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NATIONAL UNIVERSITY OF MANAGEMENT

THESIS

ADDRESSING THE CHALLENGES OF
HAVING MULTIPLE BANK ACCOUNTS
THROUGH NFT-BASED ID

BY

THONG SETHAMONIN

Phnom Penh
2023



FACULTY OF
DIGITAL ECONOMY



MINISTRY OF EDUCATION, YOUTH, AND SPORT

NATIONAL UNIVERSITY OF MANAGEMENT

FACULTY OF DIGITAL ECONOMY

**Addressing the challenges of having multiple bank accounts through
NFT-Based ID**

**By
Thong Sethamonin**

**Project Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Digital Economy
(English-Based Program)**

**SPECIALIZATION IN
FINANCIAL TECHNOLOGY**

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DECLARATION

I declare that this thesis is my own work and has not been submitted for a degree at any university. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

A handwritten signature in blue ink, appearing to read 'Thong S.', is positioned above a horizontal line.

Thong Sethamonin

National University of Management

Phnom Penh, Cambodia

October 2023

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support, guidance, and mentorship that have made this academic journey not only possible but also incredibly fulfilling.

ABSTRACT

This research investigates the challenges associated with managing multiple bank accounts and introduces an innovative solution through NFT-based Identity (NID) implementation in Cambodia. It explores the reasons individuals maintain multiple accounts, the difficulties they are facing, and the issues stemming from this practice. NID emerges as a secured and unified identification system poised to revolutionize Cambodia's banking sector by simplifying account management and enhancing security. This study also delves into the broader implications and potential limitations of NID integration, offering practical recommendations for its adoption. Beyond Cambodia's borders, the findings have relevance to the global financial sector, shedding light on the intersection of technology and finance in the digital age.

Keywords: Multiple bank accounts, NFT-based ID, Digital identity

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CHAPTER 1: INTRODUCTION

1.1. Background

The financial sector plays of critical role in the economy, as evidenced by its significant contributions. In the United States, for example, the financial services sector accounted for approximately 7.5% of the nation's GDP in 2020, according to the Bureau of Economic Analysis (BEA). Moreover, data from the World Bank highlights that financial intermediation services, including banking and insurance, constituted 6.5% of the global GDP in 2019. This sector is a substantial contributor to economic output and a critical enabler of economic activities. It provides capital to businesses, supports job creation, and ensures the efficient allocation of resources, all of which are essential for increasing economic growth and stability. Bank integration, through digital technologies and platforms, can enhance the convenience and accessibility of financial services, allowing individuals to efficiently manage their accounts across different banks.

A recent GoBankingRate survey found that Americans are split evenly between those who use one bank and those with accounts at multiple banks. Among those with multiple accounts, most have two (28%), followed by three. Surprisingly, having accounts at five or more banks (7%) is more common than having accounts at four banks (4%).

The main reasons for having multiple bank accounts are flexibility and convenience (31%) and access to various services and products. Lower fees come next, followed by a desire to spread finances. Having large account balances is the least common reason.

Cambodia on the other hand has also experienced significant economic growth and urbanization in recent years, which has contributed to the expansion of its financial sector. According to the National Bank of Cambodia (NBC), the financial industry contributed to Cambodia's robust economic growth, which averaged around 7% annually in the years leading up to 2021. The financial industry has significantly improved access to banking services in Cambodia, promoting financial inclusion. The number of bank branches and ATMs has increased, and

mobile banking and digital payment solutions have become more prevalent. This has helped bring unbanked and underbanked populations into the formal financial system.

As the country's economy continues to develop, an increasing number of individuals and businesses have turned to bank services to manage their financial assets, conduct transactions, and support economic activities. This growth in the banking sector has led to the emergence of various financial institutions offering a wide array of products and services.

1.2. Research Problems

In Cambodia's dynamic financial landscape, the proliferation of multiple bank accounts among individuals has become a prevalent phenomenon. Recent data from the National Bank of Cambodia (NBC) reveals that, on average, Cambodian consumers hold approximately 2.3 bank accounts per capita, signifying a significant reliance on multiple banking relationships. People are opening accounts for different purposes like savings, transactions, emergencies, loans, and company arrangements and it also helps to reduce the fee when users do transactions with different accounts. While this diversification may offer flexibility in money management, it has concurrently led to multifaceted challenges.

The challenge of managing multiple bank accounts is particularly pertinent as the nation undergoes rapid economic growth and modernization. Managing multiple accounts can be complicated due to the risk of overlooking some complex terms, tracking balances, potential fees, security concerns, and a lack of an efficient financial overview. The consequences of this challenge encompass financial confusion, exposure to fees and penalties, heightened security risks tied to scattered financial data, and potential inefficiencies in accessing financial services. These implications impact individual financial well-being, while also influencing the efficiency and security of the financial sector as a whole.

While some individuals employ various methods to mitigate the complexities of multiple bank accounts, existing solutions may fall short in terms of efficiency and user-friendliness. Identifying these limitations underscores the need for more effective approaches.

1.3. Research Objectives

The research aims to identify the prevalence of having multiple bank accounts in Cambodia and to examine the challenges and the impact faced by bank users. Additionally, the study seeks to enhance the challenge of having multiple bank accounts effectively through NFT-based ID solutions.

1.4. Research Questions

The key research questions include:

- What are the primary challenges faced by individuals in managing multiple accounts, including issues related to account organization, financial costs, and potential risks?
- How can NID help in enhancing the challenge of holding multiple bank accounts?

1.5. Research Significant

This study holds great importance as it aims to uncover the real issues people encounter when managing multiple bank accounts. By diving deep into the complexities of this situation, it will shed light on the challenges from various angles. This knowledge can empower individuals to make smarter financial choices, improve their banking strategies, and tackle these challenges effectively. In essence, this research has the potential to make a meaningful impact on how people handle their finances in a world with multiple bank accounts. It promotes financial inclusion, offering strategies to ensure more people have access to efficient banking services. The efficiency gains for banks translate into better services for customers and potential cost savings. Improved data security aligns with global standards, enhancing consumer trust. Technologically, it positions Cambodia as forward-thinking. Policymakers can use its findings to shape banking regulations. Its contribution to the existing body of knowledge regarding the complexities of

multiple bank accounts adds value to the academic discourse in the fields of finance, banking, and consumer behavior. It fills a gap in the literature by addressing a contemporary issue that directly impacts individuals' financial well-being

1.6. Scope and Limitation

The research investigates the specific challenges faced by Cambodian consumers in managing multiple accounts and explores the feasibility of integrating NFT-based identity verification systems within the country's banking sector. The study also aims to propose practical strategies for enhancing consumer awareness and ensuring regulatory alignment, considering the unique financial landscape of Cambodia.

While this provides valuable insights, it is subject to several limitations. Firstly, the geographic scope is limited to urban areas Phnom Penh the capital of Cambodia, which may not fully represent the banking dynamics in rural regions. Another thing to keep in mind is that this research is based on data up to a certain date, so it might not capture any new developments that happen afterward. Also, because of limitations like time and resources, we might not have data from every possible group in the city. These factors are important to consider when interpreting the study's findings and their relevance to the broader population. Lastly, the recommendations formulated in this paper may require further evaluation and adaptation to suit the broader national context beyond the scope of this research.

CHAPTER 2: LITERATURE OF REVIEW

2.1. Evolution of Banking

Historically, banking has roots dating back to ancient civilizations, evolving into modern institutions, including central banks and commercial banks (Gorton & Winton, 2018; Calomiris, 2016). Technological advancements have been pivotal, with the adoption of telegraphy, telephones, and computers revolutionizing banking operations (Mallick et al., 2010). Recent digital disruptions, driven by fintech firms and digital banks, have prompted traditional banks to invest in digital transformation efforts (BIS, 2020; PwC, 2019). Moreover, there has been a notable shift toward customer-centric banking, focusing on personalized services and enhanced customer experiences (Meuter et al., 2000). The evolving regulatory framework, shaped by events like the 2008 financial crisis, plays a crucial role in modern banking operations (Dell'Ariccia et al., 2016). Banking's role in promoting financial inclusion, aided by mobile banking and digital wallets, is a prominent theme (World Bank, 2018; Jack & Suri, 2018). Challenges and opportunities emerge, with cybersecurity threats and regulatory complexities on one side (Epstein et al., 2008; Barth et al., 2016) and opportunities in data analytics, artificial intelligence, and blockchain on the other (Jiang et al., 2018).

2.2. Reason for having Multiple Bank Accounts

The phenomenon of maintaining multiple bank accounts has garnered attention in the field of financial behavior and decision-making. One prominent motivation for individuals to hold multiple bank accounts is the desire for diversification of savings and investments. Research by Chen and Volpe (1998) suggests that people perceive diversification across accounts as a means to enhance financial security. This practice allows individuals to allocate funds for specific purposes, such as emergency savings, retirement planning, or short-term expenses, thus contributing to a more organized and goal-oriented financial management strategy (Gathergood et al., 2020).

Convenience and accessibility also drive the adoption of multiple bank accounts. Scholars like Hastings, Madrian, and Skimmyhorn (2013) have found that individuals find it more convenient to manage their finances when they have separate accounts for distinct purposes. Multiple accounts enable better tracking of expenses, monitoring of savings goals, and more effective budgeting (Hastings et al., 2013). Additionally, having multiple accounts simplifies financial tasks such as bill payments and fund transfers, contributing to a smoother financial management experience (Laibson et al., 2003).

Moreover, the pursuit of higher interest rates and rewards is a prevalent reason for maintaining multiple bank accounts. Research by Norvilitis (2003) highlights that consumers actively seek accounts with attractive features, such as high-yield savings options and rewards programs. By diversifying their accounts across various financial institutions, individuals aim to maximize their returns on savings, aligning with rational financial behavior (Kast & Pomeranz, 2014).

Psychological factors also come into play, as behavioral economics research suggests. Thaler and Shefrin (1981) indicate that individuals derive a sense of control and satisfaction from allocating funds to different accounts. This segmentation of funds can serve as a psychological mechanism to deter impulsive spending and encourage disciplined financial behavior (Gathergood et al., 2020).

2.3. The Challenge with having Multiple Bank Accounts

One of the primary risks associated with having multiple bank accounts is the potential for savings to be reduced. Chen and Volpe (1998) highlight that individuals often allocate their funds across numerous accounts, leading to a dispersion of financial resources. This scattering can impede the accumulation of significant savings, hindering individuals from meeting essential financial goals. Diluted savings may leave individuals ill-prepared for emergencies or long-term financial security.

The complexity of managing multiple bank accounts is a widely acknowledged challenge. Hastings, Madrian, and Skimmyhorn (2013) observe that

individuals may struggle to keep track of various accounts, leading to confusion, missed payments, and late fees. The intricate web of financial obligations can create a burden on individuals, affecting their financial well-being and causing stress.

Maintaining numerous accounts across diverse financial institutions elevates the risk of data breaches and security vulnerabilities. Mishra, Jain, and Bhuvaneshwar (2020) emphasize that each account represents a potential entry point for cyberattacks and identity theft. This heightened exposure poses a significant threat to the security of financial information and assets, necessitating robust cybersecurity measures.

The presence of multiple bank accounts can lead to inefficient resource allocation. Hastings et al. (2013) suggest that some individuals may neglect accounts with lower balances, resulting in underutilized funds that could otherwise be invested or utilized productively. This inefficiency can hinder individuals from maximizing their financial returns and achieving their financial objectives.

Psychological factors play a crucial role in managing multiple bank accounts. Behavioral economics research, as highlighted by Thaler and Shefrin (1981), indicates that individuals may experience psychological stress and decision fatigue when dealing with numerous financial choices and accounts. This cognitive burden can lead to suboptimal financial decisions and disrupt long-term financial planning.

2.4. Existing Solution

Integrated financial management applications have gained popularity as a contemporary solution to the challenge of multiple bank accounts. Research by Meuter et al. (2013) suggests that these apps allow users to consolidate and manage multiple accounts from different financial institutions within a single platform. Users can track transactions, monitor balances, and set financial goals, thereby enhancing their financial organization and control.

Many bank users turn to budgeting and expense-tracking tools to address the challenges of multiple accounts. Research by Hastings et al. (2013) suggests that these tools help users create budgets, categorize expenses, and gain a clearer understanding of their financial flows. This proactive approach aids in financial organization and decision-making. Digital wallets and payment platforms have become go-to solutions for simplifying transactions across multiple bank accounts (Huang & Rust, 2018). However the transactions across the bank always come with fees for both users.

The rise of fintech (financial technology) solutions has introduced innovative approaches to managing multiple accounts. Fintech companies offer tools and platforms that help users optimize their financial decisions, reduce inefficiencies, and enhance their overall financial well-being (Jack & Suri, 2018). These solutions often leverage artificial intelligence and data analytics to provide personalized financial advice.

CHAPTER 3: RESEARCH METHODOLOGY

This section discusses the study's general techniques, such as the research strategy, sample selection, research methodologies, data collection instruments, data analysis, and limitations.

3.1. Research Design

This study employs a mixed-methods research design, seamlessly integrating both quantitative and qualitative approaches. Blending these methods may provide a more complete understanding of research problems and complex phenomena than either approach alone (Creswell and Plano Clark, 2007). The quantitative aspect involves data collection through surveys, while the qualitative facet draws insights from the existing literature review.

3.2. Population and Sample Size

The main aim of this study is to understand what bank users in Cambodia think and experience, regardless of whether they have a bank account or not. To collect information, we're using online surveys, and anyone can take part. To address the practicalities of online data collection, this study utilizes a non-probability sampling method, specifically opting for the convenient sampling approach due to its ease of implementation and cost-effectiveness. In research methodology, sampling methods are the techniques used to select a subset (sample) from a larger group or population to conduct research (Singh& Masuku, 2014).

Since the population is large (more than 5,000), a sample size is set at 171 with a confidence interval of $\pm 7.5\%$. (Conroy,2016)

Table 1: The RCSI Sample Size Handbook (Conroy,2016)

Acceptable margin of error	Size of population					
	Large	5000	2500	1000	500	200
±20%	24	24	24	23	23	22
±15%	43	42	42	41	39	35
±10%	96	94	93	88	81	65
±7.5%	171	165	160	146	127	92
±5%	384	357	333	278	217	132
±3%	1067	880	748	516	341	169

Source: Conroy (2016), the RCSI Sample Size Handbook

3.3. Research Method

The study collected quantitative and qualitative data through surveys and interviews. Interviews were conducted to elicit more information about qualitative experiences, while the survey was designed to gather quantitative data.

3.4. Data Collection

Quantitative Data: The quantitative data of this study is conducted with a pilot survey, which is an online questionnaire on Google form, with 10 variables. The goal of this survey was to observe the usage pattern and create the response option for the comprehensive survey. The form was distributed online using snowball sampling approved and 55 people responded after two weeks. The question range was multiple choices followed by open-ended answers to gain a holistic understanding of the challenges associated with managing multiple bank accounts within the context. The result of the survey is not used to draw a conclusion or build any contain out of it but to develop a comprehensive survey.

The comprehensive survey is built depending on the response from the pilot survey. The survey questionnaire is made on Google form with 22 varies which specify the experience or usage, the challenges, and the user's perception.

Qualitative data: Qualitative data collection through interviews is a method that delves into detailed narratives and perspectives of the participants. Before embarking on the interviews, informed consent is obtained, emphasizing the

importance of confidentiality and participant rights. A structured interview guide, thoughtfully crafted with open-ended questions and prompts, facilitates a focused yet flexible conversation. During the interviews, detailed notes are taken to identify recurring themes, patterns, and narratives and deepen the understanding.

3.5. Data Analysis

Quantitative Data Analysis: To answer the first research questions, the descriptive analysis is used to identify the impact and the challenge faced by the multiple bank users in Cambodia and the current method to minimize those challenges which is used to support how NID helps enhance the challenge with managing multiple bank account.

Qualitative Data Analysis: The qualitative aspect of this study will employ thematic analysis, a method facilitating the extraction of essential ideas, concepts, and pattern identification. This approach empowers the researcher to unearth and convey valuable insights from the data, thereby enhancing the research's depth and overall quality.

3.6. Limitations

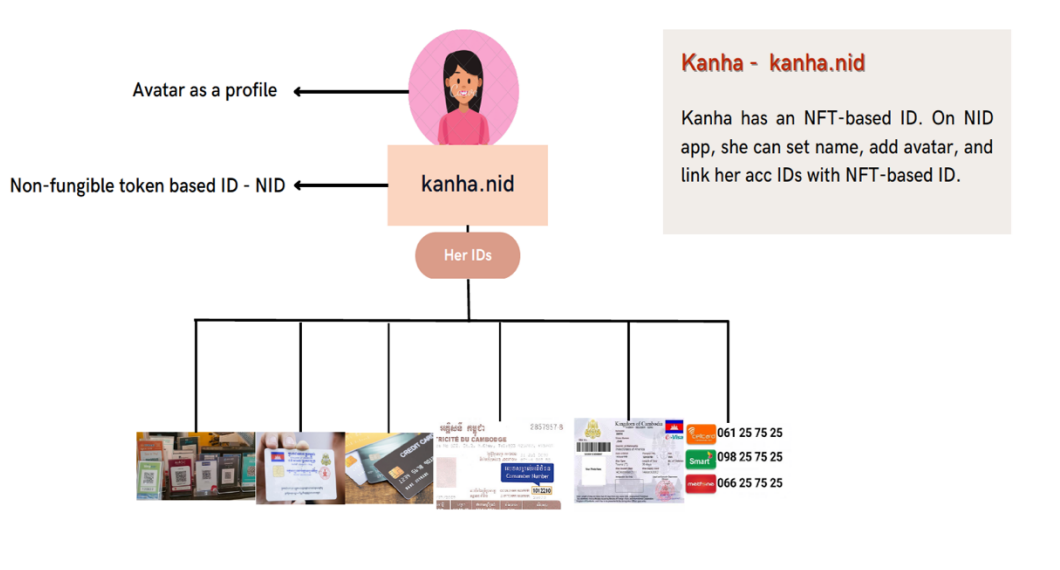
It's essential to acknowledge certain limitations inherent in the chosen methodology. This research predominantly relies on survey data, which might limit the depth of qualitative exploration. As the study does not entail direct primary data collection beyond surveys, there may be constraints in capturing nuanced and unforeseen factors that could emerge from face-to-face interviews or observations. Nonetheless, the integration of both quantitative and qualitative methods strives to mitigate these limitations by providing a multifaceted perspective on the challenges related to multiple bank accounts.

CHAPTER 4: NFT-BASED ID (NID)

4.1. Introduction to NID

The NID (Non-Fungible Token-based ID) system represents a middle management Web3 model that offers users the ability to purchase and hold NFTs within our platform. This innovative approach allows NID to be seamlessly linked with various services that our application will offer in the future. We've recognized the growing importance of customization and personalization in the era of NFTs, and as a result, we've integrated this concept into our products and services.

Figure 1: NID Framework



Source: Constructed by NID's team (NID Whitepaper, 2023)

With NID, customers have the option to acquire unique, customized IDs tailored to their preferences. This feature not only enhances personalization but also simplifies user interactions. Users can create their avatars and connect them to various services, such as bank accounts or any other services supported by our application.

For instance, when making transactions between users of our service, NFTs linked to bank accounts can streamline the process. Instead of remembering numerous bank account numbers or bill payment details, users can simply insert

their NID. This unified identification method provides a single point of access to all their associated accounts, making transactions more user-friendly and navigation within our app incredibly easy. In essence, NID aims to revolutionize how users interact with their accounts and services. It not only leverages the power of NFTs for customization but also simplifies the user experience, making financial transactions and account management a breeze.

The NID (Non-Fungible Token-based ID) system holds immense promise when integrated into the banking sector. Here's how NID can revolutionize banking:

Unified Banking ID: NID provides users with a single, tamper-proof identification number that links all their bank accounts together. Instead of remembering multiple account numbers, usernames, and passwords, users can simply use their NID for all their banking transactions. This simplifies account management and reduces the risk of selecting the wrong account during transfers.

Enhanced Security: NID is built on blockchain technology, making it a secure and decentralized form of identification. This robust security feature reduces the risk of identity theft and fraudulent activities during banking transactions.

Streamlined Transactions: By using a single NID for all accounts, the chances of mistakenly choosing the wrong account for transfers are greatly reduced. This prevents incorrect transfers and the associated hassles of rectifying such errors.

Integration with Banking Services: For banks, implementing NID as a common identification system can simplify their processes. It allows for easy integration of customer data and account information, leading to a more seamless and user-friendly banking experience.

Improved Customer Experience: NID offers users a more cohesive and user-centric banking experience. It reduces the complexity of managing multiple accounts, making mobile banking more user-friendly and accessible to a wider range of customers.

4.2. NID Features and Functionality

The NID system introduces several key features that enhance user customization, convenience, and engagement within the platform:

Avatar and Name Customization: Users have the option to set their own unique avatars and names, adding a personalized touch to their NID profile. This feature not only fosters individuality but also makes interactions within the platform more engaging.

Seamless Account Number Integration: NID simplifies the process of managing multiple bank accounts. Users can effortlessly link their various account numbers to their NID, eliminating the need to remember numerous account details. This integration streamlines transactions and account management.

NFTs Trading: The NID system embraces the growing popularity of NFTs by offering users the ability to engage in NFT trading. Users can buy, sell, and trade NFTs within the platform, opening up exciting opportunities in the world of digital collectibles and assets.

Customized ID Purchase: NID offers users the option to purchase unique customized IDs according to their preferences. This feature adds an extra layer of personalization to their digital identity.

Connection to Multiple Services: Users can connect their NID to various services, not limited to bank accounts but also extending to other services supported by the application. This creates a versatile and interconnected digital ecosystem.

Simplified Transactions: With NID, making transactions becomes more user-friendly. Users can simply insert their NID, and all their linked bank accounts will be accessible. This streamlines financial interactions and minimizes the risk of selecting the wrong account during transfers.

User-Centric Experience: NID aims to provide a more cohesive and user-centric banking experience, reducing the complexity of managing multiple accounts and enhancing the overall user experience.

4.2. Technology

NID, the Non-Fungible Token-based ID system, has been strategically built upon the Polygon blockchain, a choice that brings forth a multitude of advantages. Polygon's blockchain infrastructure offers exceptional scalability, ensuring that NID can accommodate a vast user base and handle a high volume of transactions with efficiency and speed. Furthermore, Polygon is renowned for its cost-effectiveness, boasting low transaction fees that make NID an accessible and user-friendly solution. Speed is another hallmark of the Polygon blockchain, providing NID users with near-instantaneous transaction processing, a crucial element in the fast-paced world of digital finance. Importantly, Polygon's interoperability with Ethereum opens doors for NID to potentially integrate with Ethereum-based services and assets, expanding its range of functionalities. Security is paramount in the world of digital finance, and Polygon inherits the robust security features of Ethereum, ensuring the safety of user data and assets. Additionally, Polygon's thriving ecosystem offers exciting prospects for NID to collaborate with other blockchain-based services and applications, ultimately creating a more interconnected and versatile digital financial landscape.

CHAPTER 5: RESEARCH FINDING

5.1. Demographic

Table 2: The demographic of the participant

Profile	Categories	Response	Percentage
Gender	Male	88	50.3
	Female	87	49.7
Age	Age range 18-42	175	100
	The average age of 25		
Resident	Phnom Penh	120	68.58
	Another province	55	31.42
Occupation	Private company	64	36.57
	Worker	32	18.29
	Student	31	17.71
	self-own business	41	23.43
	Occupation as a public worker	7	4
	Other		

Source: Constructed by the author using the survey data

Regarding the gender distribution of survey participants, we observed a nearly equal representation of respondents. Of the total 175 participants, 88 respondents identified as males, constituting 50.3% of the sample, while 87 respondents identified as females, accounting for 49.7% of the sample. This balanced gender representation ensures that the insights gathered from our study reflect a diverse range of perspectives and experiences among both male and female participants.

The participants represented a wide range of ages, with respondents falling within the age bracket of 18 to 42 years. The average age of the surveyed individuals was found to be 25 years, indicating a diverse age distribution among participants.

In terms of geographical distribution, the majority of respondents, totaling 120 individuals or 68.58% of the sample, were located in Phnom Penh, the capital city of Cambodia. Additionally, 55 respondents, comprising 31.42% of the sample, resided in other provinces across the country. This geographical diversity allowed us to capture insights from both urban and provincial areas, providing a more comprehensive understanding of the perspectives and experiences of individuals across different locations.

In terms of occupation, our survey featured participants from varied professional backgrounds. Private company workers constituted 36.57% of our sample, students represented 18.29%, self-owned business owners made up 17.71%, and public workers accounted for 23.43%. An additional 4% reported diverse occupations, showcasing the richness of perspectives among our respondents. These demographic insights collectively enhance the depth and breadth of our research, allowing us to draw comprehensive conclusions on the challenges and perceptions surrounding multiple bank accounts and wrong transactions in Cambodia.

5.2. Usage and Its Purpose

The number of bank accounts people hold is revealed by the details below:

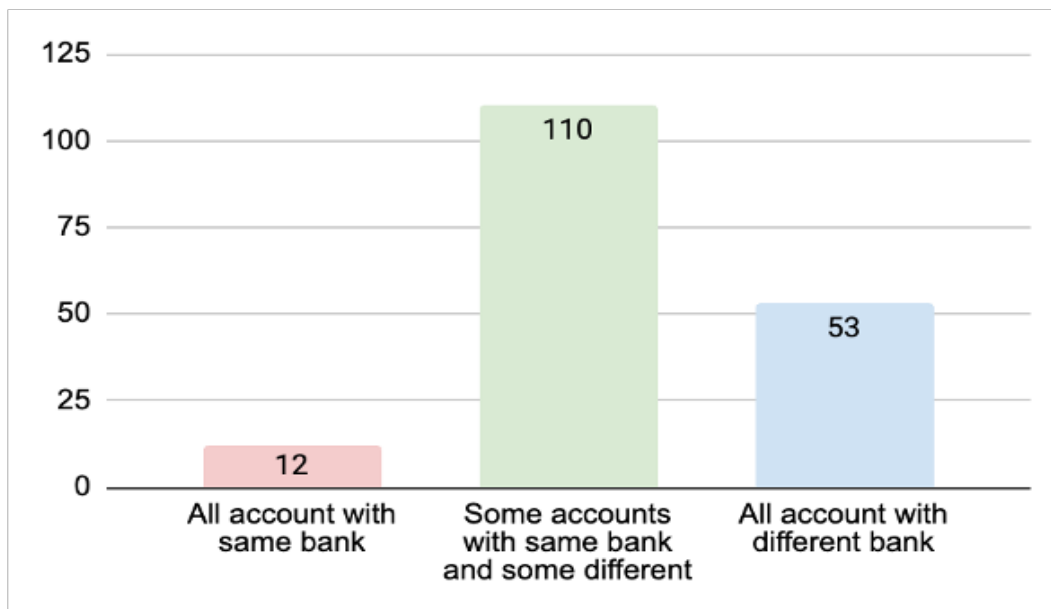
Table 3 : The number of accounts held by the user

Number of accounts people have	Response	Percentage
1	4	2.28
2	19	10.86
3	45	25.71
4	69	39.43
5	32	18.29
6	6	3.43
Total	175	100%

Source: Constructed by the author using the survey data

In our analysis of people's bank account holdings and their corresponding responses, a clear pattern emerges. The majority of respondents, around 39.43%, indicated that they hold four bank accounts, with 69 individuals falling into this category. Following closely behind, the next most common account category was those holding three accounts, accounting for 25.71% of the responses, with 45 individuals in this group. The data also showed that a significant portion, 18.29%, held five bank accounts, and a smaller percentage, 10.86%, had two accounts. Additionally, 2.28% of respondents had only one bank account, and a mere 3.43% had six accounts. This distribution reflects a diverse range of banking preferences among our survey participants, providing valuable insights into their financial habits and decision-making processes.

Figure 2: Bank institute preferred by the user



Source: Constructed by the author using the survey data

The data provided presents an interesting breakdown of respondents' banking habits and preferences. Among the respondents, it's noteworthy that a considerable 62.9% have a mix of accounts, with some held at the same bank and others at different banks. This suggests a diverse financial portfolio, possibly driven by varying services and benefits offered by different banks. Additionally, 30.3% of respondents maintain accounts exclusively at different banks, indicating a

preference for diversification and potentially seeking unique offerings from various institutions. On the other hand, 6.9% of respondents have all their accounts with the same bank, showcasing a strong loyalty or convenience factor with that particular institution. This data highlights the dynamic nature of individuals' banking choices, influenced by factors such as convenience, loyalty, and the desire for diversified financial services.

Table 4: The reason why people have multiple bank accounts

Reason to have multiple bank accounts	Respondent	Percentage
Saving purpose	166	94.9
For everyday transaction usage	174	99.4
Company arrangement	101	57.7
Earning interest	139	79.4
Customer need	40	22.86

Source: Constructed by the author using the survey data

The reasons behind individuals opting for multiple bank accounts are multifaceted and driven by diverse motivations. A significant 94.9% of savers choose to maintain multiple accounts with a clear savings purpose in mind. This underscores the importance of segregating funds for distinct financial objectives, whether it's saving for a major purchase, an emergency fund, or retirement planning. Additionally, a striking 99.4% of respondents utilize multiple accounts for everyday transactional needs, emphasizing the convenience and liquidity offered by these accounts in managing daily expenses.

For some, the decision to hold multiple bank accounts is influenced by corporate affiliations, with 57.7% citing company arrangements as a motivating factor. This may involve partnerships between their employer and a specific bank or job requirements mandating staff to open accounts with a designated institution.

Furthermore, 79.4% of individuals seek to maximize their financial potential by earning interest on their deposits, prompting them to distribute funds across

various accounts, each offering different interest rates or investment opportunities. This diversification of savings aims to achieve optimal returns.

However, it's worth noting that not everyone maintains multiple accounts, as 22.86% of respondents indicate that customer needs are the primary driver behind their choice. These individuals may have specific customer-related financial obligations that necessitate separate accounts for managing transactions or complying with business or service-related requirements.

Table 5: The mobile banking Usage by User

Mobile banking usage (Frequency)	Respondents	Percentage
Once a day or more	134	76.6
Several times a week	36	20.6
Once a week	4	2.3
Fortnightly	0	0
Once a month or longer	1	0.6

Source: Constructed by the author using the survey data

The data indicates that a significant 76.6% of individuals use banking services for transactions once a day or more, emphasizing the daily necessity of these services. Another 20.6% engage in transactions several times a week, highlighting their frequent financial interactions. A smaller 2.3% utilize banking on a weekly basis, while no respondents reported transactions on a fortnightly basis. Only 0.6% use banking services once a month or less, demonstrating that infrequent usage is rare among participants.

5.3. Challenges with the Multiple Accounts

Table 6: The problems encountered by users

Question	Categories	Respondent	Percentage
Problems that users encounter with having multiple bank accounts (multiple answers)	Data Breach	36	20.7
	Have a hard time remembering the account number	166	95.4
	Wrong transfer	158	90.8
	Prefer not to answer	2	1.1

Source: Constructed by the author using the survey data

Managing multiple bank accounts can present users with a host of challenges, and these statistics shed light on some of the most prevalent issues they face. Data breaches, a concern for 20.7% of users, pose a significant threat to the security of their financial information. With personal data spread across various institutions, the risk of unauthorized access and potential financial loss looms large. Another major hurdle is the difficulty of remembering account numbers, affecting a staggering 95.4% of users. This often leads to inconveniences during transactions or account inquiries. Additionally, the high percentage of wrong transfers (90.8%) highlights the risks of accidentally directing funds to the wrong account, which can result in financial complications and require time-consuming resolutions. While a small percentage (1.1%) prefers not to share their specific issues, these challenges underscore the need for robust security measures, efficient account number management tools, and meticulous financial oversight when managing multiple bank accounts.

In our qualitative analysis, three key challenges emerged for individuals managing multiple bank accounts. Firstly, the concern of Data Breaches was prevalent, with participants expressing worries about the security of their financial data across different institutions. Secondly, the struggle with Remembering Account Numbers was a widespread issue. Participants described difficulties recalling their various account numbers, leading to transaction errors and inconveniences. Lastly, the challenge of Wrong Transfers was highlighted, with respondents sharing

instances where funds were accidentally directed to the wrong account. These themes underscore the urgent need for improved security measures, user-friendly account management tools, and careful oversight to address concerns related to data breaches, memory challenges, and erroneous transfers when managing multiple bank accounts.

5.4. Current Process

Table 7: What people do to manage their bank account number

Question	Categories	Respondent	Percentage
What people do to help themselves manage and remember the bank number (multiple answers)	Noted down	140	80
	Create templates.	158	90.3
	Reciting all the digits	95	54.3
	Type in the number while checking the note	153	87.4
	Using QR code	162	92.6
	Prefer not to answer	1	0.6

Source: Constructed by the author using the survey data

Individuals employ various strategies to aid in managing and remembering their bank account numbers effectively. Notably, a substantial 80% of users choose to note down their account numbers, whether in physical notebooks or digital notes, as a dependable reference. Creating templates in their banking application, a practice adopted by 90.3% of users, streamlines the process of filling out forms or making transactions, ensuring accuracy. Another approach involves reciting all the digits of the account number, with 54.3% of users finding this repetitive practice helpful in committing the number to memory. For many, typing the number while cross-referencing with their notes (87.4%) serves as a safeguard against errors. Additionally, the widespread use of QR codes (92.6%) has emerged as a convenient and secure method for instantly accessing account information. These strategies collectively reflect the adaptability of users in leveraging both traditional and

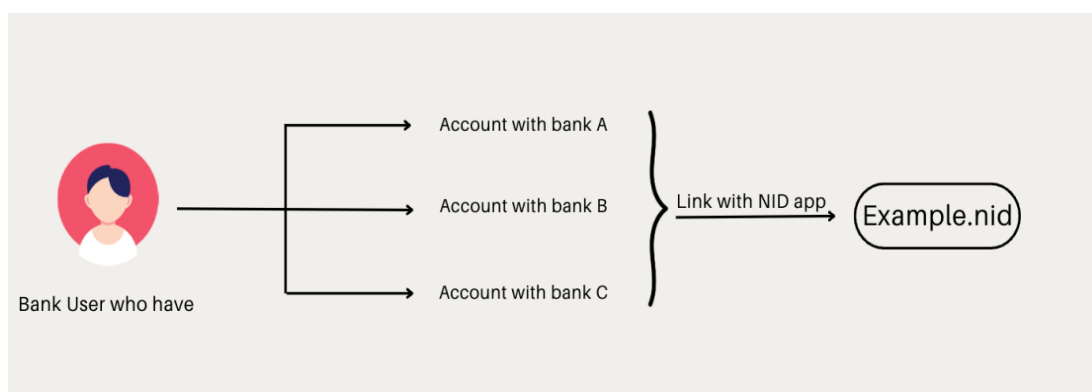
technological tools to overcome the challenges of managing and remembering their bank account numbers efficiently.

In our qualitative analysis, various strategies employed by individuals to manage multiple bank accounts were revealed. A common approach involved noting down account numbers and passwords, providing a tangible reference point and aiding effective account management. Additionally, some participants practiced the habit of reciting all digits of their account numbers, enhancing their ability to recall complex information during transactions. Another prevalent strategy was typing in the number while cross-checking with notes, ensuring accuracy by combining digital input with manual verification. Moreover, a group of respondents discussed the convenience of using QR codes linked to their accounts, streamlining transactions, and minimizing errors. These strategies not only highlighted the creative ways individuals address the challenges of managing multiple accounts but also underscored the importance of diverse and innovative solutions in the realm of personal finance management.

5.5. NID as a Solution

The findings from a combination of quantitative and qualitative research approaches have unveiled a range of issues related to having multiple bank account numbers. Users express a multitude of concerns, with some common themes emerging from their experiences.

Figure 3: How NID works.



Source: Constructed by the author (2023)

The proliferation of digital banking has made it increasingly common for individuals to hold multiple bank accounts, each serving different financial purposes. However, managing these accounts can be complex and presents various challenges, including the risk of data breaches, the difficulty of remembering numerous account numbers, and the potential for wrong transfers. This portion explores how Non-Fungible Token-based Identity (NID) can serve as an innovative and secure solution to address these challenges effectively.

NID offers a unique digital identity for each user, utilizing the capabilities of Non-Fungible Tokens (NFTs). This digital identity can incorporate various identity numbers, including bank account details, into a single, secure entity. With NID, users no longer need to remember an array of account numbers; instead, they only need to recall their NID. This simplifies identity management significantly, enhancing convenience and reducing the cognitive load associated with remembering multiple numbers. NID goes beyond merely serving as an identity number. Users have the flexibility to customize their NID, adding personal touches such as avatars and other personalization elements.

NID streamlines the process of conducting transactions. Users can initiate transfers and payments using their NID, eliminating the need to manually input or remember individual account numbers. This not only reduces the risk of wrong transfers but also simplifies the transaction experience. With a single point of access, users can seamlessly navigate their various bank accounts.

5.6. Limitation of NID

NFT-Based Identity (NID) offers significant advantages in simplifying identity management, but it also has limitations to consider. Adoption depends on technology integration and the willingness of financial institutions. While NID enhances security, blockchain is not immune to breaches. Users may need education

on secure usage, and the loss of digital identity could result in account access issues. Privacy concerns arise from a single identity for multiple services. NID's functionality relies on stable blockchain infrastructure, and regulatory changes can impact its use. Implementation costs and user resistance may pose challenges, as does ensuring interoperability with various systems. Despite limitations, NID holds promise in modernizing identity management.

5.7. User’s perspective of NID

Toward the end of the survey section, the basic concept of NID is explained and introduced to the participants, and the participants are questioned about their willingness to try the solution once it is released.

Table 8: The willingness of users to try NID

Question	Categories	Respondent	Percentage
Willingness to try the NID once it is released	Yes	125	71.4
	No	5	2.9
	Maybe	48	27.4

Source: Constructed by the author using the survey data

The survey results indicate a notable level of interest and curiosity among users regarding the adoption of NID, or Non-Fungible Token-based IDs, for storing their personal identification information. A significant 71.4% of respondents expressed a clear interest in trying out this innovative concept. This positive response suggests that users are open to exploring new and secure methods of managing their digital identities, particularly when it comes to their interactions with banking and financial services.

Furthermore, while a smaller percentage of users (2.9%) indicated a lack of interest, it's essential to recognize that such responses are not uncommon when introducing new concepts. The potential benefits and security enhancements offered by NIDs may still appeal to a substantial majority of users.

Additionally, the "maybe" category, with 27.4% of respondents, signifies that there is a portion of users who may be open to adopting NIDs but may need more information, assurance, or practical demonstrations to make an informed decision. This group represents an opportunity for further education and engagement to showcase the advantages of NID implementation.

CHAPTER 6: DISCUSSION AND IMPLICATION

Certainly, let's delve into a discussion that contrasts the proposed NFT-based ID (NID) system with existing solutions, highlighting how NID can address the challenges of managing multiple bank accounts more effectively.

Traditionally, individuals have relied on memory, physical records, or digital note-taking to manage multiple bank account numbers. However, these methods have inherent limitations. Relying on memory alone, as practiced by some, can lead to forgetfulness and errors in account numbers, resulting in wrong transfers and subsequent hassles. Physical records, on the other hand, pose security risks in case of loss or theft. Even digital note-taking, while more convenient, still demands meticulous organization and does not eliminate the risk of data breaches if the digital notes are compromised.

Moreover, some financial institutions have attempted to address these issues by offering consolidated account management services. These services, while helpful, are often confined to a single financial institution and do not provide a unified solution for managing accounts across multiple banks. Users are left with a fragmented experience, still necessitating memorization or record-keeping for accounts outside the scope of the chosen institution.

The NFT-Based Identity (NID) solution presents a revolutionary approach to mitigating the challenges inherent in managing multiple bank accounts. Unlike conventional methods, which rely on human memory, physical record-keeping, or institution-specific services, NID leverages the security and immutability of blockchain technology to create a unified digital identity. This digital identity not only encompasses a user's various bank account numbers but also offers customization options and access control. Users are empowered to tailor their NID to their preferences, adding a layer of personalization. Moreover, NID ensures enhanced security, as the blockchain foundation reduces the risk of data breaches and unauthorized access, instilling confidence in users that their financial information remains safeguarded. By streamlining transactions and simplifying identity management, NID addresses the fragmented nature, security concerns, and

inefficiencies associated with managing multiple bank accounts, positioning itself as a transformative solution for the digital finance landscape.

Furthermore, NID's implications extend beyond convenience and security. Its potential to foster interoperability among different financial institutions signifies a shift towards a more unified and inclusive financial ecosystem. Users may no longer be bound by the limitations of institution-specific services; instead, they can seamlessly manage accounts across various banks under a single NID. This could promote financial inclusion, making banking services more accessible to a wider demographic. Additionally, the user-centric nature of NID, with its customization and control features, aligns with the principles of self-sovereign identity, where individuals have greater autonomy over their digital identities. While challenges such as regulatory adaptation and user education must be addressed, the NID solution represents a promising leap forward in simplifying identity management and enhancing security in the digital finance era.

The implications of implementing the Non-Fungible Token-based Identity (NID) system are profound and multifaceted, touching upon various aspects of the financial sector and beyond. These implications offer both significant opportunities and challenges that merit in-depth examination:

Enhanced Security: NID's adoption signifies a critical step toward enhanced security in the digital realm. By leveraging blockchain technology, NID ensures the immutability of user identities and transaction records. This not only reduces the risk of data breaches but also bolsters user confidence in the security of their financial information, contributing to a more robust and trustworthy digital finance ecosystem.

Streamlined User Experience: The NID system streamlines the user experience by simplifying identity management. Users can seamlessly access and manage multiple bank accounts through a single, user-friendly digital identity. This simplification not only reduces the cognitive burden on users but also promotes a more efficient and error-resistant process for conducting financial transactions.

Efficiency Gains: NID's implementation can yield significant efficiency gains within the financial sector. The reduction in transaction errors, such as wrong

transfers, can lead to cost savings for financial institutions. Moreover, the streamlined user experience may reduce the need for extensive customer support, further enhancing operational efficiency.

Financial Inclusion: NID has the potential to foster greater financial inclusion. Its user-centric design and simplified identity management can lower the barriers to entry for individuals who may have previously encountered challenges in managing multiple accounts. This democratization of access to digital banking services can contribute to broader financial inclusion goals.

Regulatory Adaptation: Policymakers and regulators will face the imperative of adapting to the changing landscape of digital identities and blockchain technology. NID's implementation necessitates the development of appropriate regulatory frameworks that balance innovation with consumer protection, privacy, and compliance with existing financial regulations. Striking this balance is a complex but crucial task.

User Empowerment: NID empowers users by granting them greater control over their digital identities. With customization features and control over access permissions, individuals can exercise a higher degree of sovereignty over their personal information. This aligns with the principles of self-sovereign identity and reflects a broader shift toward user-centric data management.

Interoperability and Integration: NID's potential to seamlessly integrate with various financial institutions and services holds the promise of fostering interoperability and integration within the financial ecosystem. This may lead to the development of standardized practices and greater convenience for users as they navigate an increasingly interconnected digital financial landscape.

Economic Opportunities: The development and implementation of NID can create economic opportunities within the blockchain and fintech sectors. This includes the potential for job creation, investment in blockchain infrastructure, and the emergence of innovative solutions that leverage NID technology to enhance the overall financial services landscape.

However, these opportunities are accompanied by several notable challenges. Regulatory complexities must be carefully navigated to ensure that NID adheres to evolving legal and compliance standards. Comprehensive user education will be essential to help individuals understand and maximize the benefits of NID while safeguarding their digital identities. Additionally, ensuring the continued integrity of blockchain technology is paramount to maintaining the security and trustworthiness of NID.

CHAPTER 7: CONCLUSION AND RECOMMENDATION

In conclusion, the introduction of the NFT-Based Identity (NID) system as a solution to the challenge of managing multiple bank accounts in Cambodia holds significant promise. NID, built on the foundation of blockchain technology and user-centric design, offers a comprehensive response to the complexities faced within the Cambodian financial landscape.

With NID's strong security features based on blockchain technology, people can trust it to protect their information and prevent problems like data breaches or identity theft. Plus, NID simplifies identity management, making it more efficient, and giving users control over their digital identities.

As Cambodia's financial world grows and more people use digital services, NID could be a game-changer. But, it's essential to deal with complicated rules and make sure people understand how to use NID properly. In simple terms, NFT-Based Identity (NID) has the potential to solve the challenge of managing multiple bank accounts in Cambodia, making finance safer, easier, and more user-friendly.

Recommendations are crucial in the context of implementing innovative solutions like NFT-Based Identity (NID). They are essential as they provide a structured and efficient roadmap for the successful implementation of new technologies, mitigate risks, encourage compliance, and foster user adoption while aligning with overarching goals and continuous improvement to the shareholder.

Implementation of NID in Financial Institutions: To fully realize the potential of this innovative technology, financial institutions should investigate the integration of NID systems into their existing services. Collaborating with NID providers to seamlessly link users' bank accounts to their NID profiles should be part of this integration. Financial institutions can streamline user identification processes, improve security with blockchain-backed authentication, and simplify account management by doing so. This simplification not only reduces the administrative burden on users and institutions but also improves the overall customer experience significantly. Users, for example, would no longer have to

memorize complex account numbers or passcodes, making financial transactions more accessible and efficient

User Education: Financial institutions, in partnership with relevant authorities, should allocate resources to educate users about the benefits and functionalities of NID. This educational effort should encompass comprehensive awareness campaigns, workshops, and user-friendly guides. By promoting awareness and providing hands-on training on how to use NID effectively, financial institutions can empower users to embrace this technology confidently. Users should understand the security measures in place to protect their data, how to link their bank accounts to NID, and how to use NID for various financial transactions. A well-informed user base is more likely to adopt NID and leverage its capabilities, contributing to a smoother transition to this innovative identity management system

Scalability Enhancement: Continuous investment in research and development is required to ensure NID's scalability as its user base grows. Scalability enhancements should prioritize continuous service delivery and data integrity, ensuring that NID remains dependable and responsive even as its user base expands. This entails regularly assessing system performance, identifying possible problems, and implementing enhancements to accommodate the platform's growing demands. Scalability optimization not only ensures a seamless user experience but also contributes to NID's long-term sustainability and growth in the financial sector.

Research and Development: User acceptance factors, emerging blockchain technologies, and evolving data protection mechanisms should all be researched with dedicated resources. Research in these areas will enable NID to adapt proactively to changing user needs and expectations. Understanding user acceptance factors, for example, can help inform user-centric design improvements, ensuring that NID remains intuitive and user-friendly. Keeping up with emerging blockchain technologies allows NID to take advantage of the most recent advancements in security and efficiency. Furthermore, researching evolving data protection mechanisms ensures that NID remains at the forefront of data security, effectively safeguarding user information. Overall, ongoing research and development

initiatives are critical to keeping NID relevant, secure, and in line with user expectations in a dynamic digital landscape.

REFERENCE

- Bank for International Settlements. (2020). Fintech and big tech credit: Regulatory and policy challenges. BIS. <https://doi.org/10.4324/9781003138587>
- Barth, J. R., Caprio, G., & Levine, R. (2016). Bank regulations are changing: But for better or worse? World Bank Policy Research Working Paper, (7614). <https://ideas.repec.org/p/wil/wilcde/2008-04.html>
- Bureau of Economic Analysis. (2020). [https://www.bea.gov/news/2021/gross-domestic-product-4th-quarter-and-year-2020-advance-estimate#:~:text=Current%2Ddollar%20GDP%20decreased%202.3,\(tables%201%20and%203\)](https://www.bea.gov/news/2021/gross-domestic-product-4th-quarter-and-year-2020-advance-estimate#:~:text=Current%2Ddollar%20GDP%20decreased%202.3,(tables%201%20and%203))
- Chen, H., & Volpe, R. P. (1997). An analysis of personal financial literacy among college students. *Financial Services Review*, 7(2), 107-128. [https://doi.org/10.1016/S1057-0810\(99\)80006-7](https://doi.org/10.1016/S1057-0810(99)80006-7)
- Conroy, R. M. (2018). The RCSI Sample size handbook. ResearchGate. <https://doi.org/10.13140/RG.2.2.30497.51043>
- Creswell, J. and Plano Clark, V. (2007). *Designing and Conducting Mixed Methods Research*, Sage, Thousand Oaks. <https://journals.sagepub.com/doi/abs/10.1177/1094428108318066>
- Dell’Ariccia, G., Igan, D., Laeven, L., Tong, H., Coeurdacier, N., & Peydró, J. L. (2016). Credit booms and macro-financial stability. *Economic Policy*, 31(86), 299–355. <https://www.jstor.org/stable/26566853>
- Epstein, R. A., & Brown, T. P. (2008). Cybersecurity in the Payment Card Industry. *The University of Chicago Law Review*, 75(1), 203–223. <http://www.jstor.org/stable/20141905>
- Gathergood, J., Sakaguchi, H., Stewart, N., & Weber, J. (2020). How do consumers avoid penalty fees? Evidence from credit cards. *Journal of the European Economic Association*, 18(3), 1233-1272. <https://doi.org/10.1287/mnsc.2019.3568>

- Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial Literacy, Financial Education, and Economic Outcomes, 5(1), 347-373. <https://doi.org/10.1146/annurev-economics-082312-125807>
- Ho, S. J., & Mallick, S. K. (2010). The impact of information technology on the banking industry. *Journal of the Operational Research Society*, 61, 211-221. <https://link.springer.com/article/10.1057/jors.2008.128>
- Kast, F., & Pomeranz, D. (2014). Saving more in groups: Field experimental evidence from Chile. *Journal of Development Economics*, 106, 78-91. <https://doi.org/10.1016/j.jdeveco.2018.01.006>
- Laibson, D., Repetto, A., & Tobacman, J. (2003). A debt puzzle. *Brookings Papers on Economic Activity*, 2003(1), 1-63. <https://www.brookings.edu/books/brookings-papers-on-economic-activity-2002>
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters. *Journal of Marketing*. <https://doi.org/10.1509/jmkg.64.3.50.18024>
- National Bank of Cambodia. (2021) Annual report, https://www.nbc.gov.kh/download_files/publication/annual_rep_eng/Annual%20Report%202021%20Eng.pdf
- Norvilitis, J. M., Szablicki, P. B., & Wilson, S. D. (2003). Factors Influencing Levels of Credit-Card Debt in College Students¹. *Journal of Applied Social Psychology*, 33(5), 935-947. <https://doi.org/10.1111/j.1559-1816.2003.tb01932.x>
- PricewaterhouseCoopers LLP. (2021). Global Digital Banking Survey 2021: Mobile banking—The heartbeat of digitalization. pwc.com/us/en/industries/financial-services/library/digital-banking-consumer-survey.html

- Singh, A. S., & Masuku, M. B. (2014). Sampling techniques & determination of sample size in applied statistics research: An overview. *International Journal of economics, commerce, and management*, 2(11), 1-22. <https://shorturl.at/dgis0>
- Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*. <https://doi.org/aah5309>
- Thaler, R. H., & Shefrin, H. M. (1981). An economic theory of self-control. *Journal of Political Economy*, 89(2), 392-406. <https://doi.org/10.1086/260971>
- World Bank. (2018). *The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution*. World Bank. <http://hdl.handle.net/10986/29510>