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Cambodian Youth Perspectives

Edited by

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Chapter 2 | Blockchain and the Future of Inclusive Digital Payment in Cambodia

Kosal HEANG

Future Scenario

One evening in March 2030, Kaneka—a young mother to an 8-year-old son, is sitting with her husband talking about the COVID-19 crisis that happened years ago. During their dinner, her son quietly listens to the story. She tells him how at they had a difficult time generating income through buying and transporting vegetables to sell at the town’s market:

“We were so worried about getting infected but we had no choice and needed to earn an income. Fortunately, we got vaccinated since we were categorized as a high-risk group. Despite the fear we lived with during the pandemic, every time we got home with some money, we always felt so happy even though the money we earned was not a lot.

To be honest, if you ask me what makes me happy, my answer will be, when I count each banknote one by one. I like counting and carrying it. The more I count, the better I feel. At that time, however, cash was not encouraged because of the fear that it could transmit COVID-19 when an infected person carried it and gave it to others. I heard a lot about something called electronic and digital payment, and mobile app banking in the market. Back then I did not know exactly what it was but your dad and I thought that we wanted to use it too. We both had no financial or digital literacy so we were reluctant to try.

It was not until you turned 2 years old, I remembered that there was a digital literacy program introduced by the National Bank of Cambodia that collaborated with a microfinance institution that operated in our location. They taught us some basic knowledge about financial education and digital literacy and linked it to the utilization of digital payments as the means to do transactions. They introduced us to Bakong as the digital payment platform. We had no bank account but through Bakong we could do financial transactions with other people who have it. We had our QR code displayed at our store and customers could quickly pay via the QR code system. No more cash! As we got to know more about the payment system, we decided to open a formal bank account since it was easier for us to deposit our money. In just 5 years, Bakong has gradually become popular. It’s like what happened to Wing a decade ago. Now, everyone knows Bakong and uses it.

Kaneka and her husband now own an organic fruit and vegetable store in a district 30km away from the central town of Kampong Cham Province. It is a wholesale store which also delivers produce to the market. Their business has prospered thanks to their early adoption of digital payments which has allowed them to invest in new technology such as a solar powered cooling system with enough capacity to ensure the freshness of vegetables and fruit.

Introduction

In an effort to digitize its economy by 2023, Cambodia has prioritized modernizing the country's finance ecosystem. The National Bank of Cambodia (NBC) has been undertaking several initiatives to develop its payment system capabilities and the latest development is the project Bakong which seeks to utilize the alternative technology known as Blockchain. This project is aimed at promoting financial inclusion and facilitating payments with Cambodian Riel (NBC, 2020a). However, Bakong brings along some challenges that need to be addressed.

The following chapter will discuss those challenges and propose policies that can support Cambodia to successfully achieve its efforts to build a digital economy and in particular to improve financial inclusion. The paper will briefly introduce the rationale for and deployment of Bakong as well as the way forward whereby digital payments becomes the primary platform for financial transactions among the Cambodian population, regardless of geographical location, whether urban or rural. The chapter will also explain how Cambodia can achieve this goal by 2030 using the current Bakong payment system as the base case scenario and the desired scenario will be Bakong 2.0, the future of inclusive digital payment. This paper argues that to arrive at Bakong 2.0, NBC will need to establish Bakong National Digital Payment (BNDP) as a body within the central bank responsible for the operation and development of Bakong, creating an enabling regulatory framework and ensuring sufficient digital infrastructure nationwide.

Context Analysis

What is Bakong?

Over the past two decades, the Royal Government of Cambodia (RGC) has put a lot of effort into improving the financial system in the country. NBC has been mandated to play the roles of a catalyst, an operator and overseer in the financial system under the Law on the Organization and Conduct of the National Bank of Cambodia promulgated in 1996. As a catalyst, the NBC is responsible for the development and innovation of a payment system that can ease remittance transfer and facilitate financial inclusion. As an operator, it facilitates the operation of the settlement and clearinghouse service as a National Clearing House as well as promotes sufficient payment and financial relations with public bodies. As an overseer, it ensures the safety and

efficiency of the payment system by creating the regulatory framework, conducting monitoring and assessment on financial risk as well as maintaining public trust in the domestic currency. There has been a gradual introduction of payment systems, for example, FAST in 2016 (Fast and Secure Transfer), CSS in 2017 (Cambodia Shared Switch), Bakong in 2020 (NBC, 2020a) and the most recent one is the Retail Pay system, officially launched on 26 January 2021 (Vireak, 2021).

Among these payment systems, Bakong has drawn significant attraction. This is in part because Cambodia is the first country in ASEAN to roll out a payment system using Blockchain technology (Sinay et al., 2020). The National Bank of Cambodia started its experiment on several technologies including Distributed Ledger Technologies (DLT) in 2017 to address the problems regarding interconnectivity and interoperability, payment efficiency, financial inclusion and the ease of Khmer Riel cash payments (NBC, 2020a). In July 2019, the pilot test of Bakong was using Hyperledger Iroha, a blockchain platform commissioned by the Linux Foundation Hyperledger Project developed and maintained by SORAMITSU (SORAMITSU, 2020).

On 28 October 2020, Bakong was officially launched with an initial 18 financial institutions participating (SORAMITSU, 2020). Bakong is a mobile application using blockchain in its backend that allows financial institutions (FIs) with existing mobile applications to integrate their backends through an open application programming interface (API). This system is expected to eliminate the need for FIs to develop their digital customer interface, thereby lowering the costs, and in turn facilitating interoperability which enables digital transfers across financial service providers (FSPs) in Cambodia and internationally with more security (NBC, 2020a).

The launching of Bakong, however, generated a great deal of confusion. Some view Bakong as a cryptocurrency, while others see it exactly the same as the Central Bank Digital Currency (known as CBDC). In fact, Bakong is none of these. According to Chea Serey, Director General of the National Bank of Cambodia, Bakong is the backbone of a payment system that aims to reduce transaction costs, increase transaction speed and enhance security (RadioFinance, 2020). It is better understood as quasi-CBDC which uses fiat-backed currency with its operation supported by blockchain technology. NBC does not produce any digital currencies, for example, Bitcoin or Ethereum (RadioFinance, 2020).

Why is Bakong important?

It is widely acknowledged that blockchain and other distributed ledger technologies (DLT) will potentially transform a wide range of industries. Advancements in blockchain in a wide range of sectors are pushing governments to consider policy responses, and to some extent, whether to embrace blockchain technology within their own institutions (OECD, 2019). However, distributed ledger technology is still in its infancy in terms of development and deployment. Yet, it is widely

thought to have the potential to deliver a new wave of innovation to the financial technology ecosystem by offering a ‘trustless’ distributed system to exchange value (IFC, 2019).

Emerging markets may opt for more rapid adoption of blockchain due to their underbanked populations, higher banking risks, and lower bank penetration (IFC, 2019). This is true for Cambodia which is why such technology has been adopted to improve the financial ecosystem (The Asian Banker, 2020). The launching of Bakong was part of the solution to some of the challenges related to current digital payments and the high unbanked population (NBC, 2020a).

The existing payments ecosystem is characterized by constrained interoperability as it is based on individual agreements between FSPs (NBC, 2020a). Even though the Fast and Secure Transfer (FAST) system allows real-time settlements, its use is limited because FSPs are the ones who provide customers with the ability to access the system. The majority of FSPs are not willing or are financially constrained to invest in the development of an interface application (Madan, 2020). Slow progress among the financial institutions led to the rapid deployment of Bakong (NBC, 2020a). Bakong is also expected to bring new opportunities for people, especially the unbanked or underbanked population to get into the formal financial system. The entrance of this segment of the population will create new opportunities for Cambodian businesses in turn (Fintech Singapore, 2020). In terms of an innovative payment system, Bakong positions Cambodia as a leader in payment initiatives, though blockchain has not yet been fully explored (Lewis, 2020). NBC also expects that this project will be another catalyst, further promoting financial inclusion and increasing the use of Riel in Cambodia (NBC, 2020a).

Challenges of Bakong

Despite its potential benefits, there are some challenges associated with Bakong and its future with respect to upscaling its adoption and achieving its original goals, in particular financial inclusion. The challenges confronting the deployment of Bakong are initially at the level of adoption. Though there has not been an official statistic showing the level of adoption and recognizing how recently it has been released (October 2020), some information regarding the level of adoption is still thought to be important. In a Global Seminar on the Challenges and Benefits of Digital Payments held on 23 June 2021, National Bank of Cambodia (NBC) Director-General, Chea Serey, said that the uptake of the Bakong digital payment app is less than what was hoped for though in general there has been an increasing use of digital payments during the COVID-19 outbreak. Despite Bakong being a free service, the uptake level is rather slow (Firn, 2021). She added, “So far, there are 100,000 registered Bakong wallets with 5 million users reached indirectly through member bank mobile apps.” (Firn, 2021).

The slow adoption of Bakong is attributable to the lack of awareness and financial literacy (Firn, 2021). This indicates there is a lot to be done by NBC and other stakeholders, especially those in

the financial service industry. Firstly, Bakong has limited capability of Bakong to reach more users and make good on its promised goals. From a business perspective, there has been inadequate outreach activities including advertising and raising awareness of Bakong in the general population. That the outreach program to raise awareness of Bakong from both NBC and its participant financial institutions seems limited. Future plans on research and development (R&D) of the blockchain technology in payment systems has also not been mentioned.

Secondly, the NBC has yet to clearly define the scope, role and responsibility of department or unit who will lead the development of Bakong. There has been a small team handling the Bakong project but it is insufficient for NBC to achieve its goals. In Bakong's white paper, there is an absence of a clear organizational structure to undertake the Bakong project despite the need for sufficient human resources to ensure the sustainable operation of the project. In addition, a specific timeline of project activities which can serve to assess whether the level of uptake of deployment is on track is not in place. The lack of an organizational structure and sufficient human resources raises a question of the current and future capability of NBC to sustain the operation and ensure the success of Bakong. Currently, Bakong is partnering with SORAMITSU whose role is on system development and maintenance of the distributed ledger technology (NBC, 2020a) which appears not to be a significant challenge to NBC for now. However, how Bakong evolves in the future is uncertain. NBC will certainly face difficulty in ensuring the achieving its goals and the efficiently maintaining the system in the long run if it has no clear organizational structure and not enough human resources.

In addition, there is potential for unexpected outcomes to impede progress against Bakong's main goals, one of which is to promote financial inclusion. The most recent evidence on the unwanted effects of financial services still questions the pro-poor effects of financial development, particularly in Cambodia (Seng, 2020). If not carefully implemented with appropriate supporting measures and stakeholders' involvement, the deployment of fintech products like digital payment systems might compromise efforts to address financial inclusion and widen the digital gap among the population (Raghuveera, 2020). For instance, both digital skills and financial literacy are positively associated with fintech products (e-banking and digital payment) awareness and adoption (Morgan and Trinh, 2017). In Cambodia, the financial literacy rate is low compared to other countries in the region. Its financial literacy scores are only 11.5 out of a total possible score of 21. This score is much lower than the 30-country average score of 13.3 and those of some other developing Asian economies, for example, Malaysia at 12.3 and Thailand at 12.8 (Morgan and Trinh, 2017, p.6). This is problematic because financial literacy plays an important role in promoting financial inclusion (Atkinson and Messy, 2013). In terms of the average level of digital literacy, Cambodia is the lowest in ASEAN (Kusumastuti and Nuryani, 2020).

Given these factors, the deployment of a new payment system will not be able to reach the mass population, especially those in rural areas, and those who with insufficient digital and financial literacy. This can widen the digital gap between urban and rural populations in Cambodia, and exacerbating financial exclusion of those who cannot use the system. Additionally, Cambodia still faces a number of challenges as a result of weaknesses in the adoption of industry 4.0 including limited basic and digital infrastructure (World Bank, 2018). Another key challenge is related to the regulatory framework. The current regulatory framework is unable to support a financial system that is trust-based and dynamic. For example, practices related to protecting consumers are inadequate and ineffective but time-consuming. Though NBC has regulation requiring the FIs to reveal the consumer complaints on their websites, among the top ten banks only ACLEDA bank has detailed information showing complaints made to the bank (You, 2019). In addition, comprehensive data protection legislation has not yet been enacted in Cambodia and thus, there have been no regulatory and enforcement authorities in charge of handling, overseeing or implementing matters of data protection (DLA Piper, 2021). Indeed, data protection and cybersecurity policies are imperative to build consumer trust and facilitate digital payment, specifically for the usage of digital financial services (World Bank, 2018). Without sufficient support from the government, the digital payment ecosystem, and the private sector on its own cannot overcome the challenges and costs of adoption (You, 2019).

Policy Recommendations

To realize the main objectives of Bakong, such as promoting financial inclusion and increasing the use of the Riel in Cambodia, NBC needs to consider three policies: (1) the creation of Bakong National Digital Payment as a body within the central bank, (2) fostering an enabling regulatory environment and (3) ensuring sufficient digital infrastructure.

Bakong National Digital Payment (BNDP)

To fulfill the promise of Bakong as an influential technology in digital payments, the NBC will have to consider the transfer of Bakong from a project to a program under a body within the central bank. This body should be equipped to handle the operation and development of Bakong while the NBC maintains its core roles in terms of supervision and oversight of the development of the payment system. This will improve efficiency in terms of sustainability and operability in the future. The establishment of the Bakong National Digital Payment (BNDP) should appear like a separate department in the central bank with full integration with other departments. This change will address the difficulty of Bakong currently being handled by only a small team. Mobilizing more human resources to operate Bakong is important because the mere deployment

of Bakong is not enough to ensure its success. A business oriented with diverse team functions including a research and development team, public relations and a product design team will ensure the success of the new product.

Indeed, the business model is not just for business. It is important that any organization that wishes to be relevant, and to deliver value at scale and sustain itself, must clearly articulate its business model and evolve as it grows. Even though government agencies are not working for profit, they are financially supported by tax and other state revenue which means they should be held accountable to deliver value to citizens (Kaplan, 2011). In this case, one of Bakong's objectives is to promote financial inclusion, which is under the mandate of NBC. Therefore, ensuring the success of Bakong is part of the state's responsibility and thus more effort is needed from the NBC to make sure that Bakong can provide value at scale to citizens, especially the unbanked population.

Another important thing to be developed in BNDP is strong R&D. Though currently SORAMITSU oversees the blockchain technology component, NBC should invest in developing more human resources in this technology as it relates to the application of CBDC. Though Bakong is not exactly a CBDC but rather the backbone of the payment system, NBC should be ready for the prospective development of a CBDC, as it is a global trend. Over the last several years, many countries around the world have poured resources into research and development of CBDC seeking to improve financial services and products, especially for underserved communities (Barr et al., 2021). Whether NBC is to move to CBDC or not in the future, research will play an important role in making sure that NBC is prepared and holds adequate knowledge to meet changes in the global financial landscape. All of these initiatives require sufficient human resources and investment as well as a clear organizational structure from the NBC.

Fostering an Enabling Regulatory Environment

There is an emerging consensus that the future enabler of Cambodia's economy will be the digital economy. So far, Cambodia has established a basic digital infrastructure and has created an enabling environment via policy changes (Madan, 2020). For example, Cambodia has developed the groundwork for its digital transformation in order to stimulate national productivity and tap into new sources of growth since the early 1990s. A series of policy measures such as the Rectangular Strategy (Growth, Employment, Equity and Efficiency), the 2020 ICT Masterplan, the Telecommunications and ICT Development Policy, the Industrial Development Policy 2015-2025 (IDP) have been put in place. Additionally, the NBC's provisions for the management of payment service providers, 2019 Laws on Electronic Commerce and Consumer Protection, have all helped to create a conducive ecosystem for digitization in Cambodia (Madan, 2020). The National Financial Inclusion Strategy (NFIS) 2019-2025 was also introduced and adopted by the Council of

Ministers in the Plenary Session on July 12, 2019. This strategy serves as a roadmap in guiding the priority action plans of NBC and other agencies to promote financial inclusion (NBC, 2020b).

However, more tasks remain in order to lay the foundation of a digital economy including the establishment of cybersecurity and data protection policies as a means to facilitate digital payments and build consumer trust in the use of digital financial services (World Bank, 2018). NBC must enhance consumer protection so as to gain trust from consumers in its financial system. On top of this, Cambodia needs wide-ranging financial protection legislation for consumers. NBC must take a leading role to establish a regulatory framework to safeguard the financial rights and interests of consumers (You, 2019). The government also needs to prioritize the completion of the regulatory framework governing the digital economy such as finalizing the Cybercrime Law, preparing a Privacy and Data Protection Law, and especially introducing a framework on the use of mobile banking and payment. These must all be supported by an enforcement mechanism to ensure the rule of law, transparency and accountability.

For Cambodia to leverage the benefits of the digital economy, it is necessary to invest in both infrastructure and the development of complementary regulations, skills, and institutions. For instance, the issue of financial exclusion can result from regulatory constraints and geographical factors (supply-side), and low levels of financial literacy and linguistic challenges (demand-side) (Atkinson and Messy, 2013). According to a study from the World Bank (2018), for Cambodia to improve its digital development, it must address a number of priority areas relating to both the supply-side and demand-side. This includes closing the digital gap by enhancing spectrum reallocation and mandating passive infrastructure sharing among telecom operators as well as elaborating a Digital Skills Readiness Strategy (World Bank, 2018). NBC must massively strengthen its financial inclusion program by focusing on financial and digital literacy education. In the digital era, financial education is even more crucial for people as technology brings new financial products. Digital literacy is also important to provide an understanding of digital transactions thereby ensuring a safe consumer environment (O'Brien, 2021). This means financial literacy needs to go hand-in-hand with digital literacy.

However, digital literacy is not well developed in the NBC financial inclusion strategy which means the demand side of the payment system service will still need to be developed. There must be sufficient investment in financial and digital literacy for those who live in rural areas, especially youth. The NBC will need to ensure a balance between the supply- and demand-sides through intervention, facilitation and policy formulation. Indeed, the Central Bank has to ensure that any introduction of new technology does not exclude marginalized groups but rather actively promotes the inclusion of low-income households (Barr et al., 2021). The NBC needs to have a unified roadmap for financial inclusion in order to facilitate coordination between various stakeholders and ensure the accountability of all relevant ministries (Wyman, 2017). NBC will

oversee coordination and cooperation among the ministries involved to ensure the quality of actions taken.

Currently, there is not enough investment on the demand side which is needed to grow users and drive usage, especially amongst those who are unbanked and have limited or no understanding of either financial or digital literacy. Investing in educating customers and users on the use of digital devices and the financial system is important (RadioFinance, 2020). NBC will need to mobilize support, resources and cooperation with the private sector, in particular the financial service providers (FSPs) to run financial and digital literacy programs for their clients and non-clients. A mandatory policy should be implemented to make sure each financial institution has a specific program on financial education for their respective clients, which is also accessible to non-clients who reside in their target geographical location. So far, NBC has introduced its 2019-2025 Financial Inclusion Strategy, which includes a financial education curriculum for the formal education program (NBC, 2020b). The program on financial education among the financial institutions will complement the efforts of the NBC to improve financial inclusion through financial and digital literacy in Cambodia leading to an increase in the number of users of fintech products, such as Bakong. It is estimated that Cambodia's GDP could increase by as much as 32% if the financial inclusion gap was closed (Wyman, 2017, p.4). Bakong will serve as one of the main policy tools in promoting financial inclusion.

Sufficient Digital Infrastructure

In addition to improvements in the policy environment, investments in hard infrastructure are needed to enable wider usage of the Bakong payment system. Over the past decade, Cambodians have enthusiastically embraced mobile technologies as shown by a considerable surge in subscriptions. However, most mobile broadband subscriptions are operated using 2G and 3G services because 4G coverage is still limited. According to the World Bank (year), for 50 percent of the population, LTE/WiMAX coverage, bandwidth per internet user, and other indicators remain below regional and global averages. Furthermore, the adoption of fixed-broadband adoption is low due to the inadequate supply of optical fiber in rural areas, the small number of households with a computer, and the relatively low price of mobile-broadband internet compared to fixed broadband Internet (World Bank, 2018). Nonetheless, it is worth noting that Cambodia has a high rate of mobile phone adoption (above average both regionally and globally with 124.9 mobile phones per 100 people (World Bank, 2018) and 10.7 million phones with internet connectivity (Kem et al., 2019). However, many Cambodian people living in rural areas are still excluded from this rapid rise in mobile phone and internet access (You, 2019).

The government should therefore take a more proactive role to improve its digital infrastructure such as internet connectivity and electricity, especially in rural areas. In urban areas, eight out of

ten Cambodian people had a mobile phone, while in rural areas only six out of ten had a mobile phone. Meanwhile, 51 percent of those who live in urban areas used the internet compared to 31 percent in rural (LIRNEasia, 2019). To address this disparity and move towards widespread adoption of digital-based payments, all Cambodian people, regardless of the geographical difference—whether they live in urban or rural areas, must have stable access to the internet.

Conclusion

In conclusion, this chapter argues that in order for the National Bank of Cambodia to achieve what has been set out in its white paper regarding the establishment of Bakong, some challenges have to be addressed. This includes the ability of the Central Bank to ensure the sustainability and operability of the Bakong payment system, powered by blockchain and distributed technology, together with the inadequacy of the current regulatory framework and digital infrastructure as well as the low level of financial and digital literacy among the Cambodian people. If these challenges are not fully addressed, the development of a new payment system might widen the digital gap between those who can harness the benefits of a digital economy and those who cannot. Simply put, at present, the development of the financial system is not inclusive. If Cambodia wishes to modernize digital payments and meet the expected goals of the NBC — including financial inclusion, it needs to establish the Bakong National Digital Payment (BNDP) as a body that addresses the constraints regarding NBC's capability to operate and develop Bakong. Second, enabling factors such as the regulatory framework and the digital infrastructure must be addressed. If this can be achieved, in 2030 Cambodia will enjoy the fruits of Bakong 2.0 where the financial ecosystem boasts an inclusive and robust high technology payment system.

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