

# Digital Transformation in Banking amidst the Era of Digital Wallets: A Technology Foresight through Scenario Building

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**Abstract**— As technology advances rapidly in the Philippines, digital transformation emerged as one of the shaping forces for the competitive landscape in the banking industry. This study was conducted to determine whether there is a potential growth for banks venturing in digital transformation, such as UnionBank, given that there has been an expanding market penetration coming from digital wallet solutions.

As the market penetration for digital banking grows, an e-wallet solution is another option. To this, a great need for understanding and analyzing the current gaps, trends, and practices is essential to build and maintain a competitive advantage for banking institutions leveraging digital innovations. To assess this, STEEPLED Analysis, Scenario Planning and Technology Roadmapping was used to build a Technology Foresight for digitally-transformed banks.

The study revealed a notable inclination towards using e-wallet solutions over mobile banking applications. Based on the interviews and customer reviews collected, there is a substantial potential for improvement that can significantly enhance the usability and user experience of e-wallets.

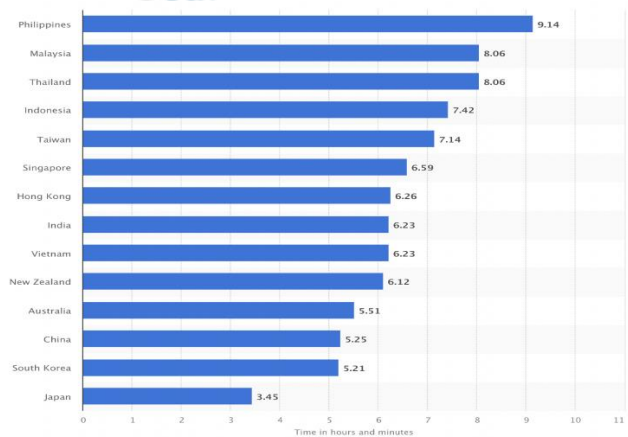
In light of potential scenarios such as an economic downturn, cybersecurity breaches, and the introduction of new regulatory requirements, it is crucial to address certain concerns like this. Finally, adopting emerging technologies in the business' future strategies is paramount to maximize utilizing the potential of going digital and remain competitive in the fast-paced ever-evolving digital landscape.

**Index Terms**— Digital Banking, Digital Technologies, Emerging Technologies, Hybrid/Digitally-transformed Banks.

## I. INTRODUCTION

Nearing the end of the year 2022, most of the internet users in the country spend so much time using the internet in their day-to-day lives (Statista, 2022). This is shown in Figure 1.1 where the Philippines is at the top in the average daily time spent in the Asia-Pacific region with around 9 hours and 14 minutes of usage daily.

Digitally-transformed banks are now firms that adopt new and emerging technologies to offer efficient banking solutions to their customers. These businesses have the flexibility to target a segmented market and move depending on the dynamics of the technologies to promote better the products and services they have. This is definitely about change. Since there is a new wave of digital innovation in the Philippines, there should also be a transformation coming from the banking industries in order to cope with the significant disruptions to either to reduce the cost of the business structure, create a greater scalability in general, improve the capabilities in operations, and further custom the value and experience being offered to the consumers.



**Figure 1.1** Average daily time spent using the internet in the Asia-Pacific region in the 3rd quarter of 2022, by country or territory (in hours and minutes)

*Note.* From “Average daily time spent using the internet in the Asia-Pacific region in the 3rd quarter of 2022, by country or territory”, Statista Search Department. <https://www.statista.com/statistics>

Majority of the core banking systems in the Philippines were developed decades ago already, which means that the programming languages used at that time were completely different from the current trend (Szijarto, 2017). This is where the challenge is in the banks in keeping up with the rapidly changing environments of the industry. These core

systems have prevented banks from even having full access to their own data. For that reason, banks should at least invest in a holistic IT transformation given that they have a vision of adapting digital innovation to quickly respond to the changes of the fast go-to-market opportunities. Banks in emerging markets are frequently constrained by outdated operational models. One great constraint on banks is distribution. Although banks have developed agent networks, there is a thin margin for reaching out to new customers especially with doing it virtually. Product management practices have slowed down in incorporating agile approaches and human-centered design methodologies. The lack of flexibility in service deployment and responsiveness to customer demands has become a constraint for digital banks as well. With these challenges, the appetite for having a different business model has opened. This is where digital wallets were introduced. The kind of revenue model that e-wallets have centers on transaction fees and broader offerings. This is present now to how people use e-wallets in almost any establishment as a mode of payment. Moreover, regulation does not typically limit the ability of digital wallets to be offered beyond basic payments.

Initially, regulations typically limit the ability of digital wallets to offer financial services beyond basic payments but there has been a great shift on consumer behavior especially during the pandemic lockdown. There came a wide variety of offerings in financial services using digital means. We can see this one in the mobile wallet company, GCash, who made it possible for a lot of Filipinos to avail of retail investment offers in smaller amounts, for as low as 50 pesos, through a marketplace feature on the app, GFunds. This offering exists in partnership with ATR Asset Management Group which is also a large enterprise dealing with mutual funds, trust assets, insurance portfolios, and real estate for proprietary and third-party clients.

The Philippines' Internet economy is now expected to grow at around 30% and reach \$28 billion by 2025. With such a great number, the popularity of digital payments is still a key driver to the growth of the country's economy. Before the pandemic, 7 out of 10 online transactions were settled in cash (cash on delivery and over-the-counter). In today's post-pandemic era, only 5 out of 10 transactions were settled in cash (Xendit, 2022), showing a notable growth of digital payments in the country. Among many digital innovations, Filipinos now have the option to either use digital banking applications or digital wallets to perform transactions as needed.

Taking a look at UnionBank's journey as a digitally-transformed bank since seven years ago, they have been reaping the benefits of their digital transformation initiative ever since and their big bet is paying off huge dividends (UnionBank, 2021). The leading and highly rated banking apps and platforms of Unionbank practically sell themselves as they focus on providing quality functionality and superior user experience. With this, they attract new

users and encourage frequent usage from existing customers.

The pandemic has tested how resilient businesses and organizations are around the world. The demand of consumers was curbed, many supply chains were fragmented, employment was cut, and a lot of establishments shut down. This forced many of the individuals and organizations to rethink the way they do things. UnionBank acknowledged the gravity that it entailed to be able to provide security to its employees and at the same time remain relevant and serve its customers well. While the economy is turning and shifting, this means that the business should work smarter and harder, that is why, experimenting and innovating has been most welcomed to the company. In the 40 years that UnionBank has existed, it has always been a long-term goal for the business to leverage on technology rather than treating it as a threat or disruptor to the current processes and strategies of the bank. UnionBank remained to innovate and push the frontiers of banking into having a customer-centric approach. Evidence to this is the operationalization of a Dual Transformation Strategy of UnionBank that is anchored on technology. Through digital transformation, core banking processes were improved to its full efficiency and at the same time, the organization built new business models that are fit to serve the changing behavior of the market. This existential threat of technology disruptors was treated as an opportunity to further the unique position of UnionBank as it proves the resiliency and agility that the organization portrays during digital transformation.

Going through a pandemic clearly highlighted how crucial it is to have a digital strategy. For the same exact reason, UnionBank put a pause in its expansion plans and went full throttle with its digital initiatives in 2021 (UnionBank, 2022). The business accelerated its processes and strategies with the help of data science and digital marketing. In 2021, UnionBank has onboarded its new record high of around 2.5 million customer accounts which is close to 1 million of which were acquired via UnionBank Online App's Digital Account Opening that is fully digital. The salesforce arm of the bank also reached a larger ecosystem as it was equipped with data-baked insights with the digital tools that they use. All these contribute to the customer base including supply chain, employees, government agencies, LGU constituents, and many more. Thereupon, the digital transactions of UnionBank stepped up in 2021 alongside with the increase of customer's preference to transact via the available digital channels. To this, the total online transactions of UnionBank doubled year-on-year outdistancing the gap between preferences on branch and Automated Teller Machine (ATM) transactions.

## II. THE PROBLEM

This section of the study covers the criticality of the matter in question for UnionBank's digital transformation as it goes through the digital era of e-wallet solutions as a key

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challenger for its customers.

**A. Statement. of the Problem**

Digital banking has been an essential part of the financial system in the country. On the other hand, there has also been a trend for digital wallet solutions in the Philippines. In recent years, there has been a significant increase to the volume of people using digital wallets. According to a study by the Bangko Sentral ng Pilipinas (BSP), digital wallet users spread by 60% this 2018 to 2022 which accounts to around 10.8 million in 2020 (Bangko Sentral ng Pilipinas, 2020). Just like digital banking, the trend on digital wallets has been very positive in the country with people developing an inclination to use it more, to which can become concerning if it continues.

With UnionBank having an increase of 53 times more than their previous customer base but having almost unchanged net income and net revenues (UnionBank, 2022), it is just as important to review this kind of industry trend and investigate the following considerations in view of a digitally-transformed bank to analyze the trend of digital banking in the Philippines in general to provide inputs for the formulation of technology policies and strategies, establish the core competencies of UnionBank as a digitally-transformed bank and how it can support innovation, and examine the future of UnionBank in the rise of digital wallet solutions and how it can lead to enhanced competitiveness and growth.

The lack of responsiveness and good governance to these challenges might entail potential detrimental consequences for the business. Disuse of calibrating to the emerging technologies may result in outdated technology as well as loss of competitive advantage. Ignoring such limitations in regulatory frameworks can also lead to compliance issues and legal consequences in cases that the business would explore a totally new innovation that is not yet familiar with the market. With the rise of people’s preference to digital wallet solutions, neglecting negative brand associations and customer expectations can damage the reputation of UnionBank, especially the customer trust. Lastly, if the organization fails to prepare for a disruptive impact from critical enablers, the business would be left unprepared for market shifts and technological advancements resulting in missed opportunities and potential obsolescence. Taking action to stay on top of these challenges is crucial to mitigate risks and consequences to maintain a strong position in the banking and financial industry.

**B. Specific Research Questions**

The project aims to answer the following research questions at the end of the study. These questions will serve as a guide in addressing the problem stated through analysis and interpretation of data from the conclusion.

1. What is the state of usage of hybrid banks in the Philippines in the past 5 years?

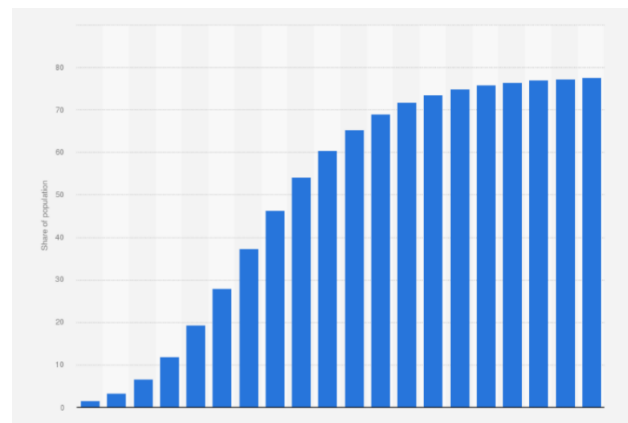
2. What were the issues that UnionBank experienced in relation to digital transformation?
3. What are the milestones for UnionBank that gave its break in the industry?
4. What are the areas in which UnionBank bank leverage technological innovation to further give value to its customers?
5. What is the effect of digital banking in the current Philippine demographics?
6. What would be the future of UnionBank as a digitally-transformed bank in the rise of digital wallet solutions?

**C. Significance of the Study**

The study will provide insights on the future strategies and opportunities that may potentially be available to the digital banking industry with a rapidly changing market. This review and study will give substantial help to address gaps, understand trends, and recognize milestones present in the banking industry with the use of digital technologies. Full understanding of these will also provide richness in information for digital banking businesses on metrics that may influence their future strategies, opportunities, and decisions that can advance the holistic growth of the organizations. Ideally, this will also aid UnionBank as a digitally-transformed bank to be ahead of the competition in a fast-paced and competitive digital market.

**III. REVIEW OF RELATED LITERATURE**

The population share of the Philippines for mobile internet connectivity was predicted to be growing steadily between the years 2022 up to 2028 with a total of four percent as shown in Figure 3.1 (Statista, 2023). This prediction depicts that by 2028, the mobile internet penetration will be increasing to at least 77.59 percent for the sixth year in a row. Remarkably, during the past few years, a bigger percentage with access to mobile internet has been increasing. This means the number of people who can access the internet through a mobile broadband connection is expanding.

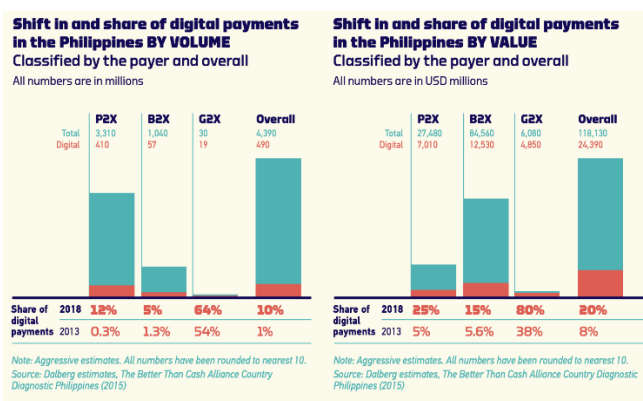


**Figure 3.1** Forecast of the mobile internet penetration in the Philippines from 2013 to 2028



*Note.* From “Mobile internet usage reach in the Philippines 2009-2028“ by J. Degenhard, 2023, Statista Search Department. <https://www.statista.com/forecasts/>

It is evident nowadays that the expectations of customers evolve towards using digital banking. Customers want to keep things simple and personal in experience especially in handling their finances. At most, the banks should have provided customers with superior user experience that would get them hooked and bring more value to their product and services. The pandemic caused more and more customers to change their behaviors as they also started to shift into digital commerce platforms in order to make cashless payments. According to Visa’s latest Consumer Payment Attitudes study, around 52% of Filipinos shopped online through apps and websites for the first time during the pandemic. In Figure 3.2 we can see the progress of the Philippines in relation to digital payments in the last five years. The Philippines engages in about 470–490 million digital payment transactions every month in the year 2015.



**Figure 3.2** Shift in and share of digital payments in the Philippines by volume and value classified by the payer and overall

*Note.* From “Dalberg estimates”, The Better Than Cash Alliance Country Diagnostic Philippines, 2015

Given that the Philippine government is leading digitization to have a remarkable growth, this also involved having digital payments, thus usage of digital banking and digital wallets in the market. As a whole, this also means that there should have been a foundation that will aid the country on its digital transformation journey.

According to Visa’s data, Philippines’ contactless transactions have been increasing month-on-month in a stable manner. Even though progress in digital payments adoption was presented already, there is still a huge opportunity to encourage more Filipinos to embrace digital innovation in general. Being one of the first countries to pioneer in digital payments, the Bangko Sentral ng Pilipinas (BSP) is working closely with the government in different aspects like financial, retail, and regulatory sectors to advance in the digital realm. With this, the overall growth

rate of the Philippines in digital payments was estimated to be at 27% to 30% as compared to 25% in emerging Asian countries.

To this, digital access to financial services and information really exerts an essential role to the customers in developed and emerging Asian markets. Digital banking customers are wanting more than online presence but superior user experience. As shown in Figure 3.3, there are four key attributes that are far more important to digital consumers when selecting a bank they transact in other than considering available digital channels. This is attributed to the basic service, products itself, trust in the institution, and customer experience. This means that digital consumers are considering more factors other than the digital channel experience of banks as they see basic service, products, and trust to be much more important. There is also an opportunity to win over consumers if banks would focus on products and customer experiences.

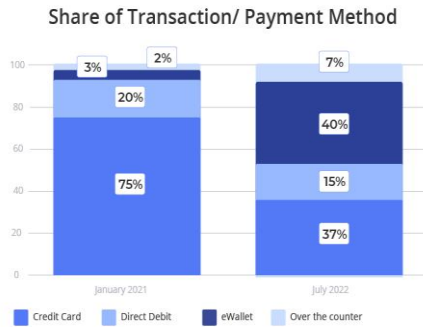
**Exhibit 4.** A compelling proposition for digital consumers has to go beyond digital channels



**Figure 3.3** Attributes important to digital consumers when selecting primary bank

*Note.* From “McKinsey Asia Personal Financial Services Survey”, 2014

The expeditious shift of digital banking in Asia displayed far-reaching results that impacted the whole financial services industry. It opens doors of opportunities for companies outside the financial sector to also offer what the traditional banks do with their products and services. We can see this as e-wallets in the Philippines gained a large customer base during the pandemic lockdowns. Along with the rise of digital payment methods such as electronic bank transfers, cards, and digital bank accounts, digital wallets allowed businesses to reach a growing market by offering financial services as well.



**Figure 3.4** E-wallets usage in the Philippines in terms of Payment Methods in transactions

*Note.* From “E-wallets in the Philippines: usage and business trends”, Xendit Payment Platform Aggregated Transaction Data, 2022

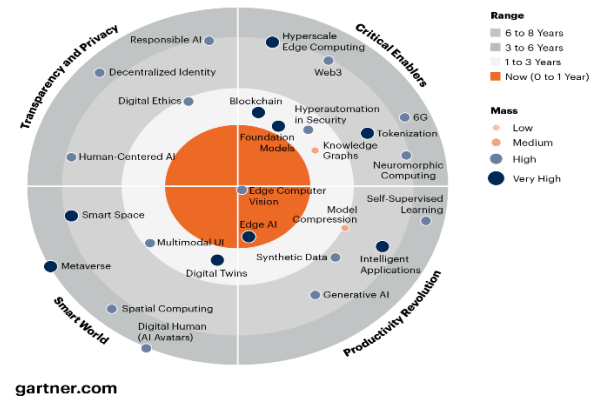
Digital adoption among the Filipino community was not only limited to Manila, being the capital. It was also extended to the outside cities such as Cebu and Davao. Figure 3.4 shows how Filipino consumers use various payment methods for online transactions. The numbers suggest that the Philippines started at around 3% share in transactions in January 2021 and drastically increased up to 40% in July 2022 which is a span of just 18 months.

For this to succeed, business owners should be able to evaluate their industry sector and decide on what payment method they should enable depending on their business model. While there is an option for digital wallets, there are some that still consider cash payments as their primary payment methods for high-value transactions.

The Philippines is in a constant journey towards becoming a cash-lite economy. At present, there are five payment use-cases which are most promising in terms of maximizing the benefits of digital payments: (1) merchant payments, (2) supplier payments by businesses, (3) remittances, (4) utility payments, and (5) social benefit transfers. These accounts to around 97% of all financial transactions in the country.

Today, still 2 out of 3 Filipinos are financially excluded which means that they do not own a digital wallet or account yet (Bangko Sentral ng Pilipinas, 2020). With digital banking increasing in popularity in Asia, it is now a matter of timing when more and more Filipinos will start to make a shift. Both the incumbent banks and new entrants would profit from this movement to digital by working hand in hand with customers and simplifying the online banking process.

**2023 Gartner Emerging Technologies and Trends Impact Radar**



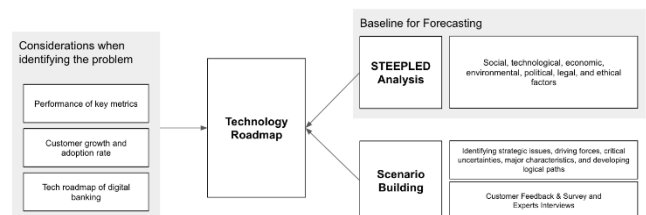
**Figure 3.5** 2023 Gartner Emerging Technologies and Trends Impact Radar

*Note.* From “Emerging Tech Impact Radar: 2023” by Tuong Nguyen, Gartner, 2023

According to Gartner, most of the emerging technologies and trends this year are near in three to eight years from reaching adoption to the essential innovation in the years ahead. In Figure 3.5, a fusion of these emerging technologies is occurring in the evolving physical realm and interactions to rich information that eventually expanded in the virtual hybrid experiences. Gartner also found that advancement in artificial intelligence (AI) tools, technologies, and applications are rapidly advancing the utility and automation potential of AI. There is an exponential growth already in corporate and personal collection of data to accelerate the increase in public, legislative, and regulatory scrutiny. Lastly, blockchain, hyperautomation, and knowledge graphs are just some of critical enabling technologies that allowed the previously unattainable technological advancement to thrive. These kinds of enablers are promoting new opportunities for businesses and monetization.

**IV. CONCEPTUAL FRAMEWORK**

In this study, the conceptual framework is based on considerations that have been identified throughout the delineation of the problem. This includes the performance of the organization, the growth and market penetration, and the roadmap that it currently has in view of digital banking. Figure 4.1 shows the conceptual framework for this study.



**Figure 4.1** Conceptual Framework

The framework also incorporated STEEPLD Analysis as its baseline for forecasting. STEEPLD Analysis will provide a comprehensive understanding of the social, technological, economic, environmental, political, legal, and technical factors influencing UnionBank's programs and strategies. The adoption of Scenario Building is perceived to align the Technology Roadmap through identifying strategic issues, driving forces, critical uncertainties, major characteristics, and developing logical paths. To this, customer feedback & surveys will also be collected. Expert's interview insights will also be relevant to further emphasize customer-centricity and be able to recognize the importance of understanding and meeting the needs of the customers. Overall, the conceptual framework shown in Figure 4.1 provides a structured approach to implementing a technology foresight for digitally-transformed banks in coming up with a Technology Roadmap to navigate the complexities of digital transformation and empower banks such as UnionBank to adapt and thrive in this digital era.

## V. METHODOLOGY

This study will employ Technology Management concepts namely Technology Foresight, STEEPLD Analysis, and Scenario Building. If this would be carried out correctly, this may prevent the business from having fundamental mistakes including acquisition of technologies that may probably not have value for the company's business goals and productivity. Having a rigorous analysis on technology foresight will highlight any potential for the business in focus within areas of technology adoption (Khoury, et al, 2023).

The qualitative component of this study involves STEEPLD Analysis which is beneficial in considering and assessing several societal areas in which the business may be influenced. This would tackle the business' products and services on how it would shift and behave given the scenarios that are currently encountered in the areas including Social, Technological, Economic, Environmental, Political, Legal, Ethical, and Demographic. This will be acquired through available resources, especially Annual reports, from the organization in addition to the interviews among employees working for the Bank.

Scenario Building is another methodology utilized in this study. This helps understand and analyze the current and historical trends of the key industry where the business operates. Interviewing experts and stakeholders from UnionBank help identify key themes and patterns related to the goals and objectives of the business as a bank leveraging digital technologies. Having a view of someone from the organization will provide a better perspective of how the business operates with its internal influences. Aside from this, there are also customer feedbacks of the UnionBank Mobile App that are available in both Google Play Store and Apple Store. This kind of information will give a perspective of the end user on how they behave, respond, and even

patronize the business given the customer experience that they had.

From the research to the interviews, a technology roadmap should provide a visual representation of the future high-level plan of the organization's technology strategy which could help the business make informed and deliberate decisions in particular to technology infrastructure.

## VI. RESULTS AND ANALYSIS

### A. STEEPLD Analysis

The result of this study is important to provide valuable insights into the complex nature of internal and external challenges being faced by UnionBank in view of the market. This will further inform the organization to take into account any interconnectedness to various factors present in the market and in the organization. Moreover, the study emphasizes on understanding the holistic approach of the business to sustainable development, collaborative efforts, and interdisciplinary solutions being done in the most pressing challenges to present.

In the first framework used, STEEPLD Analysis, we can consider the external factors that can impact UnionBank as an organization and as a part of the banking and financial industry that leverages on digital technologies to provide their products and services. By conducting this analysis, we will gain a comprehensive understanding of how the external environment operates and identify further opportunities and threats to the business. Additionally, the ethical and demographic considerations included in the analysis will help UnionBank to address any socially responsible need and cultural awareness which are essential for their decision-making processes.

### *Social*

Social factors influence the business or organization on a growth level (Walden, 2011). This may include some change in demographics and population trends, consumer behavior and preferences, social mobility and access to resources, social media and online communities, etc.

UnionBank is now pursuing strategic partnerships with various organizations and institutions that align with its advocacy on innovation and digital transformation for social good. This is geared towards relieving the purpose of the bank of "co-creating innovations for a better world." One manifestation of this social strategy is UnionBank's use of technology for social good in Tech Up Pilipinas, which is an initiative to provide globally competitive bank products that promote inclusive prosperity (TechUp Pilipinas, 2021). As the bank has always maintained, it is more than just compliance, but their sustainability extends to the culture and the operations of the organization. The bank leverages on their digital expertise to promote sustainable finance and extend more financial services to the nation, especially the MSMEs who account for about 99% of the country's



registered businesses. In parallel with promoting financial literacy and inclusion, UnionBank brings accessibility and banking convenience to the underserved and unbanked through issuance of International Finance Corporation's (IFC) social bonds. This empowered positive social outcomes from the Filipino community as it uplifts and supports the recovery of the nation from the pandemic-hit sectors. Being in a fast-paced digital society, consumers now have become inclined to having commerce transactions and mobile payments to be as immediate and convenient as possible. The 2021 Financial Inclusion survey results showed that 93 percent of Filipino adults are knowledgeable of at least one financial access point (Bangko Sentral ng Pilipinas, 2020). To this, they are most familiar with banks (80%), ATMs (75%) and pawnshops (69%). Meanwhile, less than half of this adult population are familiar with MF NGOs (45%), insurance agents (38%), and NSSLAs (12%).

In 2021, MSMEs accounts are taking up 90% of the businesses in the Philippines and they generate more than 60% of the jobs present now (UnionBank of the Philippines, 2021). Despite this, only 6% of the total bank loans go to them which made a great impact when COVID-19 hit, and assistance has become a critical need for them to recover. With this, UnionBank took the helm to issue a seven-year social bond through a USD 150 million investment from the IFC to help assist the global development institution that focuses on the private sector in emerging markets. This has been the first social bond of the Bank with the longest-term USD-denominated bond to date allowing UnionBank to extend more loans to the MSMEs. The social bond would enable creation of jobs and contribute to the financing of the MSMEs' resilient, efficient, and inclusive financial sector. The more social bonds being issued in the country, the more Filipinos will benefit from this initiative, the unbanked and underserved included. UnionBank has been dedicated to contributing to a positive change in the country and this social bond initiative has been serving its purpose of uplifting the MSME ecosystem by investing in initiatives that will enable financial inclusion to the people and strengthen the market penetration of the organization.

### **Technological**

Technological factors refer to advancements and developments that can influence the organization in a technological infrastructure view. Making long-term investments in creating local capacity for technology innovation can produce breakthroughs that enable firms a competitive edge, pioneering the emergence of new businesses and industries that generate high-quality jobs. It's crucial to start investing in technology early as it takes a significant time to adopt and develop.

As the global pandemic pushed forward the rapid adoption of digital technologies, UnionBank was ready to take the forefront. UnionBank together with its digital transformation and technology solutions arm, UBX Technology Services,

has been venturing in multiple digital technologies from blockchain, artificial intelligence (AI), and open finance to cryptocurrencies, tokenization, and decentralized finance (DeFi). There are no other companies in the Philippines that adopts and leverages emerging digital technologies like UBX. More than just banking information and transactions, they also are engaging into government agencies, insurance companies, fintech firms, telcos, retailers, and utility providers. This is crucial to the unbanked and underserved segments of the country which is over 51 million Filipino adults and one million MSMEs (UnionBank, 2021). Beyond the digital technologies and business models, UBX is leading its way to redefining finance for the Filipinos. UBX Technology Services developed PHX, the first stable coin approved by the BSP, which powers the i2i network. This stable coin represents a digital asset that is cryptocurrency with a stable valuation like a fiat currency.

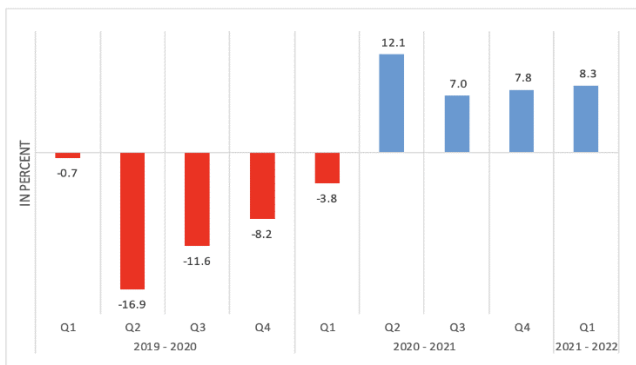
Other than the digital transformation and technology solutions, UnionBank leverages low-code development to improve collaboration between stakeholders and IT teams as this enables non-technical users to also provide contribution to the development process. This kind of software development approach enables creation of applications using a visual interface with pre-built components which do away with the traditional high code development. As this approach gains popularity in the Philippines, more businesses now seek to be digitally transformed in areas such as operations. Aside from having faster application development, it is also cost-effective as developers are building on top of pre-built components already. UnionBank, in partnership with a low-code platform, Appian, launched its first fully digital branch, The Ark. This completely transforms the customer experience to shift into having an entirely digital experience using internet-connected self-service kiosks and virtual reality. Unlike traditional banks, this digital branch does not have tellers and long queues as transactions are being done electronically and paperless. Customers now go to a self-service iPad stationed inside the branch and they personally log their request using the application provided.

As UnionBank has always been in the forefront of digital economies, the Bank started to invest in learning emerging technologies such as decentralization, blockchain, and cryptocurrencies, to be able to function in commercial transactions and digital assets. UnionBank has always aspired to adopt the mindset of an agile technology company that complies with governance and operates as a regulated bank. This aspiration was fulfilled in December 2020 when BSP released the Guidelines on the Establishment of Digital Banks which pushed UnionBank to officially launch UnionDigital Bank six months after. UnionDigital Bank operates as both a technology company and a bank altogether (UnionBank, 2021). The core focus of UnionDigital Bank is to improve the quality of life of the Filipinos by delivering intentionally structured and user-focused banking for everyone.

**Economic**

These factors include the economic conditions of the industry market and their impact on business operations. This may cover inflation, GDP, interest rates, labor market conditions, and tax policies.

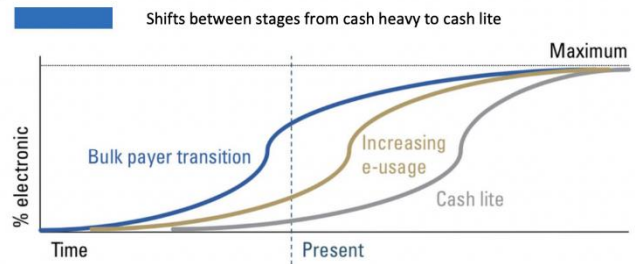
In the first quarter of 2022, the Philippine Gross Domestic Product (GDP) experienced an increase of 8.3 percent, according to the Philippine Statistics Authority. The primary contributors of this growth were the Manufacturing industry, expanding by 10.1 percent, followed by Wholesale and Retail Trade, which grew by 7.3 percent, and Transportation and Storage, which increased significantly at 26.5 percent. The Agriculture, Forestry, and Fishing, Industry, and Services sectors also gained a positive growth with increases of 0.2 percent, 10.4 percent, and 8.6 percent, respectively.



**Figure 6.1** Gross Domestic Product, Q1 2020 to Q1 2022 Growth Rates (at constant 2018 prices)

*Note.* From Better Than Cash Alliance Philippine Country Diagnostics, 2015

In 2015, there was a study that was conducted by Better Than Cash Alliance Philippine Country Diagnostic (BTCA) using data from 2013 which showed that out of 2.5 billion payments made by Filipino adults in a month, equivalent to USD 74 billion, only 1 percent of the payments by volume and 8 percent by value were digital retail payments. Despite having a wide availability of various e-payment channels, many Filipinos still rely heavily on cash and cheques. To which the study implied that digitally-transformed banks may lean towards electronic, mobile, and online platforms to do: (1) moving away from one-to-many or bulk payments that includes large batch of cheques for salary and government payments; (2) shifting to many-to-one or remote bill payments for high-value pension and insurance contributions and loan repayments but not yet for tax or supplier payments; (3) adapting one-to-one payments that includes person-to-business payments that requires significant progress in both the formal and informal sectors.



Source: BTCA Philippine Country Diagnostic (July 2015)

**Figure 6.2** Country progression in cash to electronic transition over time

*Note.* Better Than Cash Alliance Philippine Country Diagnostic, 2015

In the same study, it was highlighted, as shown in Figure 6.2, that there are key hindrances to the adoption of electronic payments in the Philippines. These are situations to which UnionBank might need to strengthen their strategies: (a) absence of a having a legal and regulatory framework to govern digital payments, (b) utilize e-banking as a foundation to promote digitization; (c) low-income individuals may confront high barriers to entry to the banking system; (d) lack of trust and concerns that related to fraudulent acts.

**Environmental**

Environmental factors involve both the natural and man-made surroundings in which the business operates. Factors concerning the environment may include climate change, environmental regulations, natural disasters, waste management, ecosystem health, and resource availability.

Being a responsible company as it is, UnionBank still strives to minimize any environmental footprint it incurs by adopting the principles of Leadership in Energy and Environmental Design (LEED) design which is an effective way to manage the Bank’s facilities and resources among other environmental initiatives. The UnionBank Sustainability Policy outlines our commitment to the cumulative effort towards sustainable development. This policy is aligned with the purpose of the Bank to co-create innovations for a better world that is sustainable and focused on digital transformation, sustainable finance, and inclusive prosperity.

As part of its efforts, UnionBank has been implementing digital transformation processes and services to enhance resource management and reduce its carbon footprint (TechUp Pilipinas, 2020). This also influenced the organization to influence the behavior of its consumers to dispose of e-waste responsibly through its Race to Zero partnership with Globe Telecoms to encourage recycling. As the organization promotes digital transactions, the business is also aware that the devices people use for these transactions often get replaced quickly with the release of newer digital device models. UnionBank advocates responsible recycling and usage of electronic devices as a support to the Bangko Sentral ng Pilipinas' call for local banks to adopt sustainable



finance mechanisms in rebuilding the economy after the pandemic. The organization aims to go beyond simply complying with sustainability regulations and synchronize digital transformation strategy with the business' sustainable value generation.

In 2020, UnionBank focused on environmental sponsorships to innovation challenges which was part of the supporting cumulative efforts to set up the ground for innovation in relation to climate technology. This also opened an avenue for a collaboration between the academy and the young entrepreneurs. With this, Climathon in the Philippines started as support for Philippine Innovation Challenge which was championed by University of the Philippines' Business Administration Council, and the United Nations (UN) sustainable development goals-centered hackathon of AIESEC Philippines. This equips young innovators by emerging them into a full experience of ideation to project implementation.

#### **Political**

Political factor refers to the influence of government policies, laws, and regulations on the organization or government to the business. Some of the political influences include political stability, political ideology, and political risks.

The Bangko Sentral ng Pilipinas has been prudently supportive and cautious at the time towards the advancement of the FinTech sector in the Philippines. While there are potential risks that entails having this, including cybersecurity issues, reliability of third parties, fraud, and heightened procyclical forces, BSP has strived to facilitate the growth of FinTech while still considering its capacity to enhance effectiveness and surmount established obstacles to obtaining financial services. As a large payer in the economy, the government is in a very strategic state to go digital especially with its payments. The government is now currently leading its way into digital payments having risen from 54% in 2013 to 64% in 2018 (Bangko Sentral ng Pilipinas, 2020). This digitization of transfers, social welfare contributions, and procurement payments from the national government to LGU will help lead to reduction of cost for the agency as well as bring efficient flow of funds.

The typical experience for Filipinos that would want to register a business or pay tax is to immerse in long lines, paper forms, multiple steps, and hours of waiting. But for forward-looking local government units (LGUs), there are already initiatives in trying to go digital which was presented in the Anti-Red Tape Authority (ARTA) where LGUs are mandated to set up an electronic Business One-Stop Shop (eBoss) or automate their Business Processing and Licensing Systems (BPLS). This digitization includes online submission of business permit applications, accepting digital payments, and issuing electronic versions of permits, licenses, or clearances. UnionBank has actively contributed to the digitalization of government units in the Philippines.

At the peak of the global pandemic, the organization was able to assist the LGUs in their online disbursement of SAP (Social Amelioration Program) funds. Currently, there is also an initiative to integrate an online payment system for business licenses, property taxes, certificates, and permits. The organization's belief is to engage with the government and provide hassle-free and effortless online activities to the citizens. Again, following the push of the BSP and the increasing demand for digital services on a national level, there is a great opportunity for the emergence in a global realm but there must be someone who pioneers the way.

#### **Legal**

In STEEPLED Analysis, the Legal factor refers to any laws, regulations, and legal issues that may influence the business on how it operates in the industry. This includes both national and laws, as well as regulations and policies that are being set by present governing bodies. This factor may also include a wide range of issues, such as labor laws, tax laws, intellectual property laws, health and safety regulations, and environmental laws that can have a significant impact on the organization.

In the Philippines, banks are allowed to publish their own mobile applications if they comply with the regulations that are set by the Bangko Sentral ng Pilipinas (BSP). The BSP has issued regulations on the usage of electronic banking channels which includes mobile applications in ensuring the safety and security of financial transactions and the protection of consumer rights (National Privacy Commission, 2012). These guidelines and regulations cover aspects such as customer authentication, data privacy, and security measures. To this, traditional banks that have their own mobile banking applications are required to comply with the Data Privacy Act of 2012 which mandates the protection and confidentiality of personal data that are being collected by the banks. Banks will be held liable for any fraudulent activities that occur through their mobile applications through this security measure. Failure to comply with these guidelines may result in penalties and fines imposed by the BSP.

In general, for traditional banks in the Philippines, having an own mobile banking application entails legal consequences that involve adhering to the rules guided by the BSP and the Data Privacy Act of 2012. Moreover, organizations should implement sufficient security measures and systems for detecting fraud to guarantee the protection and safety of their customers' transactions.

#### **Ethical**

When it comes to the Ethical factors affecting the organization, this may include considerations in issues such as corporate social responsibility, sustainability, fair labor practices, and ethical marketing. This is essential to be considered as it influences the organization's reputation, brand image, and customer loyalty.

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Banking in the digital realm involves some ethical considerations especially when it comes to the safety and loyalty of consumers. This includes cyber security which is common to services being offered digitally. With the growing connectivity of people comes an increasing volume of cyber threats. Filipinos are now receptive to data breaches and privacy violations online. At the level of a society, cyberattacks brought by non-governmental or governmental organizations on legacy systems can weaken the security of a country and affect its financial operations. Although risks in cybersecurity start online, the outcomes and consequences can extend beyond the virtual realm and influence the physical lives of the consumers (The Asia Foundation, 2022).

The Bangko Sentral ng Pilipinas conducts activities that aim to strengthen the financial literacy in the country with different targeted individual segments. The overall vision of this is to establish an inclusive financial system to where there is an available access to various financial products and services. BSP is firm in promoting that financial education and consumer protection is a shared responsibility common to all financial institutions and financial consumers. To fully harness the potential and possibilities of digital financial services, having digital connectivity is essential. As UnionBank embarked on its journey of digital transformation, the organization aligned the mindsets, attitudes, and capabilities of their employees, customers, and other stakeholders, so that the business could advance towards the objective of building an exceptional bank. UnionBank prioritizes the well-being of their staff which translates into having a committed service of uninterrupted banking services to the customers despite constant change in need. UnionBank’s corporate social responsibility program is in line with the bank’s digital transformation strategy and is gearing towards the policies concerning sustainability and corporate social responsibility. The bank envisioned their Corporate Social Responsibility (CSR) programs to take part as a solution in the Sustainable Development Goals (SDG) of the United Nations. This focused on the following goals: SDG 1 (No Poverty), SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 13 (Climate Action), and SDG 9 (Industry, Innovation, and Infrastructure). The Bank acknowledges its vital responsibility to strengthen and fortify communities by employing the achievements of UnionBank in technological innovation and digital transformation which focuses in the areas of e-commerce, education tech, and climate tech that include community wellbeing and environment. With this kind of motivation, UnionBank now proactively pursues CSR partnerships with groups and establishments that share the same passion for innovative solutions.

**Demographic**

Demographic factors refer to influences like population, such as age, gender, ethnicity, income level, education, and family size. This kind of factor will help us understand how a

particular population is changing over time and what impact this may have on the business.

**Table 6.1** Formal Account Demographics in the Philippines for 2022

<b>FORMAL ACCOUNT</b>			
<b>BSP Financial Inclusion Survey (Respondents: Adults - individuals aged 15+)</b>	<b>2019</b>	<b>2021</b>	<b>Change</b>
Percentage of adults with formal account	29%	56%	26.9
<i>By type of account</i>			
Bank account	12%	23%	11.2
E-money account	8%	36%	27.6
Microfinance institution account	12%	9%	-3.6
Cooperative account	2%	5%	3.5
Non-stock savings and loan association account	0%	0%	0.2
<i>By individual characteristics</i>			
Male	24%	54%	29.6
Female	34%	57%	23.9
Young adults (15-19)	7%	27%	20.5
Older adults (>60)	32%	47%	15.4
ABC	43%	80%	36.9
D	28%	54%	26.9
E	27%	44%	17.0
Rural	30%	56%	26.3
Urban	27%	55%	27.8
Working adults	39%	61%	21.6
Business owners	43%	65%	22.0
Pantawid Pamilyang Pilipino Program beneficiaries	47%	64%	16.2
Percentage of accountholders who use their account for payments	47%	79%	32.2

*Note.* From “BSP Financial Inclusion Survey”, 2022, Bangko Sentral ng Pilipinas

Based on the Financial Inclusion in the Philippines Dashboard as of 2022, there has been an increase of 11.2% in the population with bank accounts, while 27.6% growth was acquired for e-money accounts. To which a greater percentage of the individuals engaging in financial accounts are females in class A-C. At its highest in 2021, the percentage of account holders who use their accounts for payments jumped to 79% with a change of around 32.2% from 2019. This implies that Filipinos in the ideal average working age can be a potential target market for digitally-transformed banks.

The global pandemic highlighted the importance of having a digital strategy in this fast-paced market. This is why many of the businesses put a hold on expansion plans and went to maximum capacity in their digital initiatives in 2021. UnionBank was able to utilize data science and digital marketing to speed up the process of customer onboarding and engagement, which resulted in a new record high of approximately 2.5 million customer accounts onboarded in 2021. Almost a million new customers are obtained by the bank through the Digital Account Opening feature of UnionBank’s Online App. The continued empowerment of salesforce with data-backed insights via their digital tools, there is an expansion to reach various ecosystems such as supply chains, government agencies, LGU constituents, and others thus increasing the customer base eventually. This also led to a rise in digital transactions in 2021 where customers showed a stronger inclination towards utilizing digital channels. As digital channels became more essential, UnionBank continued to introduce new features and products to enhance the customer experience it provides to its customers. The organization launched new features on the UnionBank Online App in 2021, including the Insurance Marketplace, which presents a wide selection of insurance products that are affordable and tailored to customers’ needs. InstaPay 2.0 was also introduced, which simplifies the

process of sending funds through email or mobile number. Lastly, the receive money feature through Western Union was extended to the customers in order to reach thousands of locations across the country.

After launching its digital transformation journey five years ago, UnionBank is now reaping the fruits of its efforts. One of the big bets of the business is to pay off huge dividends with its net income of 12.6 billion pesos in 2021 which was 9 percent higher than the year before that, implying that the organization is well above the industry average. While experiencing substantial business growth resulting from the continuous gains in efficiency brought about by digitization, UnionBank was able to gain 4.1 million digital users across UnionBank Online App, MSME Business Banking App, and The Portal for corporates, a 6.5x increase vs. pre-pandemic, 53 times increase in Digital Accounts Opened via the app reaching 1.1 million vs. pre-pandemic, a record-high CASA growth of 32% due to increased adoption of cash management services, more than 2.5 million new retail customers, driven by digital accounts and carded communities (Pag-IBIG, payroll, etc.), Over 200,000 MSMEs signed by UBX, our fintech firm, across its platforms, namely i2i, BUX, Sentro, and SeekCap, representing a 28% increase, and a total of 150 of our paperless, digital-only branches called Arks nationwide.

**B. Scenario Planning**

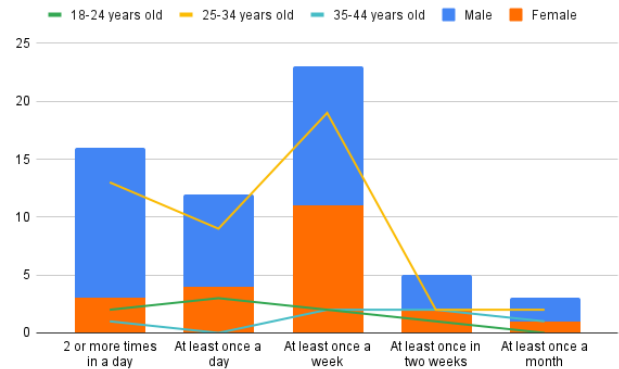
The digital banking sector is continually changing, and scenario planning aids firms in preparing for upcoming opportunities and difficulties. This is crucial for the digital banking industry because it is susceptible to disruption from new technologies and shifting consumer expectations. It enables digital banks to recognize possible threats and weaknesses, empowering them to proactively address these threats and guarantee business continuity (Elsevier, 2010). Digital banks can create risk management plans and contingency plans to assist them respond to unforeseen events by recognizing probable scenarios.

Interviews were conducted with four participants to gather their experience in working with the organization. All participants have been with the Bank for more than 2 years. The interviews were conducted virtually via questionnaires that were sent out to them, with participants providing detailed responses to a set of open-ended questions. The analysis of these interviews provided valuable insights into the participants' perceptions of the future for UnionBank as a digitally-transformed bank, which are presented and discussed in the following sections. After conducting the interviews, several themes emerged from the responses of the participants. The following identified were Barriers to Digital Adoption, Rapid Automation, Trust and Security, and Culture. This impacts the potential strategies to which UnionBank should further reinforce.

In this study, customer feedback on the usage of mobile banking applications were conducted via e-survey form, and

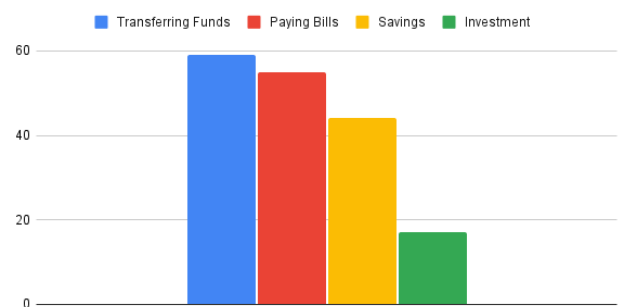
the responses were recorded, transcribed, and analyzed. The findings of the customer usage provide insights to the strengths and weaknesses of the mobile app, as perceived by its users.

The survey results in Figure 6.4 indicate that the average user of a mobile banking application is male, aged between 25 and 34 years old. This implies that most respondents in the survey come from this age range and identified as male. Moreover, the data suggests that these users are also engaged with using the digital banking applications on a regular basis, with at least once-a-week usage. This demographic profile highlights the importance of considering the preferences and needs of male users in the 25-34 age group, ensuring that the banking application provides a secured, accessible, and seamless experience for this specific target audience. Furthermore, in Figure 6.5, it shows that the majority use digital applications mostly to transfer funds and pay bills.



**Figure 6.4** Average user of mobile banking applications

What are the main reasons users use mobile apps for financial transactions?



**Figure 6.5** Main reasons for mobile app usage for financial transactions

The survey results revealed that a significant number of respondents expressed a strong likelihood of recommending the UnionBank mobile banking application to others. The primary reason for this was the exceedingly superior user experience being offered by the application that is far better as compared to other banking applications in the market. Participants complimented the app for its ease of transferring funds, real-time updating, user-friendly navigation, and overall accessibility and adaptability. These positive reviews

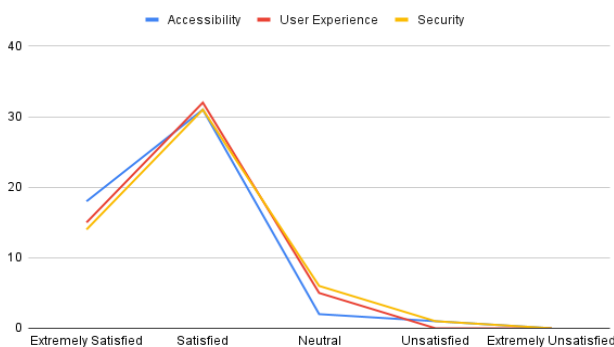


from the respondents highlighted the ability of the UnionBank mobile app to meet and even exceed user expectations, exemplifying its competitive advantage over similar products from other banks. With this response from the majority, it underscores the importance of considering and prioritizing the user experience in order to strengthen customer loyalty and stimulate customer satisfaction to highly penetrate the competitive landscape of digital banking.

The survey with a total of 60 participants displayed that there are common issues that are now being faced when using mobile applications for financial transactions. One of the recurring concerns is related to the removal of credit card spend limits in the application. A few participants have reported that in some instances, removal of these limits did not reflect immediately on the application. As a result, users were forced to shift into an alternative payment method or use other credit cards to complete their transactions.

Another prevalent issue that was mentioned in the survey is the performance of the application which was slowing down during salary days. The respondents noted that there is a noticeable lag and decreased responsiveness in the app during peak usage periods, especially when employees are receiving their salaries. This slow performance delayed some of the users in carrying out essential transactions promptly and efficiently during that time. Furthermore, participants reported that there are some delays in receiving One-Time Passwords (OTPs) for transaction verification. This issue has raised a concern regarding the reliability and security of the UnionBank app as users were left waiting for stretched periods of time before receiving the necessary OTPs to complete their transactions securely.

Some of these common issues that were identified in the survey serves a crucial contribution to what should be improved in the application in terms of providing user experience. Figure 6.6 shows that most of the respondents would probably be satisfied using the UnionBank app user due to its accessibility, security, and user experience. Addressing delays such as these will significantly provide an optimized app performance, enhanced customer experience, and positive customer satisfaction among application users.



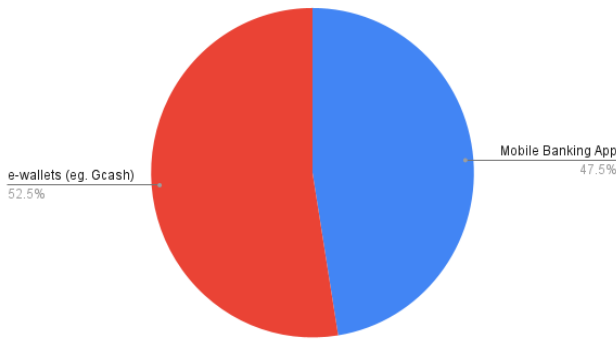
**Figure 6.6** Average customer satisfaction of UnionBank app users

To gather customer feedback on the mobile app, we analyzed the reviews posted on both Apple Store and Google Play Store. The UnionBank Online app is available on both platforms, and customers can provide feedback in the form of ratings and reviews. Shown below are reviews collected from Apple Store and 250 reviews from Google Play Store. These were listed over a period of three years from January 2021 to April 2023. The goal of this analysis is to assess and understand the key features that customers appreciate and the areas where the mobile application can be improved to enhance the customer experience.

Based on the customer reviews in the UnionBank digital banking app, it received an average rating of 3.1 stars out of 5 in the Android platform, with a considerable number of 61,600 reviews. As seen in Annex A: UnionBank Online Android App Reviews, the positive points highlighted by app users includes commendation that the app is user-friendly interface and convenient to use. Many of the customers appreciated the ease of navigating through the app and transacting various banking activities with relative simplicity. See Annex A for reference. Nevertheless, one aspect that garnered consistent feedback was the customer service being provided by the Bank. Numerous users did express that there has been dissatisfaction with their experience of support service and assistance they have received when they encountered issues and sought for clarification. The need for having a better user experience was emphasized in the reviews that were posted. This implies that customers have a strong desire for having efficient and responsive customer assistance when experiencing concerns and having inquiries.

While the application garnered a lot of positive feedback for having a user-friendly interface, the customer service feedback indicates that there are still areas that require further attention. By prioritizing and enhancing customer service capabilities, the app can strive for higher levels of customer satisfaction and address customer's needs more effectively. As seen in Annex B: UnionBank Online Apple Store App Reviews, based on the customer reviews in the Apple Store, UnionBank mobile app has received an average rating of 3.2 stars out of 5, based on 5,900 reviews. The app users highlighted several positive aspects of the app including the simple user interface, additional value-adding features such as goal setting, and overall convenience. The feedback gathered reflected that customers appreciate the ease of navigating the app and find value in the goal-setting functionality which enhances the banking experience of the users. However, a noticeable area for improvement that was discovered from the reviews is the compatibility issues being experienced when downloading updates on Apple devices. Several users reported that they encounter difficulties and glitches after updating the app on their Apple devices. These compatibility issues have resulted in disruptions and inconveniences for UnionBank mobile app users which negatively impact their overall user experience.

While addressing and resolving issues compatibility customer service complaints, it is as crucial to improve the seamless app performance across all Apple devices by prioritizing compatibility testing and ensuring smooth upgrades in the app to enhance customer satisfaction and avoid potential frustrations being associated with compatibility-related glitches.



**Figure 6.7** Mobile Payment Platform Preference



**Figure 6.8** Reasons for mobile payment platform app preference

Figure 6.7 shows that among the respondents who participated in the survey, there is a strong preference for using e-wallets like GCash over traditional mobile banking applications. The primary reasons cited for this preference revolves around convenience, speed, and availability which can be seen in Figure 6.8. Users now appreciate the ease and simplicity of e-wallets, allowing them to perform transactions instantaneously with just a few taps on their smartphones. The speed of transacting with e-wallets is often perceived as faster compared to using traditional mobile banking applications, reducing the time and effort required for any financial transactions that are commonly available. Moreover, the widespread availability of e-wallets provides users with a broader range of merchants and service providers to choose from further enhanced the customer’s convenience. These survey findings highlighted the growing popularity of e-wallets and emphasized the significance of not only delivering seamless and user-friendly experiences but remaining competitive in the evolving digital landscape, customer behavior and market trend.

With the study conducted on respondents' preferences regarding digital financial services revealing a notable inclination towards using e-wallet solutions over mobile banking applications, revealed a substantial potential improvement area based on the feedback and interviews gathered during the study. To this, a need for enhanced interface designs, simplified processes, and intuitive features cut the edge for usability and user experience on e-wallets making them more user-friendly. Secondly, as security emerges as a paramount concern to the users, apprehension on safety for financial data and transactions is now inevitable which suggests prioritization of authentication and encryption protocols to build the customer’s trust and confidence in transacting digitally.

The interviews that were conducted during this study did not only reveal areas for improvement but also showcased the immense potential of integrating emerging technologies, such as artificial intelligence (AI), to further innovate banking services and processes. Respondents expressed enthusiasm about the possibilities of digital technologies present in improving various aspects of digital financial services. Considering all of these, while respondents illustrated a preference for e-wallet solutions over mobile banking applications, the feedback and interviews from the study shed a light to several areas that necessitate improvement. Amplifying the usability, reinforcing security measures, promoting interoperability, and fostering inclusivity are just some key aspects that need to be addressed to unlock the full potential of superior user experience and market penetration in the long run.

For Unionbank of the Philippines, scenario building could involve analyzing potential changes in customer behavior, technological advancements, regulatory changes, and market dynamics. Based on these scenarios, the bank can identify potential threats and opportunities, evaluate the impact on its business, and plan for a course of action. Predicated on interviews and scenario planning conducted, there are several scenarios expected to emerge in the banking industry especially for digitally transformed banks. Considering the identified themes and patterns from the interviews and customer survey, these scenarios encompass a range of possibilities in the social and economic aspects, security apprehensions, and regulatory encounters.

This results in consideration in strategizing for an economic downturn. Digital transformation now has a potential to both mitigate and avoid any impact of economic downturn. With the advanced data analytics and predictive modeling, digitally transformed banks may be better equipped to anticipate market fluctuations, identify risks, and adjust their strategies accordingly. Contrarily, an economic downturn could pose any challenges to the bank that is heavily reliant on digital channels. Customer behaviors and demand patterns may shift during periods of financial instability.

**Table 6.2 Scenario 1: Economic Downturn**

Scenario Phase	Description
Identify Strategic issues & focal question	Economic Downturn
Identify Driving forces	Societal, Economical
Define critical uncertainties	<ul style="list-style-type: none"> <li>• There can be high unemployment rates and low consumer confidence.</li> <li>• A greater emphasis on saving and budgeting with the shift of consumer behavior.</li> </ul> Businesses may struggle or shut down leading to decreased demand for loans and other financial services.
Describe major characteristics	<ul style="list-style-type: none"> <li>• Loan demand will decrease and may impact revenue.</li> <li>• Banks may adjust to risk management strategies to account for likelihood of loan defaults.</li> <li>• Opportunities to offer financial education and budgeting tools may be introduced.</li> </ul> Banks may need to adjust in terms of marketing strategies and encourage consumers to prioritize saving overspending.
Develop Logical Paths	<ul style="list-style-type: none"> <li>• Banks may consider diversifying revenue streams by offering new products or services.</li> <li>• Adjustments in lending criteria can reduce risk exposure.</li> <li>• Prioritization of customer retention and loyalty by offering hyper personalized rates and incentives.</li> </ul> The bank may invest in marketing campaigns focusing on the value added coming from digital banking such as the automated way of monitoring spending and saving money with automated tools.

Security apprehensions would entail having potential scenarios in the Bank such as breaches. With having an increased reliance on digital systems and data-driven processes, digitally transformed banks face heightened cybersecurity risks. Advancing technologies and security measures can further safeguard any threats and cybercriminal

attacks that would involve unknown tactics. A cybersecurity breach would have multiple significant implications such as financial loss, reputational damage, and erosion of customer trust. Banks must remain vigilant in investing in robust cybersecurity measures and foster a culture of cybersecurity awareness and response.

**Table 6.3 Scenario 2: Cybersecurity Breach**

Scenario Phase	Description
Identify Strategic issues & focal question	Cybersecurity Breach
Identify Driving forces	Technological, Ethical, Political
Define critical uncertainties	<ul style="list-style-type: none"> <li>• Unauthorized access to internal systems may expose sensitive customer data, including names, addresses, phone numbers, email addresses, and financial information.</li> <li>• The bank should take immediate action to address a breach that is discovered within few days and notify affected customers right away.</li> </ul> Any incident that might occur will receive significant media attention, and the public becomes aware of the breach.
Describe major characteristics	<ul style="list-style-type: none"> <li>• This kind of damage will make customers lose trust to the bank and may switch to another bank that they perceive as more secure.</li> <li>• There may incur significant financial losses due to the cost of investigating the incident, improving security measures, and even compensating affected customers for any losses.</li> <li>• Legal and regulatory consequences may include fines, lawsuits, and damage to our reputation.</li> </ul> In the aftermath of a cybersecurity breach, banks may experience operational disruptions including increased call volume from customers and a decrease in usage of digital channels.
Develop Logical Paths	<ul style="list-style-type: none"> <li>• Preventing breaches requires a proactive security measure such as regularly testing system vulnerabilities, keeping security software up-to-date, and training employees for cybersecurity best practices.</li> </ul>



Scenario Phase	Description
	<ul style="list-style-type: none"> <li>• A rapid response when cybersecurity breaches occur is needed such as investigations and notifications. This should be improved further to prevent future incidents.</li> <li>• In the event of a breach, banks should communicate transparently to the customers and the general public and state any steps the organization is taking to address the issue. This can potentially rebuild trust and reassure customers that the business is taking action.</li> </ul> <p>By exploring this scenario and developing mitigation strategies, there can be a better approach for minimizing impacts of cybersecurity breaches to the customers and the business.</p>

Lastly, when it comes to regulatory encounters, user experience as well as organizational expenditures are affected when there are new requirements that need to be implemented in digitally-transformed banks. Going through digital transformation in the banking industry is often

accompanied by regulatory challenges. As the technology evolves, regulatory frameworks must also adapt to address any emerging risks to protect the interests of its consumer. Digitally-transformed banks may entail navigating through complex compliance landscapes.

**Table 6.4** Scenario 3: Introduction of New Regulatory Requirements

Scenario Phase	Description
Identify Strategic issues & focal question	Introduction of New Regulatory Requirements
Identify Driving forces	Legal, Demographic
Define critical uncertainties	<ul style="list-style-type: none"> <li>• There are struggles in complying with new regulations as some may potentially incur cost and may lead to financial losses.</li> <li>• Implementation of new requirements may cause a delay in the product launches and realignment of digital banking initiatives.</li> <li>• Noncompliance to new regulations may discourage customers from trusting the banks which could result in a decreased customer loyalty and potential loss of business.</li> </ul> <p>With successfully implementing new security measures, there can be a greater competitive advantage as customers will gain peace of mind and confidence with using the bank's application.</p>
Describe major characteristics	<ul style="list-style-type: none"> <li>• As digital banks rely heavily on digital technologies, introduction of new regulations may heighten emphasis on cybersecurity authentication measures, security assessments, and incident response plans.</li> <li>• Collection and processing of customer data is one key aspect that should be involved since data privacy now requires having transparency even with storage and protection of customer data.</li> <li>• With the remote transactions, there is an increase of risk for fraud and other forms of financial crime. There should be additional layers of controls for transaction monitoring, fraud detection, and dispute resolution.</li> <li>• Balance of innovation and risk management should be in place especially with testing innovation, there should be a controlled environment before launching any new offerings to the general public.</li> <li>• Digital banks may operate across multiple jurisdictions so it should be flexible enough to adjust and adapt to different legal and regulatory frameworks involving data transfers and international data protection regulations.</li> <li>• There is a potential to partner with fintech companies for innovation for new products and services. This requires again a due diligence act of monitoring and overseeing of such partnerships in view of new regulatory requirements.</li> </ul> <p>Involvement of collaborative approach between regulators, digital banks, and other stakeholders may be effective in any ongoing engagements for it to remain relevant despite new regulations.</p>
Develop Logical Paths	<ul style="list-style-type: none"> <li>• Digitally-transformed banks should also conduct a comprehensive analysis of the new requirements and develop a plan for compliance.</li> </ul>

Scenario Phase	Description
	<ul style="list-style-type: none"> <li>• There should be an assessment on potential costs for implementing new security measures.</li> <li>• Banks might need to invest in additional IT infrastructure to cover new requirements.</li> </ul> <p>Promotion of new measures to customers may come off as a new competitive advantage as they may be chosen over those that struggle to comply with such new regulations.</p>

All these scenarios underscore how dynamic the nature of the banking and financial industry is as it does through adoption of digital transformation. Digitally-transformed banks are compelled to be agile, proactive, and resilient in taking over emerging opportunities and challenges in the market. By adopting robust strategies, investing in digital technologies, strengthening security measures, and maintaining superior customer satisfaction, banks can continue navigating in these scenarios and win it over the digital era.

### VII. CONCLUSIONS AND RECOMMENDATIONS

Based on the result and analysis of this study, a technology roadmap for digitally-transformed banks in the era of digital wallet solutions should focus on leveraging emerging technologies to provide a convenient, fast, and seamless user experience with digital banking applications. With integrating emerging technologies into their technology roadmap, UnionBank, as one of the digitally-transformed banks, can meet the evolving needs and expectations of customers, delivering a hyper-personalized experience with transacting with digital financial services. Continuous improvement and monitoring of technological advancements and agile adoption of relevant innovations will be a key aspect in staying competitive in the digital wallet era.

Based on the result and analysis of this study, the current state of usage of hybrid banks in the Philippines in the past 5 years has been growing with some challenges on user experience, security, and regulations for UnionBank. There have been several projects and initiatives from UnionBank that gave its break in the industry including the first digital

branch, the Ark, and launching its digital arm, Union Digital. As part of the recommendations, it is essential for UnionBank to consider the following actions to leverage technological innovation to further give value to its customers:

1. Calibrate any existing investments in "smart world" foundations: Prioritizing investment in digital technologies such as metaverse should be taken in consideration as these enhance customer value by providing new interaction experiences that are immersive, personalized, and intuitive.
2. Overcome current limitations with regulatory frameworks: It is crucial to explore and discover new tools that may augment innovation and deliver added value by training models to optimize processes, performance, or even banking services while staying compliant in regulatory requirements and reducing computational costs and overhead operations.
3. Mitigate any litigation and negative brand associations: The organization may invest proactively in technologies and trends that promote transparency and privacy. Focusing in areas such as digital ethics, responsible identity solutions, human-centric computing, and encryption is important in addressing customer concerns related to data privacy and security.
4. Prepare for disruptive impacts from critical enablers: Evaluate any adverse impact of innovations on the business' product or service offering. It is essential to stay ahead of market disruptions by monitoring emerging technologies and realigning strategies to leverage potential benefits.

**Table 7.1** Technology Roadmap for UnionBank

Year 1-3 (Short-term)	Year 4-6 (Mid-term)	Year 7-10 (Long-term)
<ul style="list-style-type: none"> <li>• Mobile Banking Application with Chatbots</li> <li>• Introduce Biometric Authentication Options</li> <li>• Launch Digital Savings and investment products</li> <li>• Hyperautomation in Security</li> <li>• Knowledge Graphs</li> </ul>	<ul style="list-style-type: none"> <li>• Implement Artificial Intelligence (AI) and Machine Learning (ML) Algorithms for Continuous Improvement and Product Development</li> <li>• Introduce Blockchain-based solutions</li> <li>• Enhance Personalization with Big Data Analytics</li> <li>• Launch a Digital Lending Platform</li> <li>• Develop and launch Virtual Reality (VR) and Augmented Reality (AR) Features</li> </ul>	<ul style="list-style-type: none"> <li>• Adopt Quantum Computing</li> <li>• Launch a Comprehensive Digital Wealth Management Platform</li> <li>• Automate financial decision-making processes</li> <li>• Develop innovation around Internet of Things (IoT) and Edge AI</li> </ul>

By taking these actions, digitally-transformed banks can now position themselves for success in the rapidly evolving digital era. This will also enable UnionBank to deliver cutting-edge experiences with emerging technologies while still prioritizing transparency and privacy. Embracing these recommendations will help the organization grow in terms of customer base and market penetration despite the changing customer behavior nowadays. Table 7.1 shows the future of UnionBank as a digitally-transformed bank in the rise of digital wallet solutions in a perspective of a Technology Roadmap.

Looking ahead to the next 1-3 years, based on the customer feedback and interviews conducted during the study, these are several key recommendations for UnionBank:

#### 1. Mobile Banking Application with Chatbots

Focus on enhancing the existing mobile banking application by integrating intelligent chatbot functionalities. Chatbots are popular in providing personalized assistance, answering customer inquiries, facilitating transactions, and offering financial advice. This would not only improve customer engagement but also reduces operational costs by automating routine tasks.

#### 2. Introduce Biometric Authentication Options

Strengthen security measures that are in place by implementing biometric authentication options, such as fingerprint or facial recognition, in various financial transactions. Biometric authentication enhances the user experience by simplifying banking processes while still ensuring robust security standards to protect any customer information.

#### 3. Launch Digital Savings and Investment Products

Expand the range of products and services being offered inside the mobile banking application by introducing digital savings and investment products which would enable customers to not only avail of digital account opening, but have access to investment portfolios, and manage their financial goals directly for the app. This would give the customers a sense of empowerment over their wealth while accessing it conveniently.

#### 4. Hyperautomation in Security

Deploying hyperautomation techniques would help enhance security measures within the digital app. Hyperautomation make use of advanced technologies such as AI, machine learning, and robotic process automation (RPA) to automate security monitoring, threat detection, and response mechanisms. With this, real-time protection against cyber threats will be possible to help provide an overall secured mobile banking experience.

#### 5. Knowledge Graphs

Integrate knowledge graphs to harness structured and interconnected data and provide a holistic view and

understanding of customer preferences, behaviors, and relationships, which would help UnionBank offer personalized recommendations, targeted marketing campaigns, and improved customer service. Leveraging knowledge graphs enables the delivery of contextual and pertinent information to customers, elevating their overall experience.

Moving forward the mid-term, approximately 4-6 years from now, the following recommendations emerge as key areas of focus for UnionBank:

#### 1. Implement Artificial Intelligence (AI) and Machine Learning (ML) Algorithms for Continuous Improvement and Product Development

Make use of AI and ML algorithms to improve various banking operations such as implementing continuous improvements in processes, intelligent chatbots for customer support, automating fraud detection and prevention systems, and personalization of user experience based on customer behavior and preference. AI and ML can enable UnionBank to make data-driven decisions for improving operational efficiency and developing tailored products and services to customers. Adopting generative AI techniques can potentially provide highly personalized banking experiences for UnionBank's customers as this develops recommendation systems from analyzing actual customer data to offer hyper-personalized financial products, investment opportunities, and offers. This can also help anticipate customer needs to foster long-term customer loyalty.

#### 2. Introduce Blockchain-Based Solutions

Explore and implement blockchain technology to strengthen security, transparency, and efficiency in banking processes. To streamline Know Your Customer (KYC) processes, UnionBank can also utilize blockchain for secure and traceable transactions and enable more convenient cross-border payments. Having a blockchain-based solution promotes secured data sharing and helps combat fraud in the banking ecosystem.

#### 3. Enhance Personalization with Big Data Analytics

Take advantage of the power of big data analytics by acquiring actionable insights in customer behavior, preferences, and needs. Utilizing advanced analytical techniques would produce valuable insights from vast amounts of data and deliver tailored strategy recommendations and targeted marketing campaigns. This aims to create a highly customized and relevant business strategy for the customer and the business.

#### 4. Launch a Digital Lending Platform

With the use of emerging technologies like artificial intelligence and machine learning, develop and launch a digital lending platform that streamlines and automates the lending process. These emerging technologies will help assess creditworthiness, streamline documentation processes, and expedite loan approvals for the business. A potential digital lending platform may offer accessibility and convenience to customers and improve the overall efficiency



of lending operations of the bank which contributes to a big chunk of its revenue.

**5. Develop and Launch Virtual Reality (VR) and Augmented Reality (AR) Features (Metaverse)**

Embrace immersive technologies like Virtual Reality (VR) and Augmented Reality (AR) in order to create an engaging banking experience. Introducing AR and VR to the customers through mobile banking features will bring magnificence as this is something unique in the market. This may include enabling virtual branch visits, personalized financial simulations, and immersive financial education experiences. Considering these features within the metaverse will allow customers to interact with their financial assets and engage with the bank in a virtual environment.

Finally looking towards the long-term, spanning approximately 7-10 years from now, the following recommendations emerge as key areas of focus for the Technology Roadmap of UnionBank:

**1. Adopt Quantum Computing**

Explore the potential of quantum computing in banking operations. Quantum computing can potentially offer enhanced computational power to provide complex solutions, optimize risk analysis, improve enterprise portfolio management, and strengthen security measures. Leveraging quantum computing research and partnerships can position UnionBank at the forefront of technological advancements in the industry.

**2. Launch a Comprehensive Digital Wealth Management Platform**

Develop and launch a digital wealth management platform that can provide a holistic view of the customers' financial and investment portfolios. Integrating features like automated portfolio rebalancing, tax optimization, goal-based investing, and personalized financial advice should also be included as this empowers customers to manage their wealth effectively, fostering long-term relationships with the bank.

**3. Automate Financial Decision-Making Processes**

Utilize automation technologies to streamline financial decision-making processes. Implementing AI-driven algorithms would be helpful in analyzing market trends, evaluating real-time risk assessments, and automating investment recommendations. Automation can possibly reduce manual errors, improve efficiency, and enable faster and more accurate decision-making for the bank.

**4. Develop Innovation around Internet of Things (IoT) and Edge AI**

Discover the power of adapting emerging technologies like IoT and edge AI to enhance banking operations. Utilizing IoT devices for secure and convenient authentication, real-time monitoring of assets through, and personalized customer experiences give a whole new perspective for mobile banking

app users. IoT devices can provide an additional layer of security with the help of sensors, preferences, behaviors, habits, and patterns. Edge AI algorithms deployed on IoT devices can also process and analyze data from customers to reduce reliance on cloud infrastructure and enable real-time data analytics resulting in less latency and managed data privacy.

**Table 7.2** Most Impactful Emerging Technologies and Trends in 2023 Based on Time to Adaption

Now	1-3 Years	3-6 Years	6-8 Years
Edge AI	Blockchain	Generative AI	6G
Edge Computer Vision	Digital Ethics	Human-centered AI	Decentralized Identity
	Digital Twins	Hyperscale Edge Computing	Self-Supervised Learning
	Foundation Models	Intelligent Applications	Spatial Computing
	Knowledge Graphs	Model Compression	
	Hyper Automation in Security	Neuromorphic Computing	
	Multi Modal UI	Responsible AI	
		Smart Spaces	
		Synthetic Data	
		Tokenization	

*Note.* From Gartner, Inc., 2023

To support the activities in the Technology Roadmap, Table 4 shows the most impactful emerging technologies and trends in 2023 that could be of use to support the recommendation. In the future, it would most likely be that there will just be a handful of banks that will manage the digital realm of banking and financial institutions. Contributing events and factors to this are as follows:

1. Major banking industry players may pursue mergers and acquisitions to consolidate their position and gain monopolistic control over the market, often at the expense of smaller competitors. For instance, an example of this is UnionBank's acquisition of Citibank's retail division in the Philippines. This acquisition earned the support of UnionBank's shareholders raising a 40-billion-peso stock rights offering (SRO) in May 2022.
2. Mobile internet usage has witnessed a surge, leading to a rise in digital adoption among Filipinos, including in regions previously underserved by traditional banking services. As people live in an increasingly digital, mobile-first world, a greater number of people connect online through their smartphones. Since the

pandemic, more and more consumers buy, pay, and bank online, which gave way for UnionBank to hone its strategy of targeting anchor communities with built-in ecosystems, such as FMCGs and government corporations. For instance, a single anchor FMCG client opens to a hundred of MSME suppliers, resulting in a bigger customer base and higher potential leads for the Bank. Government partnerships also give access to the organization in reaching millions of customer points to integrate digital banking inclusion.

3. Individuals desire speed, convenience, and ease of access, all of which can be attained by developing exceptional applications. However, to develop such applications necessitates a significant amount of digital technology capability and resources, which are typically more accessible to larger enterprises. With UnionBank being one of the most forward-looking global financial institutions, research and development for technology is a key component of its success for digital transformation. This can be seen in the launch of UnionBank's Innovation Campus which is dedicated to being a research hub and collaborative space for the organization experimenting and innovating new technologies in a controlled environment.

The world is now ever changing, thanks to technology. Every day, more and more objects are becoming smarter, and interactions are already shifting from only physical to virtual and hybrid. At the same time, physical spaces are being transformed by technology into a smart world. In this study, we have come into the conclusion that digital transformation in the banking industry appears promising, especially amid the era of digital wallets. As more digital users appreciate the convenience, speed, and availability being offered by digital wallet solutions, digitally-transformed banks are recognizing the need to adapt and transform their products and services as well. By leveraging emerging technologies and resources, banks can provide a more seamless user experience through mobile banking applications with enhanced security measures and hyper-personalized services. Having integration of AI, ML, Blockchain, IoT, and the likes would further amplify the potential for innovation and efficiency in the banking and financial sector. Seeing that there is a continuous advancement in digital wallet solutions and still a growing demand for digital banking services, UnionBank will succeed and expand while investing in digital transformation initiatives to position itself for sustained growth, exceptional customer satisfaction, and continuous competitive advantage in this evolving digital banking landscape.

## VIII. HELPFUL HINTS

### A. Definition of Terms

**Blockchain** – A decentralized and distributed public digital ledger that is being used to record transactions across many computers to prevent alteration

**Artificial Intelligence** – Simulation of human intelligence and processes through machines such as digital devices and computers

**Augmented Reality** – Interactive experience which combines the real world and computer-generated contents

**Digital Banking** – The term digital banking combines the usage of banking services being offered in both online and mobile. This allows people to have access to banking features and services via computer, tablets, and mobile devices. Users can monitor, manage, and use their finances from their bank accounts given they have full access to wireless connection

**Digital Technologies** – These refers to electronic tools, systems, devices and resources which can be used to generate, store, or process data. Some of the digital technologies may include social media, online games, multimedia and mobile phones.

**Edge AI** – Implementation of artificial intelligence in an edge computing environment instead of in a centralized cloud computing facility or offsite data center

**E-wallet/Mobile wallet/Digital wallet** – An electronic version of physical wallet that allows financial transactions to happen using an application in a mobile device. This can be used as a payment mode in multiple establishments that allows payment through money transfer using digital wallet applications

**Emerging Technologies** – Variety of technologies that are relatively new but are perceived to be capable of changing the status quo

**Hybrid/Digitally-transformed Banks** – Banks that have undergone digital transformation and are now using digital technologies to create or improve existing business processes, culture, and customer experiences to meet changing business and market requirements

**Hyper-personalization** – Refers to the process of using artificial intelligence to display highly curated and targeted content to a group of people

**Metaverse** – Immersive virtual world that is being facilitated by the use of virtual and augmented reality

**Machine Learning** – Use of artificial intelligence that focuses on analyzing data and to learn patterns and structures to be interpreted

**Neobanks** – Modern banks that are wholly online and without a physical presence. They offer digital, mobile-first financial solutions for lending, payments, and other functions

**Quantum Computing** – Digital computation that solves problems too large or complex for traditional computers

**Virtual Reality** – A computer-generated environment with scenes and objects that appears to be real through immersion of surroundings

**B. Abbreviations and Acronyms**

AI - Artificial Intelligence  
 AR - Augmented Reality  
 ATM - Automated Teller Machine  
 BSP - Bangko Sentral ng Pilipinas  
 CSR - Corporate Social Responsibility  
 FMCG – Fast-Moving Consumer Goods  
 GDP - Gross Domestic Product  
 IFC - International Finance Corporation  
 IoT - Internet of Things  
 ML - Machine Learning  
 MSME - Micro, Small and Medium Enterprises  
 SDG - Sustainable Development Goals  
 STEEPLED - Social, Technological, Economical, Environmental, Political, Legal, Ethical, Demographic  
 UBP - Unionbank of the Philippines  
 VR - Virtual Reality

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