The University of Hong Kong

Department of Computer Science

FITE4801 Final Year Project

Detailed Project Plan

Discuss the current development and the future practices of CBDCs in Hong Kong

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1 Background

1.1 CBDCs and Accelerated Development In the Globe

The digital transformation of the global monetary and payment system has been accelerated in the past few years. The cryptocurrency market is rapidly expanding with many innovations issued by private sector organizations or communities, for example, Facebook's Libra stable coin. With the risks of digital currencies, such as extreme price volatility, high leverage, and illegal trading, posing threats to the financial system, the government is tightening the regulations [1]. Meanwhile, this reinforces central banks' motivation to develop Central Banks Digital Currencies (CBDCs) to respond to the new situation and to protect monetary sovereignty [2]. CBDCs are digital payment instruments denominated in the national unit of account as a direct liability of the central bank [3]. As of 2022, over fifty central banks have continued to advance CBDCs research, development, and piloting [4]. Under the leadership of the Bank for International Settlements (BIS), innovation hub centers across the globe are promoting a series of projects covering diversified focus areas such as retail CBDCs through an open API system (Rosalind), cross-border payment (Nexus) and automated market-makers for foreign exchange (Mariana) [5].

1.2 CBDCs as Hong Kong's Fintech Strategy Focus

Hong Kong is also among this global wave with a flurry of encouraging policies released, such as "Policy Statement on development of Virtual Assets in Hong Kong," marking its ambition to develop virtual assets [6], and "Fintech 2025 Strategy" highlighting the development of CBDCs at both wholesale level targeting financial institutions for interbank settlements and retail level targeting businesses and individuals for daily transactions[7]. Along the CBDCs journey, several milestones have been achieved. For the wholesale level, Project Inthanon-LionRock, renamed to mBridge in Feb 2021, for cross-border payment was co-worked by the HKMA, Bank of Thailand, the Central Bank of the United Arab Emirates, and the Digital Currency Institute of the People's Bank of China [8]. For the retail level, Project e-HKD was launched in 2021 to explore e-HKD, covering technology, legal foundations, use cases, and design considerations [9].

1.3 Research Motivation

Despite the trend, the development of CBDCs in Hong Kong is still in progress, and many open questions remain. The literature or research on CBDCs in Hong Kong covered several areas, such as the impacts of CBDCs on the financial industry [10], technical and systematic foundation [11], and policy and legal framework [12]. The research provides in-depth analysis and insight into policy, technical, and legal considerations of CBDCs, laying a solid theoretical foundation for exploring solutions for CBDCs. However, few studies keep track of the latest development of CBDCs, which includes the latest status of HKMA-initiated projects, the latest strategies and measures adopted by companies in the financial industry or markets, Hong Kong's current position in the global CBDCs competitive landscape, and so on. Additionally, few studies delve deeply into the applications. For example, for retail CBDCs, the e-HKD Pilot Programme was launched recently to test use cases such as full-fledged payments, programmable payments, tokenized deposits, and settlement of Web3 transactions [13]. Few studies have discussed what application scenarios can benefit from these use cases or what market players can benefit from them. Given that CBDCs development is at a rapid speed but has yet to take shape, the research that keeps up with the

latest developments and suggests how CBDCs can be implemented and further developed is required.

2 Objectives

Given the research motivations mentioned above, the main objective of this research-based project is to propose strategies for the future development of CBDCs at the application level, in alignment with Hong Kong's latest situation and vision. The strategies encompass various areas, such as identifying areas that best meet the needs of Hong Kong citizens and devising effective promotion and marketing strategies.

To achieve this, the project will involve conducting in-depth research on the current development and future practices of the CBDCs industry in Hong Kong, focusing on three key areas:

(1) Background of CBDCs development in Hong Kong

This aims to understand the motivations behind Hong Kong's pursuit of CBDCs development and the driving factors that influence its progress.

(2) Current development status of CBDCs in Hong Kong

This aims to investigate the environment that supports the development of CBDCs, public attitudes and adoptions of CBDCs, and the efforts and practices undertaken by Hong Kong so far, Hong Kong's position in the global competitive landscape.

(3) Outlook of CBDCs development in Hong Kong

As CBDCs development is still in its initial stages, it aims to foresee the whole industry landscape, possible applications, use cases, and business requirements in various segments.

By addressing these objectives, this project will contribute valuable insight and recommendations for the future development of CBDCs in Hong Kong.

3 Scope

CBDCs cover a broad nature. However, as mentioned above, they are usually classified into two categories: wholesale CBDCs and retail CBDCs. As this project concerns the development among the general public in Hong Kong and how CBDCs interact with Hong Kong's society via the financial system, **the discussion in this project will be mainly scoped to retail CBDCs, i.e., e-HKD.**

4 Methodology

4.1 Overview

This project is mainly an industry research project, and the methodology will incorporate standardized frameworks commonly employed in industry research, including PEST Analysis, Competitive Analysis, and Industry Value Chain Analysis.

Both quantitative and qualitative studies will be conducted to ensure a comprehensive analysis. The information and data will involve both primary resources and secondary resources. Primary resources will include surveys and interviews of key stakeholders if allowed, while secondary resources will consist of professional research reports, official government statistics, and company annual reports.

4.2 Details

For the three discussion areas below, details of the methodology are outlined as follows:

(1) Background of e-HKD development in Hong Kong

- Conduct an extensive review of existing literature to study the motivations behind Hong Kong's pursuit of e-HKD development.
- Analyse the driving factors that influence its progress using PEST analysis.

(2) Current development status of e-HKD in Hong Kong

- Conduct an extensive review of existing literature to study the environment that supports the development of e-HKD, the efforts and practices undertaken by Hong Kong, and the main challenges faced so far.
- Design a questionnaire and survey to collect information on public attitudes and adoption towards e-HKD, including the factors influencing their acceptance, such as convenience and user experience, the impact of e-HKD on consumer behavior, such as spending habits and financial decision-making, and so on. This will provide insights into the level of acceptance, potential concerns, expectations, and needs regarding e-HKD among the general public.
- Conduct a comparative analysis of Hong Kong's e-HKD development with other global jurisdictions. The comparison will be based on several benchmarks, including driving factors for e-HKD development (such as promoting financial inclusion and a cashless society), roadmap and focus areas, efforts made, and so on. This will help to evaluate Hong Kong's position in the global competitive landscape and identify potential areas for improvement or collaboration by using SWOT competitive analysis.

(3) Outlook of e-HKD development in Hong Kong

- Conduct industry value chain analysis to project how players from the e-HKD industry upstream, midstream, and downstream participate in the e-HKD operation system. This will help forecast the potential values and opportunities from e-HKD in the industry landscape.

- Investigate the application scenarios based on use cases of the e-HKD Pilot program: full-fledged payments, programmable payments, offline payments, tokenized deposits, settlement of Web3 transactions, and settlement of tokenized assets [14].

(4) Strategies planning for the future development of e-HKD in Hong Kong

- Develop strategies for e-HKD further development at the application level based on the findings from previous discussions on current development status, challenges, potential opportunities, potential application scenarios, etc.
- Address critical areas for improvement and propose actionable steps to enhance e-HKD development at the application level.

By following this structured methodology, the project will provide valuable insights into the development of e-HKD in Hong Kong and guide the formulation of strategies for future development.

5 Timeline

Phase	Schedule	Milestones
Phase 1: Inception	Sep 2022	• Project brainstorming • Literature review • Deliverables of Phase 1: detailed project plan and project webpage
Phase 2: Elaboration	Oct 2023	• Research on background of e-HKD development in Hong Kong • Research on current development status of e-HKD in Hong Kong
	Nov 2023	• Research on future industry landscape • First round research on e-HKD application scenarios
	Dec 2023	• Second round research on e-HKD application scenarios • Questionnaire distribution
	Jan 2023	• First presentation (Jan 8-12) • Deliverables of Phase 2: preliminary implementation and detailed interim report
Phase 3: Construction	Feb 2023	• Develop strategies for further development of e-HKD
	Mar 2023	• Feedback and finetune period
	Apr 2023	• Final presentation (Apr 15-19) • Deliverables of Phase 3: Finalized implementation and final report • Project exhibition (Apr 26)

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