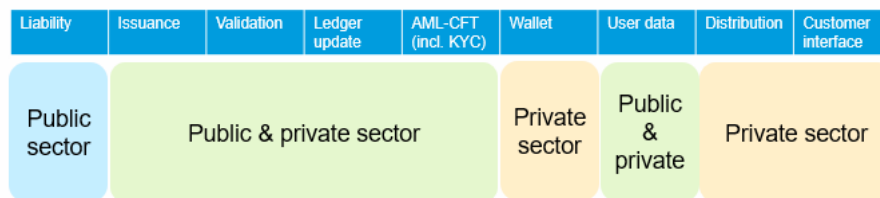
As wholesale CBDC does not involve end user elements such as user experience or private data, this would help concentrate on the architecture and back-end systems, while focusing on some of the back-end payment infrastructures current weaknesses.

Recommendation 6: Study end-to-end value chains and the roles and responsibilities of relevant stakeholders

43. **Building on the identified core use cases, workshop discussions emphasized the need for clarity of the “CBDC value chain”.** This includes clearly defining the set and sequence of activities involved in delivering the use cases and identifying relevant stakeholders. The BCRP faces the challenge of establishing a baseline product design, which involves distinguishing specific activities to engage the intended users. It also requires defining activities with minimum requirements for the central bank while allowing stakeholders to compete and differentiate their offerings. Key considerations for targeted users are low cost, high speed, ease-of-use, and trust in the product.

44. To address these goals, the following learning goals are outlined:**44.1. Jointly define the value chain and "division of labor"**

Clearly identify the end-to-end value chain for the use cases and clarify the activities performed by the central bank and the private sector. Determine for instance, the acquisition process for stakeholders,¹⁴ such as fintech firms, and clarify details on minimum wallet design requirements. The figure below is an illustrative high-level example of a CBDC value chain, involving different stakeholders in different activities.

Figure 3. High-level Example of a CBDC Value Chain**44.2. Clarify access and participation criteria**

¹⁴ Further detail is required for instance on which stakeholders could “acquire” CBDC, and how they would do this. Open questions remain such as: would fintech firms be required to purchase CBDC through current incumbents or more directly with the central bank.

Define entry and participation criteria for all activities within the value chain, considering potential new participants and concerns from incumbents.¹⁵ The governance model and “rules of the game” for the scheme should be defined across the set of activities and per “use-case.”

44.3. Establish a baseline architecture and minimum viable core infrastructure

Develop a clearer baseline architecture by unpacking activities across the value chain. Explore iterative approaches like innovation challenges to select appropriate technologies (for consideration in the prototype phase). Determine the need for interoperability with existing products and systems.

44.4. Evaluate each step of the CBDC value chain jointly with market players

Engage actively with market players to structure the CBDC value chain through co-creation of activities. This collaboration is crucial for addressing the complex challenge of increasing digital payment adoption in the target market.”

Recommendation 7: Identify the potential business models and services that can be facilitated through a well-designed CBDC.

45. Discussants emphasized the need for a clear business model for CBDC, which goes beyond identifying use cases and clarifying the value chain. The business model specifically relates to costs, potential revenues, and the overall sustainability of the product. While key considerations such as low cost, high speed, and ease-of-use were acknowledged, participants stressed the importance of a cost recovery model as a key success factor.

46. To address this objective, the following learning goals are outlined:

46.1. Obtain clarity on participant costs

Determine the costs involved for services like cash-in, customer support, and dispute resolution. The BCRP is called upon to provide clarity on these costs to the extent possible.

46.2. Identify incentives for participation

Explore creative incentives through open table discussions, such as tax incentives for micro-merchants, subsidized fees for government payments, or CBDC rewards. Initiating exploratory dialogue and understanding incentives better are crucial at this stage. For instance, gaining insights on the availability and utilization of CBDC payment-related transactional data is crucial. Equally understanding its utilization within the boundaries of competition and privacy laws is important. Additionally, engaging with other central banks to gain insights into their utilization of transactional data was recommended.

46.3. Specify the total cost of minimum core infrastructure

¹⁵ Several participants viewed CBDC as potentially a new platform that could allow new participants such as fintech firms, mobile-POS providers, non-bank wallet providers and technology providers direct access to the platform, and without the need to go through existing financial intermediaries. Several incumbents though were equally concerned about disintermediating current products

Begin understanding the costs associated with core infrastructure, considering the minimum viable use cases and related activities. Modalities like hackathons or requests for information from technology providers can aid in assessing potential costs.

46.4. *Benchmark and learn from other jurisdictions*

Conduct benchmarking studies with jurisdictions already in production or pilot phases to gain insights into their approach to clarifying business model aspects.

C. ELEVATE STRATEGY AT NATIONAL LEVEL

47. **At this stage of the CBDC project, the central bank should also explore how national elements could benefit the project and reduce risks.** A CBDC ecosystem relies not only on a platform provided by the central bank, but also on a number of elements under the purview of the government, as well as regulatory frameworks overseen by policymakers. Additionally, collaborating with relevant government agencies can facilitate the identification of valuable capabilities, resources, and relevant use cases that can support the project's success.

Recommendation 8: Consider opportunities to leverage the existing digital public infrastructure

48. **The role of digital identity** – In Peru, the national digital identity schemes, such as IDGob.pe, hold the potential to contribute to financial inclusion. Extensive research conducted by organizations like the World Bank¹⁶ and the World Economic Forum¹⁷ has highlighted the positive impact of cross-sector, national identity schemes in facilitating access to digital services, including banking and government services. The success of national digital identity schemes like India's Aadhaar has demonstrated the significance of integrating digital identity into systems aimed at reducing financial exclusion.
49. **It is therefore recommended to hold discussions with the Secretariat for Digital Transformation.** This would help assess the role that IDGob.pe can play for the success of a CBDC, especially in context of financial inclusion. This study can also help identify any necessary impact on the CBDC architecture, design, and business models to fully leverage the benefits of IDGob.pe in supporting financial inclusion.
50. **The role of national data management platforms** – As highlighted in section III, the government has established and is actively expanding essential infrastructure to manage and safeguard citizens' data. Given the sensitive nature of payment transactions and the need to collect some information in certain use cases, it is important to assess the implications of leveraging the existing data management environment. PCM's efforts in establishing a secure data collection and protection framework present an opportunity to thoroughly evaluate the potential advantages and risks associated with integrating this national data infrastructure into the CBDC strategy. By conducting a comprehensive investigation, the central bank can gain valuable insights to inform its decision-making process with regards to infrastructure and data protection.
51. **The implications of the national strategy for internet coverage** – Discussions with the Secretariat for Digital Transformation can also help understand the plan to extend internet coverage at the

¹⁶ <https://blogs.worldbank.org/psd/digital-id-critical-enabler-financial-inclusion>

¹⁷ <https://www.weforum.org/reports/identity-in-a-digital-world-a-new-chapter-in-the-social-contract>

national level. This could help identify how use cases and deployment scenarios of a potential CBDC could account for the government's plans to ensure widespread internet access and connectivity. By aligning the CBDC design with the government's internet coverage expansion strategy, the central bank can anticipate and address any potential challenges related to accessibility, infrastructure requirements, and user adoption.

Recommendation 9: Work with PCM's innovation lab to leverage their large network of Fintech providers, and to create synergies with relevant government's programs

52. **The role of the national innovation infrastructure** – In the current phase of the CBDC project, it is important to strengthen research and innovation efforts to effectively identify (i) suitable technology partners and product designers, (ii) user experience considerations, (iii) compelling use cases, including potential collaboration with the government (discussed in the next recommendation), (iv) and untapped resources from both the public and private sectors. The Laboratory of Digital Transformation, with its extensive network of innovators and domestic innovation labs, as well as its global reach, presents a valuable opportunity to support these objectives, thereby benefiting the ongoing phase of the project.
53. **The mission team recommends that the CBDC team proactively engages with the Laboratory's management to explore potential collaboration and leverage their expertise.** Working closely with an experienced and resourceful innovation lab may also be instrumental to the successful execution of various activities relevant to the Proof of Assumptions phase. These include activities such as innovation challenges (such as the one organized by the LIFT lab in Brazil), hackathons, new workshops, design sprints and other research activities.

VI. CONCLUSIONS

54. **The BCRP remains fully committed to collaborative co-designing of the CBDC.** The publication of the white paper, which shares the policy goals for a modern and inclusive payment system, has enabled frank discussions and input from a broad set of stakeholders on the potential of a CBDC. Tailored design thinking workshops have further solidified stakeholder commitment to support this phase of the project, and the BCRP is well placed to continue active industry engagement.
55. **Moving forward, the next steps of the proof of assumptions phase are guided by three main themes, supported by nine recommendations.** First, the BCRP is encouraged to maintain an agile program, implementing effective change and risk management practices, fostering broad and ongoing engagement, and ensuring consistent communication with internal and external stakeholders, to sustain momentum. Second, there is a strong call by the industry for increased clarity on the baseline product design, achieved through further interactive engagements. This includes prioritizing use cases for the target market, understanding the CBDC value chain for selected use cases, and providing clear information on costs and incentives for adoption. Last, the CBDC strategy should be elevated to the national level by exploring collaboration opportunities with relevant national agencies and leveraging emerging infrastructure and processes, such as digital identity and the innovation lab.

Annex I: Description of Methodologies Used during Workshops

Day 1: Monday June 12, 2023

Location: BCRP Internal Session

1) Workshop: Reflecting on Questionnaire Findings (1.5 hours)

Framework: Point-of-View Challenge Definition

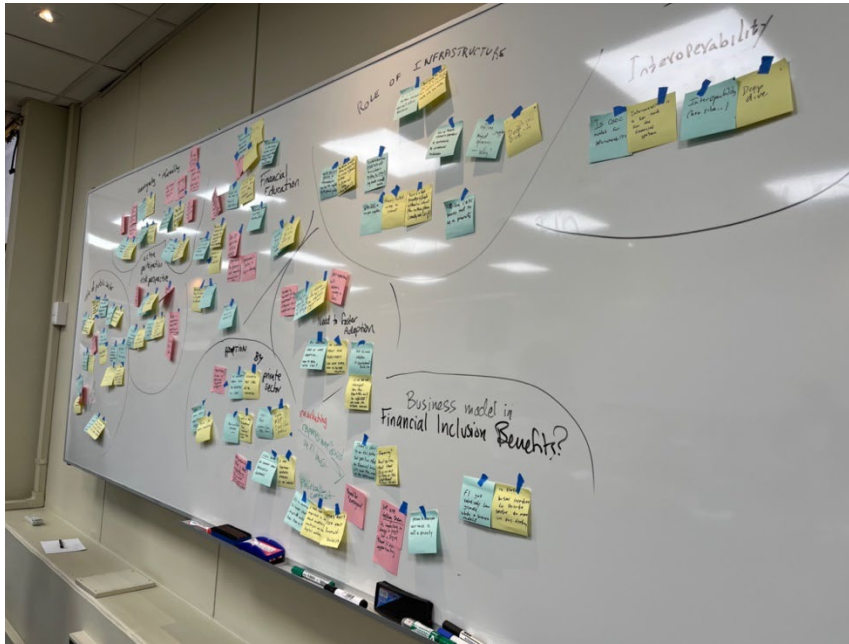
Aim: This was a reflective exercise to engage the central bank team in collectively interpreting the questionnaire findings. The method used encourages participants to share their top-of-mind reactions to the results followed by a deeper reflection into the possible meaning and stakeholder motivations underlying those elements of the results. This session also had the important secondary aim of onboarding the core BCRP CBDC team to design thinking approaches and tools, preparing them for open, frank discussions during workshops with stakeholders on day two.

Method and Results: This session took place immediately following a short presentation from central bank staff on the results of the stakeholder questionnaire. At the conclusion of the presentation, participants were asked to reflect individually on what they'd heard and take note of which results stood out. Each member used sticky notes to highlight significant points and personal insights, which were then collectively displayed on a wall. Afterwards, team members individually delved into the deeper meaning behind these responses, answering the question: "What are stakeholders really saying?" This exercise aimed to uncover valuable insights and foster thoughtful analysis of stakeholders' perspectives.

The team then shared and discussed their inputs, clustering similar ideas and building on individual ideas with group insights. During the discussions, 8 key points emerged: 1) the adoption of CBDC by the private sector; 2) potential motivating business models; 3) the need to foster user adoption; 4) issues of privacy, anonymity, and informality amongst users; 5) the financial education barriers in the user population; 6) the role of the public sector; 7) the private sector's perspective of risk in participating; and 8) the role of infrastructure, particularly with regard to interoperability. These points served as a forecast of the potential topics of concern for the discussions with stakeholders and primed the team with focal points for deeper attention, exploration, and analysis in the following days.

Overall, this exercise enabled the team to make sense of the questionnaire findings, identify patterns, and gain a deeper understanding of stakeholders' viewpoints. As an internal exercise, the framework provided facilitated a meaningful discussion amongst central bank staff in a democratic and horizontal format — encouraging them to consider and synthesize diverse perspectives and fostering an open collaborative environment in which everyone felt comfortable contributing. This approach was fully endorsed and reiterated by the General Manager who was also in attendance as an active participant.

Figure 4. Clustering of Questionnaire Reflections



The results of clustering reflections on the questionnaire with central bank staff.

Day 2: Tuesday June 13, 2023

Location: External Session with BCRP and Industry Stakeholders

2) Workshop: Design Elements of CBDC (3 hours)

Framework: SWOT Analysis and Priority Mapping

Aim: The exercise aimed to engage industry stakeholders in a dialogue with each other and the central bankers in attendance regarding their reactions to the BCRP's whitepaper on CBDC. This was designed to inform the central bank on which parts of the CBDC vision shared in the paper the stakeholders considered to be most important to the overall project — in terms of concept strengths and opportunities as well as potential weak areas and possible risks (derived from the quadrants of the classic SWOT analysis in which the term “threats” is used interchangeably with “risks”). The dialogue also aimed to set a tone on the part of the central bank as being open and receptive to the thoughts and concerns of the market.

Method and Results: After a presentation by the central bank to reintroduce and summarize the concepts of the white paper, the team was divided into five table groups, each assigned one of six specific focus areas related to the CBDC project. These focus areas are listed below.

Table 4. The Six Focus Areas Assigned to Breakout Groups

Demand-side use cases	Supply-side business model	System design characteristics
Demand-side value proposition	Supply-side incentives	System risks and security

At their tables, group members first reflected individually and recorded their thoughts on sticky notes, answering the question “what’s on your mind” with regard to CBDC within the context of their assigned focus area. These individual reflections were then discussed collectively within the group. The key themes and topics that emerged from these discussions and were documented and clustered on the wall, categorized appropriately under either of two headings: "Opportunities and Strengths" or "Risks and Weaknesses." The groups were then instructed to assign labels to each of the resulting clusters in order to further define their thinking.

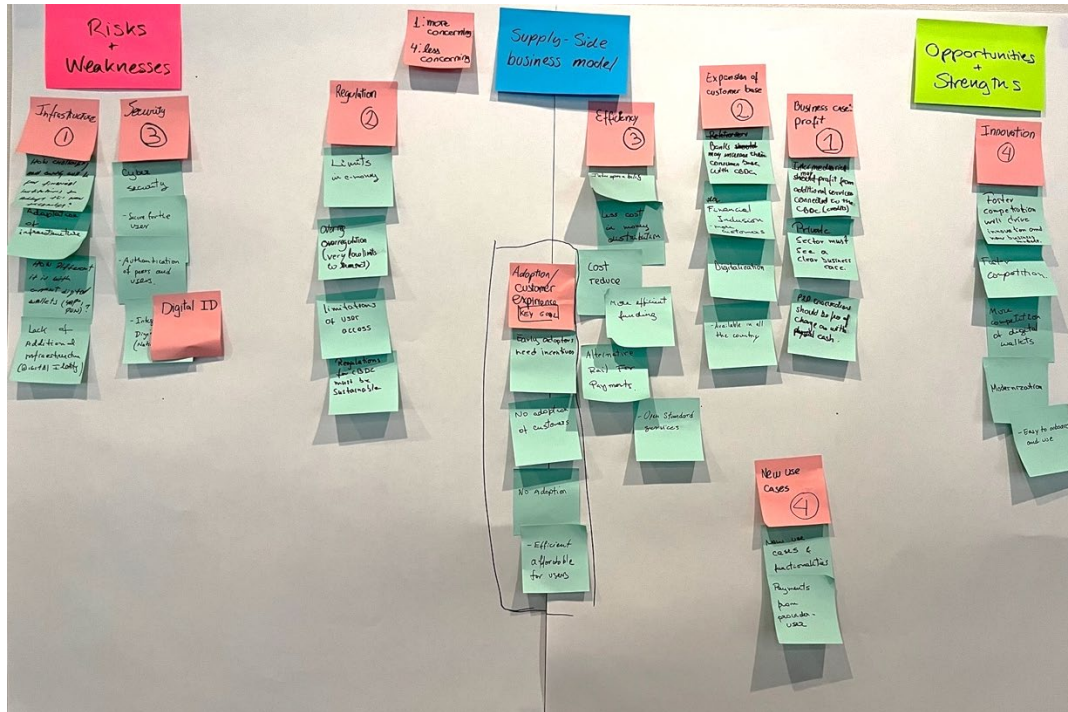
The groups then deliberated and prioritized the clusters of ideas, to indicate the level of concern or importance for each one. This prioritization was visually represented by repositioning the clusters along a vertical spectrum, with the most important at the top and the least important at the bottom, while maintaining their positioning horizontally relative to the two columns. In some cases where this repositioning was difficult, participants instead used number ranking to indicate priority.

When finished, the tables were assigned a second, different focus area on which to reflect and were instructed to complete the same process to facilitate and record their discussion and thinking. This resulted in table groups having completed two priority maps each. Throughout both rounds central bankers were embedded in the table groups and functioned “hosts”, maintaining the flow of the conversation and facilitating dialogue using follow-up questions and prompts to engage the stakeholders. As the exercises were aimed primarily at soliciting the thoughts and perspectives of stakeholders, the central bankers operated in this manner without driving the conversation around their own thoughts and feelings.

As a result, the central bankers embedded at the tables were able to collectively build a very robust and rich sense of the sentiments and ideas coming from the market with regard to their CBDC project. Following post-session synthesis of the priority maps, the IMF mission team identified ten main themes that in aggregate, appeared as high priority across all groups: 1) clarity around roles and responsibilities for stakeholders; 2) clarity around business models for participation in CBDC; 3) onboarding of merchants to CBDC; 4) the priority minimum set of use cases needed to successfully launch CBDC; 5) barriers and enablers to user adoption; 6) the elements of optimal user experience; 7) core enabling infrastructure; 8) interoperability; 9) digital identity, and 10) opportunities and risks regarding CBDC data and privacy.

These topics reflected the shared perspectives on areas requiring further attention from the stakeholders and would serve as the starting point for drafting a market engagement strategy on the third day.

Figure 5. Example Output from Design Elements Activity



The results of one table's discussion of the most crucial elements of supply-side business model

Day 3: Wednesday June 14, 2023

Location: External Session with BCRP and Industry Stakeholders

3) Workshop: Engagement Strategy Brainstorming (3 hours)

Framework: Adapted Lean Canvas for Proof of Assumptions Phase Engagement Planning

Aim: Having understood from the previous day which topics and elements of CBDC the market considered to be most crucial to the overall project, the aim of the second day was to imagine how might the BCRP and the other public and private stakeholders collaborate in the forthcoming Proof of Assumptions phase in order to get the most out of CBDC for Peru. The canvas was developed as a tool to facilitate the generation of a diverse range of ideas within a limited timeframe, fostering cross-pollination among participants. It served as a template to guide the brainstorming of both content and research and collaboration modalities which the central bank could then take as input in developing a comprehensive engagement strategy for the Proof of Assumptions phase.

Method and Results: Following a summary of the previous day, and explanation of the canvas and its various segments, and an introduction of the 10 main themes synthesized from the previous day's discussion, the participants were once again divided into 5 groups and assigned two of the themes to tackle one at a time. The objective of the workshop was for each group to complete one canvas for each theme. The canvas was divided into three broad sections: at top "what we need to learn," followed by "specific activities for learning," and lastly "who should be involved in the activity."

Figure 6. Engagement Strategy Canvas

We want to understand _____	so we need to investigate _____	in order to achieve _____
<small>TOPIC</small>	<small>ELEMENT / CONCERN</small>	<small>OUTCOME / METRIC</small>
RESEARCH ACTIVITIES		
<small>method / collaboration mode</small>	<small>method / collaboration mode</small>	<small>method / collaboration mode</small>
<small>deliverables</small>	<small>deliverables</small>	<small>deliverables</small>
WHO should be a part of this?		
CONDITIONS FOR SUCCESSFUL PUBLIC / PRIVATE COLLABORATION		
<small>INCENTIVES AND PROMOTION</small>	<small>COSTS AND RISK MITIGATION</small>	

Canvas template for brainstorming programs of potential exploratory activities for the BCRP CBDC project

Within their respective teams, participants reflected on their assigned themes (ex: business models, stakeholder roles and responsibilities, digital ID, user experience, etc.) and engaged in detailed discussions to identify the multiple relevant knowledge gaps and learning objectives for exploration within that topic (ex: for business models, participants wondered how CBDC might affect the existing value chain?). They then brainstormed specific research activities that would facilitate the acquisition of the necessary knowledge or skills to fill those gaps or achieve that learning goal. Lastly, they determined which stakeholders (present in the workshop or otherwise) who should be involved in exploration of the topic, ensuring that stakeholders could either self-nominate or recommend others whose voice and expertise might not already be represented in this particular workshop. A fourth, optional row asked teams to consider what might be conditions for successful public/private collaboration in these activities and what costs and risks should also be factored in.

Upon completion of two rounds of canvassing, 10 completed canvases featuring 50+ learning goals and 40+ research activities were generated. In post-session synthesis these results were distilled into 35 distinct and specific action items for the central bank to consider for the next phase. Notably, the areas related to users, such as prioritizing use cases and enhancing user experience, emerged as having the highest number of action items. This highlighted the significance of user-centric considerations in the CBDC project and the need for targeted efforts to understand and address user needs.

Figure 7. Example Output from Canvas Activity



A completed canvas describing potential engagement program to explore the Elements of Optimal User Experience

Day 4: Thursday June 15, 2023

Location: BCRP Internal Session

4) Workshop: Prioritizing engagement mechanisms (1.5 hours)

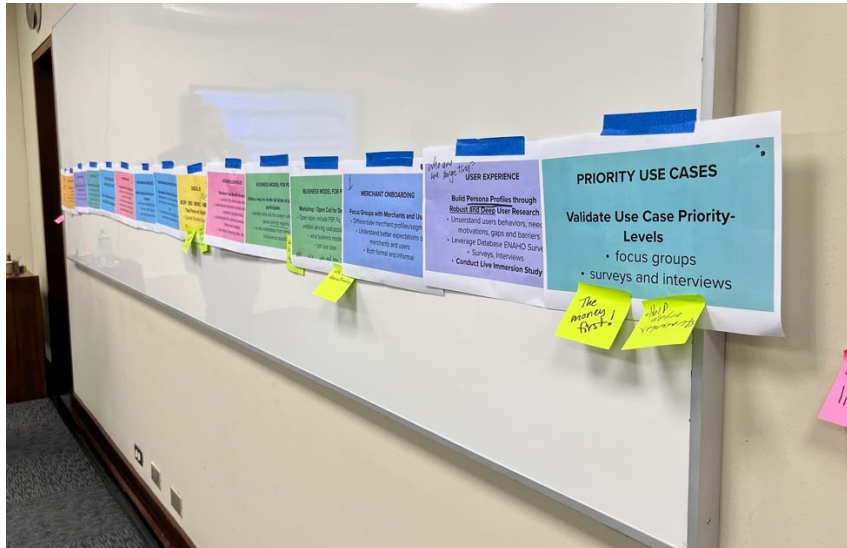
Framework: Importance vs. Difficulty Prioritization Matrix

Aim: Having concluded the two days of workshops with stakeholders, it was important to allow the central bank staff time to reflect on the outcomes and determine from their own internal perspective which action items would be most impactful and feasible. The prioritization matrix helps teams to systematically evaluate and prioritize different options or items based on difficulty and importance for the ecosystem. It provides a structured approach to help the central bank decide what options could be most suitable to take forward, which they can also replicate and repurpose throughout their CBDC journey as options and criteria for feasibility and impact are further defined.

Method and Results: The workshop started with the IMF team introducing the synthesized list of 35 action items to the central bank staff, to whom the general concepts were already familiar as they had participated in the previous days discussion. Once everyone's memories were refreshed and there was clarity around how the list had been defined and generated, the central bank staff were each given 5 votes to place on the activities which they thought were most important to take forward. This was simply a mechanism to narrow the number of items to prioritize to a more manageable number, as it was made clear that any other activities left out of the exercise should not be considered "off the table," just relatively deprioritized.

The participants then focused on an objective assessment of the various first based solely on their perceived importance to the CBDC project (though they were also encouraged to align first on what importance meant to them, they were discouraged from ranking importance based on any kind of chronology or sequential dependencies). They carefully evaluated each item, considering its potential impact and ranked them in single-file on a horizontal axis.

Figure 8. In-Progress Prioritization Activity



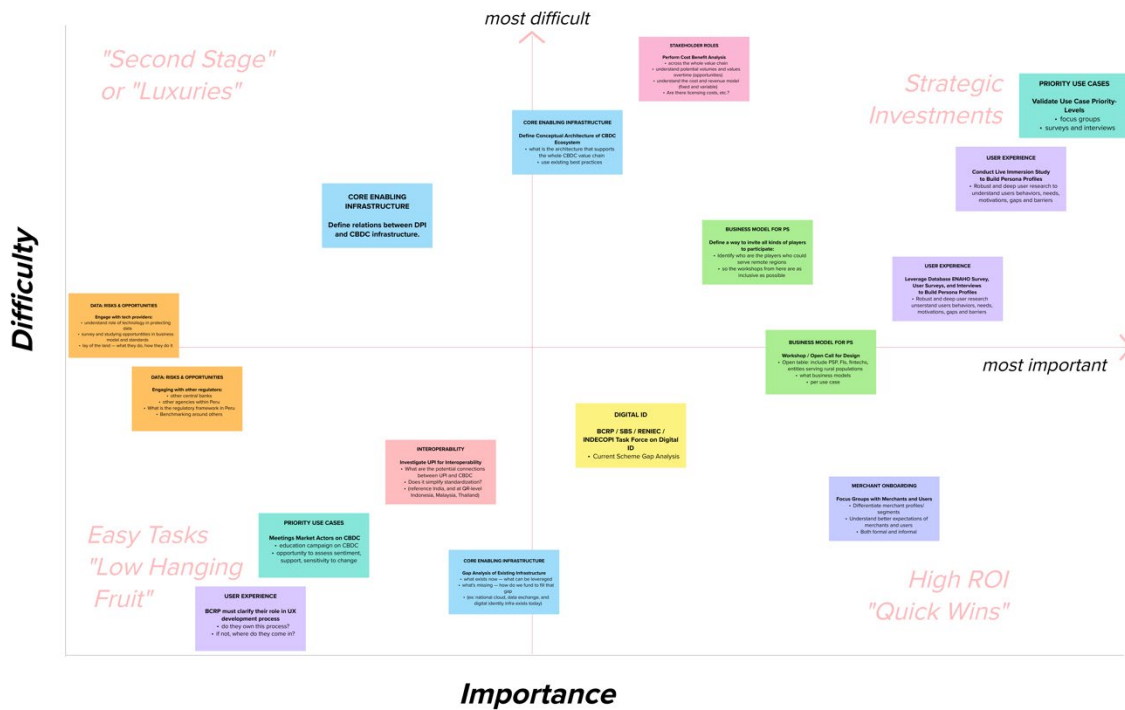
The physical activity cards ordered horizontally from most important at the far right to least important on far left

Once complete, they then proceeded to collectively rank the activities along a vertical axis of difficulty — while preserving their horizontal positioning. As with the previous step, participants were instructed that no two items could be ranked equally, so as to provoke careful evaluation and discussion as the team deliberated on the effort required for implementation of each activity.

The group effectively utilized the matrix, placing each item in the appropriate quadrant based on its relative importance and difficulty. This approach allowed them to visually identify and prioritize tasks or ideas that were both important and feasible. These were considered “quick wins” while those items considered important, but more difficult to implement should be considered more “strategic investments.” They engaged in thoughtful discussions in a very horizontal and open format, enabling the synthesis of diverse perspectives and expertise and fostering a collaborative environment in which to shape the direction of the CBDC project.

The team found the exercise extremely useful in managing and finding direction amongst such a large number of possible pathways into the Proof of Assumptions phase. They were encouraged to reuse the framework periodically to reevaluate and reprioritize as the project evolves and the team grows — considering factors such as resource availability, time constraints, and evolving learnings resulting from newly completed activities. Leveraging the prioritization matrix ongoingly can facilitate informed decision making and the allocation of central bank efforts and resources towards high-impact and manageable initiatives, ensuring efficient use of resources and maximizing the potential for success.

Figure 9. Completed Output of Prioritization Activity



Importance/Difficulty Matrix used for prioritizing potential CBDC project activities

Annex II: Innovation Challenge Operating Manual

As part of the mission, the team has created an operational manual for organizing an innovation challenge in Peru. This manual draws upon extensive research of global best practices and lessons learned from other central banks that have successfully conducted similar challenges, such as the Brazilian LIFT Challenge and the Monetary Authority of Singapore's Global CBDC Challenge.

The document provides strategic and tactical guidance to the BCRP in designing, preparing, and executing an innovation challenge specifically tailored for the "Proof of Assumptions" phase of the CBDC project. Throughout the manual, various use cases are presented to illustrate and inform the preparation and execution of the innovation challenge.

The operating manual begins by explaining the nature, scope, and goals of an innovation challenge. It then outlines the necessary steps for effective preparation, design, execution, and evaluation of such events. Key elements for success are unpacked, including the proper identification of the target audience and incentives, definition of key performance indicators, and establishment of a robust communication strategy. Additionally, the team provides insightful examples on how to properly evaluate and reward the results of the innovation challenge.

The central bank expressed their satisfaction with the operating manual, which serves as a valuable resource for the BCRP, equipping them with the necessary tools and guidance to organize and manage an innovation challenge that aligns with the goals presented in the white paper.