

Article

# Service digitalization innovation model as development strategy and policy at Bank NTT Indonesia

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**Abstract:** The research aims to examine East Nusa Tenggara (NTT) bank service digitalization innovations and examine several implications of bank service digitalization innovations. This research uses a qualitative approach with data collection techniques: in-depth interviews, documentation, and focused discussions. The key informants in this research were the board of commissioners, directors, division heads, and NTT bank employees. The findings of this research are, first, the existence of an existing/generic model in the operational, supporting, and monitoring fields of NTT banks. Second, there is an innovation model for digitizing services and efforts to popularize the digitization of NTT bank services to the government-private sector, including micro, small, and medium enterprises (MSMEs), religious institutions, educational institutions, students and students as well as the broader community to provide easy access to sources of financing for the community, Eliminate regional tax leakage, encourage the development of micro, small, and medium enterprises (MSMEs) and assisted village farmers/breeders, provide entrepreneurial opportunities for the community, namely as a digital agent for NTT bank, minimize fraudulent behavior (shirking) in credit distribution. Third, service digitalization innovation uses a contextual sociolinguistic approach because it incorporates local and global vocabulary such as Bpung Mobile, Bpung Farmer, Lopo Dia Bisa, and Bpinjam. Fourth, service digitalization innovation refers to OJK regulations regarding banking digital transformation contained in RP 21 and PBI number 23/26/2021. Fifth, conventional services (hybrid approach) still accompany the digitalization innovation model. Sixth, Bank NTT is in quadrant III, namely growth. Bank NTT continuously optimizes existing resources by taking advantage of opportunities to increase business growth and continues to mitigate threats into opportunities and strengths. The implications of the innovation in digitizing NTT bank services include updating standard operating procedures (SOP), changing corporate culture from Flobamora to Bintang, and accelerating the increase in human capital capacity. The implications of research on bank management refer to the innovation of procurement of new IT systems. Banks can increase their attention to service quality and maintain customer trust to maintain the quality of digital banks among customers. Moreover, with post-COVID-19 conditions that require people to make digital transactions. With the changes in the financial industry towards digitalization, it is necessary to strengthen risk management in financial service institutions. The implications of the research results for policymakers need to be considered in the transformation towards digital banking related to equitable internet access in Indonesia, cybersecurity, and employment. Recommendations for future research are the importance of studying the determinants of digital service innovation in bank services, such as transformational leadership style, good corporate governance, and organizational commitment.

**Keywords:** digitalization innovation; bank services; strategy; fraudulent behavior; MSME development; credit distribution

## **1. Introduction**

In the current era, the banking industry is required to strengthen its digitalization aspects in modern society which prefers the convenience of online transactions via digital platforms. Digital banking has received a positive response since it was first developed. This fact was obtained seeing the increasing number of digital banking users today (Tran et al., 2023). Bank Indonesia stated that there had been an increase in digital transactions by 46.72% or the equivalent of IDR 28,695.48 trillion as of September 2021. In Indonesia currently there are 25% of adults or the equivalent of 47 million people who have digital bank accounts. This achievement is predicted to continue to increase every year until 2026, reaching 39% of the adult population or around 74 million people (Natsir et al., 2023). Based on this data, it can be seen that the digitalization transformation in society which is leading to the development of the digital era ultimately creates an urgency for banks to change their strategy from conventional to banking digitalization (Nurjanah et al., 2023). Information technology users, namely the millennial and post-millennial generations, demand the convenience of using banking services via mobile or tablet platforms. Apart from that, the COVID-19 pandemic has also had an impact on accelerating the adoption of digital technology in various fields, including financial services (Do et al., 2022; Liu, 2021). Bank Indonesia also explained that during the pandemic, digital payments developed rapidly and increased by 65 percent (Argantara and Choiri, 2023). Various conveniences are offered through digital banking, such as allowing customers to make transactions electronically anytime and anywhere with lower processing costs compared to conventional banking (Akbari and Hopkins, 2022). Several other features are offered such as issuing checks, paying bills, transferring money, checking bank accounts and balances, and doing online shopping (Bae and Chang, 2021). Digitalization is both a challenge and an opportunity for the banking industry when linked to flexibility, better functionality and aggregation of banking services (Romanova and Kudinska, 2016). Therefore, with the rapid growth of the digitalization trend, the development of digital banking is an unavoidable path for most banks (Nguyen-Thi-Huong et al., 2023).

Even though issues related to banking digital transformation are very popular, research that addresses this phenomenon is still limited (Shanti et al., 2022). As explained in Thakor's (2020) research, there are still many things we "don't know" about this topic. Of the many factors involved in its relationship with banking, the role played by the concept of digitalization is something that deserves attention (Jakšič and Marinč, 2019). Several literatures also see an urgency to research further regarding banking digitalization. In Indonesia, the fintech business is a strong competitor for banks. Starting to develop in 2018, fintech companies now offer various conveniences for cross-platform digital payments. In the end, start-up companies are starting to look at the fintech business because they are considered to have a growing market share. Based on these changes, it ultimately motivates banks to make major changes towards digitalization (Nurjanah et al., 2023). In addition, research by Boufounou et al. (2022) stated that customer satisfaction can be achieved with digital-based transactions and they consider providing 24/7 services on digital banking platforms. Digital transformation in the banking sector is often associated

with increasing bank profitability and debranching. Research by Arnaudo et al. (2022) explain that there is a positive correlation between banking digital innovation and profitability, meaning that digitalization encourages the creation of new sources of income for banks. On the other hand, there is a negative correlation between the level of digitalization and the number of branches.

The digital transformation of banking is structured by prioritizing the principle of balance between digital banking innovation and prudential aspects to maintain bank performance in a healthy condition (prudent, safe, and sound banking). In addition, the digital transformation blueprint carries the principle of technology neutrality; that is, it does not regulate technical aspects related to technology (Zameer et al., 2018). The banking transformation blueprint contains 5 (five) main elements: data, technology, risk management, and institutional order (Thanitcul and Srinopnikom, 2019). The digitalization innovation carried out by NTT banks takes into account environmental contexts such as uncertainty, strategic orientation, and market orientation, current conditions, the tendency for economic stagflation due to the Russian and Ukrainian wars, as well as the culture of the NTT people, which is reflected in the language used (Jayawarsa et al., 2020). Realizing technological developments and the challenges of providing the best service to customers has encouraged Bank NTT to change its core banking system (CBS) (Nuwagaba and Brighton, 2014).

The world around us is changing rapidly as human civilization develops. Technology is one component that is experiencing rapid change. Currently we are introduced to the term Industry 4.0. Industry 4.0 is a model that shows how industries develop and change over time. Industry 4.0 is a smart factory where digital devices are connected to a network and can be used as a communication medium with all production sectors including humans, machines and materials. With the emergence of Industry 4.0, the use of resources becomes more efficient, and makes it easier for companies to integrate with customers and business partners (Dohale and Kumar, 2018). One of the sectors affected by the fourth industrial revolution (Industry 4.0) is the banking financial sector. The idea of a “fourth industrial revolution” may seem good at first, but it is important to remember that its implementation will be faced with many challenges, risks and obstacles such as determining appropriate standards and infrastructure, data security issues, as well as the training required for resources. the human (Gupta, 2021)

Bank NTT has begun to make changes from the design concept with an analogy approach to the concept of basic principles (first principles) within the Bank 4.0 framework through efforts to implement digitalization as a form of innovation (Ayadi et al., 2017). Bank NTT’s innovation is also marked by the implementation of intelligent branches towards bank digitalization, innovation in mobile services, and the development of online services, onboarding, and borrowing for consumer credit, Be Ju can sell smart Bank NTT consists of (1) online services lines such as electricity tokens, credit payments, online Samsat, BPJS health, electricity bills, pay TV, local taxes; (2) mini ATMs such as cash withdrawals, cash deposits, NTT bank transfers, and interbank transfers; Lopo He Can; Kiosk K; NTT weaving, farmers’ b’pung, capital innovation ideas; changes in organizational structure, changes in company culture, updating SOPs, implementing key performance indicators (KPI)

based on balance sheet score cards/BSC (Cescon et al., 2016), building pentahelix partnerships. The idea of innovation was triggered by a shared awareness among bank administrators about the problems faced (Jayawarsa, Purnami et al., 2021). The problems faced are urgently resolved through change. The first step to change is raising a feeling of urgency so that people start telling each other, “We must do something,” about problems and opportunities (Chamidah et al., 2020).

Research by Indriasari et al. (2022) explained that there are 7 challenges in implementing banking digitalization, including technology, organization, people, process, environment, customers, and risk and security. Technology-related challenges include artificial intelligence, big data, cloud, security systems, authentication, IT infrastructure, and data governance. One of the cases that befell Bank NTT was related to fund leakage, so it needs serious attention so that in the future digital transformation can provide security guarantees to its users (Amnifu, 2022). Furthermore, the second challenge for the banking industry is an organization consisting of top management support, hierarchy, innovation culture and risk management (Pourebrahimi et al., 2018). In the current digitalization environment, the banking industry seeks to recruit talented parties who include capabilities, adaptive talents, and strong collaboration (Dang et al., 2020). Another challenge for the banking industry in the process aspect is the development and innovation stages to adopt potential concepts that can improve the performance of digital banking platforms (Indriasari et al., 2022). The challenge in the environmental aspect lies in competitors in similar industries. Apart from that, the banking industry must also adapt to other business environments such as disruption, digital ecosystems, government regulations, digital revolution, and risk prevention (Suseendran et al., 2020). From a customer perspective, the main challenge for banks is to assess customer expectations and understand their motivations for adopting or not adopting the digital features that have been provided (Filotto et al., 2021). The final challenge includes risk and security aspects. Considering the large potential for financial losses due to vulnerabilities, banks face the challenge of digital banking application security risks (Chen et al., 2020).

In the end, to answer the various challenges that arise, the banking industry should innovate banking digitalization services (Ilahi et al., 2020). Bank NTT continues to innovate in the field of information technology and make adjustments to suit the dynamic development of the bank’s business in this digital era. For this reason, IT infrastructure development continues to be carried out, including application development, network development, information innovation and technology systems to be able to support various increasingly complex bank operational activities in order to increase business growth. Bank NTT also continues to strive to develop its banking applications to enter the digital era called digital banking. Digital banking is a banking service that utilizes digital technology to meet customer needs in order to realize a digital economy as expected by the Financial Services Authority (OJK) in facing a digital era full of competition in the banking sector (Bank NTT Annual Report, 2020). So, it impacts company profits (Harelimana, 2017). Thus, the main research problem is developing a service digitalization innovation model for NTT banks. The research aims to examine digitalization innovation at Bank NTT.

## **2. Literature review**

Innovation is part of the focus of learning organization studies as a discipline of organizational intelligence, and innovation capacity is a central element in planning organizational strategies related to new processes, products, and technology (Prima Lita et al., 2020). Tuan (2021) further stated in their research that organizational learning and innovation are sources of strategic fit. Therefore, innovation is part of studying organizational strategies facing competition (Groen et al., 2017).

Innovation is a key factor for motivating and maintaining productivity, as well as giving companies a competitive advantage to increase the company's competitiveness compared to similar industries (Dunyo and Odei, 2023). Most of the banking sectors are adapting their business to the changing environment and as a result, they are adopting and implementing certain processes imposed by the digitalization process. This process is carried out by creating new banking products and services that are directly related to the digitalization process. This shows that the banking sector has seriously understood the changes that will come, which of course have an impact on creating competitive advantages and competitive advantages in a better position in the market (Maulidya and Afifah, 2021).

These various elements of uncertainty are characterized, among others, by the rapid development of fintech, the outbreak of the COVID-19 pandemic (Saputra, 2021), and the trend of stagflation due to the war between Russia and Ukraine. Therefore, a strategic business response is needed, namely: (1) retrenchment, (2) persevering, (3) innovating, and (4) exit. Banking digitalization is a new innovation in the financial services industry. Responding to the increasing challenges for the banking industry, every bank is motivated to look for new opportunities to obtain greater profits, namely through new banking service innovations. (Tran et al., 2023). Innovation towards digitalization has changed traditional capital and business processes to become more modern. Most industries must change their understanding to become more competitive and ready to face the future (Cziesla, 2014). Furthermore, innovation refers to understanding 3 (three) main concepts: entrepreneurship, technology, and strategy (Diener and Špaček, 2021). Innovation refers to understanding 3 (three) main concepts: the entrepreneur, technology, and strategy (Diener and Špaček, 2021). First, the concept of entrepreneurs as innovators was put forward by Schumpeter (1934), who refers to the classical view, namely individuals who founded new companies. However, entrepreneurship does not only apply to new companies doing business (He et al., 2015).

Second, the technology concept prioritizes technology analysis from the aspects of type and function (Salihu et al., 2019). Aryadinata and Samopa's (2019) view suggests that technology only applies to material objects. However, Mufingatun et al. (2020) prioritize material objects, including knowledge and technological thinking. Munoz-Leiva et al. (2017) explained that technology is not just a material object but also includes the organization of work regarding the use of technology, management of technological processes, and technology policy.

Third, the concept of strategy refers to the phenomenon that a company is (1) a picture of the market and the basis of existence, (2) a picture of what will be done in the future, and (3) an idea of what must be done to survive. Apart from that, the

concept of strategy also refers to planning processes that are quantitative or intuitive—a shot in the dark, or processes that are very political or develop outside of individual internal work - entrepreneurs (Adler, 2011; Diener and Špaček, 2021; He et al., 2015).

Innovation can also be studied from the perspective of transaction cost theory, where companies are viewed as open systems involved in seeking information and knowledge (Diener and Špaček, 2021; Kusuma et al., 2021). This information and knowledge are created as a basis for innovation for sustainable competitive advantage (Susanto, 2017). Epistemologically, knowledge creation refers to the ongoing relationship between tacit and explicit knowledge that encourages the creation of new concepts or ideas (Murtaza et al., 2021). There are at least 5 (five) phases of knowledge creation: (1) sharing tacit knowledge—considered critical because sharing knowledge involves different backgrounds, motivations, and perspectives. This process is called socialization, (2) concept creation—intensive interaction between tacit and explicit knowledge, sharing mental models, organizing independent teams, articulating the concept through ongoing dialogue in the form of collective reflection. Shared tacit mental models are verbalized in the form of words, phrases, then crystallized into explicit concepts; so that in this phase it is related to externalization. Converting tacit knowledge to explicit knowledge is made more accessible through various methods such as deduction, induction, and forced takeover, (3) concept justification, where new concepts created by individuals or teams must be justified in procedures. The justification process involves the process of determining whether the new concept created is helpful for the organization and society, (4) building an archetype, (5) is then used as cross-level organizational knowledge (Bach et al., 2020; Diener and Špaček, 2021).

Apart from being based on knowledge creation, the innovation process also refers to identifying environmental problems and needs that will be analyzed and evaluated and forming value propositions. According to Lew et al. (2020), the requirements for obtaining a satisfactory innovation theory must be attention to the following things namely: (1) the ability to identify various issues—analysis, and problem-solving; (2) predictive capabilities and identifying future needs/problems from critical environmental systems; (3) provide objective criteria to assess the novelty of the concept; (4) is objective—-independent of the user; (5) universal—can work on any system. The service innovation typology must also consider the context: environmental uncertainty, strategic orientation, and market orientation (Turner et al., 2017).

### **3. Method**

NTT bank is the object that is the main focus of this research. Bank NTT is one of Indonesia's 26 regional development banks (BPD). Bank NTT aims to become a healthy, strong, and trustworthy bank. Based on this vision, the NTT bank's mission was formulated: (1) to be a pioneer in driving the people's economy, (2) to explore regional potential sources to be exploited productively for the welfare of the people of NTT, (3) to increase sources of original regional income, (4) to optimize the bank's intermediation function through pooling, and distribution of funds to the

community in the form of credit. Bank NTT has been carrying out activities as a bank since 17 July 1962, and on 4 February 1998, bank NTT changed to a Limited Liability Company from previously being a Regional Company. Bank NTT has 1 head office and 23 branch offices spread across all districts, East Nusa Tenggara province cities, 46 sub-branch offices, 116 functional branch offices, 24 payment points, and 8 cash vans. Meanwhile, the service network consists of 33 CRM units, 215 ATM units, 8 cash deposit units, and 3 money changer units. The number of NTT bank employees at the end of 2022 is 1985, consisting of 1549 permanent employees, 3 monthly employees, 2 mechanical electrical (ME) contract employees, 252 administrative contract employees, and 178 teller administrative contract employees.

This research uses a qualitative and quantitative mixed-method approach (Allain et al., 2021). The targets and key informants in this research consist of commissioners, directors, executive officers (PA) consisting of division heads, prospective division heads, branch leaders, and employees according to their field of work, and bank consultants/professionals who have banking expertise (Chifari et al., 2018). Data collection techniques are interviews, documentation, and focused discussions. In-depth interviews were conducted with directors, executive officers, bank consultants, and Bank NTT m-banking users. In-depth interviews aim to obtain detailed data/information from the primary informants. Documentation was carried out by reviewing several written information (documents) from formal OJK publications, Bank NTT publications, and various internal Bank NTT documents related to the research objectives. In order to ensure data synchronization, triangulation of methods and data sources is carried out. Apart from that, there was a comparison or cross-checking of information based on methods (in-depth interviews, participant observation, documentation) and cross-checking of information from informants separately. Data validation in this research was strengthened by the FGD method as a form of data source triangulation. The data analysis technique used in this research uses an Interactive Analysis Model, which operates in three components: data/information reduction, data/information presentation, and conclusion drawing and verification. Quantitative data is presented in tables; then interpretation is carried out (Allain et al., 2021; Chifari et al., 2018).

## **4. Results and discussion**

### **4.1. Service digitalization innovation**

Innovation in the digitization of NTT bank services was accelerated due to the COVID-19 pandemic. The consequences of the COVID-19 pandemic impacted various aspects of people's lives, including the banking industry (Alsetoohy et al., 2022; Putri and Saputra, 2022; Saputra, 2021). In Indonesia, 107 commercial banks are operating, including 26 regional development banks (BPD).

NTT bank's CAR ratio and BPD aggregate ratio are quite adequate because they are above the minimum 8%, the ROA ratio is healthy (1.25%–2%), the BOPO ratio is still below the maximum limit of 90%, the NIM ratio is still quite good because it is above 6%, the LDR ratio is relatively adequate, ideally 80%–90%, so the NPL ratio is still below the psychological threshold set at 5%. However, it was

found that there were still bad loans (**Table 1**). Bad credit results from various factors, including violations of prudential principles, a tendency to behave fraudulently, and opportunism (Williamson, 1975, 1985, 1995). Because of bad credit, reserves must be prepared to face the risk of impairment losses. Due to the decline in credit growth, a synergy was carried out with the funds and treasury directorates, namely reducing credit interest rates and maintaining them in the 12%–14% range. A BI policy sets interest rate policies below 2 digits, and NTT banks follow the BI policy to reduce funds. Expensive bulk SMS was implemented as a promotional tool so that 3525 potential debtors confirmed their interest in applying for credit. NTT banks have occupied a healthy position from the health level, as presented in **Table 2**.

**Table 1.** Financial ratios of BPD NTT (BPD NTT Financial Report, 2022).

No.	Indicator	BPD NTT ratio per 30 June 2022	Agregat BPD ratio per 30 June 2022
1	CAR ratio	25.36	22.31
2	ROA ratio	1.55	2.15
3	BOPO ratio	84.87	75.39
4	NIM ratio	7.07	5.51
5	LDR ratio	79.48	72.81
6	NPL gross ratio	2.60	2.42

**Table 2.** Bank NTT health level assessment. (Bank NTT Health Report June, 2023).

No.	Indicator	OJK assessment (December 2021)	OJK assessment (December 2022)
1	Risk profile	2	2
2	Good corporate governance (GCG)	3	3
3	Profitability	2	2
4	Capital	2	2
*	Composite	2	2

Research findings show an existing or generic model in bank services (see Hanfizadeh and Marjaie, 2021) for NTT banks, which can be presented in **Table 3**.

Due to the OJK policy regarding bank digitalization transformation and BI policy regarding payment systems, the rapid development of financial technology, competition, and COVID-19 have encouraged NTT banks to innovate in the form of digitalization—mobile banking such as lopo dia bisa, bpung mobile, bpung farmer and smarth branch, real-time online call center 14013. Bank NTT has been implementing digitalization innovation for 4 (four) years. Digitalization innovation at NTT banks is supported by changes in the use of core business technology (CBT) from the old CBT to the new CBT T24. NTT bank digitalization/electronicization innovations have been implemented since 2018 (Hie, 2011). Digitalization-based product innovation targets regional government segments as prime customers of NTT banks, the private sector, and the general public. In the government segmentation, Bank NTT presents an innovative cash management system (CMS) service product, namely that regional government finances are entirely managed by



Bank NTT, and the management of 9 (nine) regional taxes, namely hotel tax, restaurant tax, entertainment tax, advertising tax, street lighting tax, non-metallic mineral and rock tax, parking tax, and groundwater tax.

**Table 3.** Existing model—Bank NTT generic model (source: research findings).

Main aspects	Various aspects of main activities
Business operations	<ul style="list-style-type: none"> <li>a. Funding, credit, treasury, and placement services.</li> <li>b. Cash withdrawals and transfers using cards via automated teller machines (ATMs).</li> <li>c. Accounting and tax payments.</li> <li>d. Carrying out collections from problematic debtors.</li> <li>e. Change of primary bank system (core banking system/CBS).</li> <li>f. Increasing human resource capacity for business operations.</li> <li>g. Research and development.</li> </ul>
Bank business support	<ul style="list-style-type: none"> <li>a. General</li> <li>b. Asset liabilities committee (ALCo)</li> <li>c. Human resource management</li> <li>d. Legal activities</li> <li>e. Goods and services procurement activities</li> <li>f. Self-assessment of bank health level</li> <li>g. Obedience</li> <li>h. Risk management</li> <li>i. Corporate secretary (CORSEC)</li> <li>j. Collaboration with various parties</li> <li>k. Record management</li> </ul>
Supervision	<ul style="list-style-type: none"> <li>a. Internal supervision and advice by the board of commissioners</li> <li>b. Audit by Internal Audit Work Unit (SKAI)</li> <li>c. Micro supervision and assessment of bank health levels by financial services authorities</li> <li>d. Macro supervision by Bank Indonesia regarding the national payment and clearing system as well as Real-Time Gross Settlement (RTGS)</li> <li>e. Auditing by independent KAP auditors and The Audit Board of The Republic of Indonesia (BPK)</li> </ul>

The advantages of CMS services are the concentration of revenue, minimized leakage, an average transaction amount of 1 trillion rupiah per month, and the process of developing government credit cards. After internal risk management, compliance, and legal studies, implementing government credit cards must obtain permission from the OJK and Bank Indonesia. There is also digitization of services in the education and health sectors (hospitals) and mobile banking services (Priya et al., 2018). The aim of mobile banking services for local governments, the private sector, and the public/individuals is to increase competitiveness, efficiency of operational activities, and obtain non-interest income, namely fee-based income (Aryadinata and Samopa, 2019). In the education sector, Bank NTT is developing digitalization applications to expand the reach of connectivity between parents, students, teachers, and schools to create a quality generation. Through this application, parents can monitor their children’s academic development and fulfill their children’s educational obligations, and all payment systems are accommodated in this application (Predana et al., 2020). Through mobile banking, literacy is created for various parties in the context of financial inclusion (Jayawarsa, Saputra et al., 2021). In 2019, Dia Bisa (NTT’s digital bank agent) was introduced to students and the public. There are at least more than 5000 digital NTT bank agents who are also seen as new entrepreneurs.

A form of NTT bank digitalization innovation, the Lopo Dia Bisa application was created to map the potential of the local potential-based economic ecosystem, especially in the tourism segment, creative businesses such as cafés, and 24-hour active digital lounges. Apart from that, NTT bank has network strength spread across 24 districts/cities in NTT and also reaches villages through the assisted village model, superior villages. At least 3 (three) approaches were used, namely the business approach, contribution to the region approach, and tourist destination approach (Predana et al., 2020). Based on these three approaches, a new business model/innovation emerged as a breakthrough, namely the birth of a financing ecosystem and an ecosystem for developing superior potential in tourist destinations or superior villages. In 2021 Bank NTT will introduce the mobile banking top up feature as a super app with various services in one application (first introduced by Lazaridis, (2010)). The results of an in-depth interview with the principal director of Bank NTT (22 March 2022) stated:

*“Innovation/digital transformation in the banking world has reached the point of disruption where NTT bank is responding to it as a momentum to be able to accelerate the improvement and development of various business potentials, business processes, become a super smart bank which has an impact on good governance, meeting the needs of service users, increasing profits, increasing contribution to regional development as an agent of development. NTT bank’s digital transformation is strengthened by controlling and mitigating various inherent risks, especially operational risks. The digital transformation steps at NTT Bank are gradual, quality, and sustainable, accompanied by increasing the capacity of soft skills, hard skills, and digital programmer talent. With its islands and special character, NTT, geographically and topographically, provides a very profitable opportunity for Bank NTT to become a Regional Championship Bank. “The strength of the extensive existing office network compared to other competitors is utilized optimally with a smart service strategy through the development of new digital-based business models.”*

This statement means that several digital transformation steps start from NTT bank, upgrading the core banking system so that bank operations become more flexible and dynamic, accompanied by changes in the diversification of various fund and credit products, which are preceded by research, data mastery, and data analysis, giving rise to optimism that NTT bank has the power. Resilience, competitiveness, and ability to grow with different superior values. With achieving a healthy level of Bank health, the dynamics of digital transformation at Bank NTT are accelerating with optimism for positive growth. Smart branch, digital lounge, smart teller services, BPung Mobile application, which is following developments in payment system technology as well as OJK and BI policies and regulations, NTT bank provides QRIS, BI fast applications, cardless cash withdrawals, including Be Pinjam (digital loan) services, especially for MSMEs and consumers. Bank NTT is pursuing a collaborative work strategy and synergistic alliance with a *penta helix approach*. Creating a close loop-based financing ecosystem starting from the village with the development of superior potential. The data warehouse supports business expansion stages as a dashboard to drive intelligent bank business development in digital transformation at Bank NTT. According to Ardhoyo et al. (2023), digital

transformation shapes and disrupts the business sector and the economy.

Specifically, the innovation idea at NTT Bank started with research by the division to obtain the required data. Results of an interview with (Salmon Terru, head of the IT supporting division—now a research and development division, 7 July 2021). NTT bank digital innovation with various service feature ideas was obtained based on our capture results from our customers' habits. It is possible because of the leader's discretion, which characterizes a transformational leadership style in realizing digitalization innovation (Gupta, 2012). It means the knowledge source comes from outside and is absorbed into NTT Bank. Thus, it strengthens the view of Diener and Špaček (2021) that external knowledge is essential in knowledge creation, and knowledge creation is the basis for innovation. Bank NTT has provided a new experience—basic principles for customers in carrying out transactions using the Android application (Predana et al., 2020).

The research results were accompanied by informal and formal brainstorming among directors, division leaders, and individuals according to their field of work. Through brainstorming, it is possible to share ideas, experiences, and mental models (share knowledge and experience and mental models) so that they become shared knowledge with the division. It is important because this knowledge is still in the form of ideas, experiences, and mental models embedded in each individual's mind as tacit knowledge/implicit knowledge (Baumard et al., 2013). This knowledge and experience is the most difficult to absorb. From the perspective of the four modes of knowledge creation theory, the result of the conversion of tacit knowledge to tacit knowledge is referred to as socialization. Innovation ideas were also discussed in the OJK prudential meeting forum (Baptista and Oliveira, 2016).

At this time, businesses are led to become more flexible due to continuous changes in the organization's external environment and technological developments that increase every day. In conditions like this, companies must "open" their innovation processes to increase their potential. The concept of "open innovation" was first coined by Henry Chesbrough in 2003. Open innovation is defined as a paradigm that assumes that companies must use internal and external ideas to develop their technology (Orlova, 2020). Banking must at least open boundaries for external stakeholders so that they can perform in the long term. Banking executives must discuss how external and internal resources can be systematically integrated to increase innovation and corporate partnerships. This is necessary to face the transformation to the digital era. Furthermore, when companies have eliminated external boundaries, for example between banks and their clients, they are ready to face a very competitive market with a very fast pace of development (Fasnacht, 2020). So, the pattern of knowledge creation in the context of innovation not only crosses internal organizational levels but also includes external relations between organizations, and this is the difference between this research and the views of (Diener and Špaček, 2021). Controlling organizational change and accelerating innovation is something banks must do to provide quality services to customers, not just to survive. Due to their lack of agility in innovation, the banking industry is rapidly developing electronic services to meet the needs of its customers. These boundaries must be managed by involving various external stakeholders such as

FinTech startups, customers, and even competitors (Bertin and Schaeffer, 2020). In addition, the differences in these research findings mainly lie in the context and typology of companies. Suppose Diener and Špaček (2021) study was built based on empirical experience in pure private companies and the environmental context before it occurred. In that case, the theoretical development in this research in terms of locus is based on a pseudo-private company (NTT bank) where the management follows business principles. However, for the most part, Bank capital is dominated by provincial, district, and city government (series A shares), and a small portion belongs to the public (series B shares). Third, bank management, annual performance achievements, capital deposits, and bank business plans must be reported and accounted for to NTT bank owners, namely 1 (one) provincial government as controlling shareholder, 23 district governments, and 1 city government in the annual GMS as the highest appropriate forum. Limited liability company law.

Apart from that, the innovation being developed is a development of contextual innovation theory by taking into account environmental uncertainty. Contextual innovation theory explains that contextual theoretical strategies are carried out to deal with past events in organizational innovation studies. This strategy has the potential to provide great success in efforts to encourage innovation in the company (Elkin, 1983). Some example such as the impact of COVID-19 on NTT bank business, historical factors because the credit provided by NTT banks is still dominated by consumer credit, and the use of the local diction Bpinjam which comes from the Kupang language Bpinjam (B means beta or I borrowed it from Indonesian). Research findings show that innovative ideas at Bank NTT can originate from within the company, namely employees, through the discretion and autonomy granted by directors in order to meet customer needs in providing services (Munoz-Leiva et al., 2017). The dynamics of innovation at NTT banks are still relatively moderate because the innovation climate is not yet fully functioning well. The results of an in-depth interview with bank consultant Fanani (2022) stated that:

*“Innovation dynamics in BPD are generally still at a moderate level. It means you know the importance of innovation but do not yet have a strong desire to innovate. A strong desire can take the form of providing human resources, work units, funding, and an innovation ‘climate.’ Only a few BPDs consciously innovate to meet the needs and expectations of customers. The main challenge is the awareness that innovation is the only way to maintain business continuity or achieve sustainable competitive advantage/SCA. The Bank carries out various innovations to retain existing customers and meet the needs of society/customers to face the complexity and dynamics of the environment. Innovation is important and urgent for Regional Development Banks (BPD), including Bank NTT.”*

This statement means that the ideal innovation implemented by Bank NTT in the COVID-19 era is innovation in capital and services based on electronic banking, which supports the growth of the NTT bank business and can regulate and explain the targets of OJK provisions and applicable laws and regulations, especially those related to COVID-19 as the basis for policies, provisions, systems and internal procedures at Bank NTT.

Innovation to strengthen the core capital base of 3 trillion rupiah in 2024 as mandated by PJOK 11 of 2016 concerning minimum capital requirements for commercial banks. If the core capital of 3 trillion cannot be met, according to OJK regulations, the bank will be merged, consolidated, acquired, or established as a joint business group (KUBE). For example, KUBE has been implemented between BPD Lampung and BPD West Java (BJB). For NTT bank, according to the decision of the extraordinary general meeting of shareholders/EGMS on 10 February 2021, as follows: (1) capital deposits by provincial, district, and city series A shareholders and individual series B shareholders, (2) the capital deficiency will be invited investors to invest in Bank NTT, but not as controlling shareholders with a portion below 25%. Regarding capital, according to the governor of East Nusa Tenggara and the controlling shareholder/PSP of Bank NTT, NTT Bank must run with 2 engines in the future. Engine 1, capital sourced from series A and series B shareholders. Engine 2, capital sourced from investors, which means adhering to the model. Acquisition following POJK 11 of 2016. However, based on the development of capital contributions by provincial, district, and city governments throughout NTT, it has now reached 2.01 trillion rupiah, not including dividends paid out of 50% as paid-in capital, so it is almost sure that at the end of 2024, capital deposited in NTT banks can reach 3 trillion according to the POJK referred.

PT Bank Pembangunan Daerah NTT continues to innovate in increasing credit distribution through improving services in the digital era in the form of developing an electronification-based service system (Susanto, 2017), where Bank NTT has an application to make it easier for prospective debtors in the NTT region, namely the customer onboarding application (COB) and loan origination system (LOS) where with this application it is made easier for prospective debtors in the credit distribution service process, prospective debtors will be served directly by officers from the prospective debtor's place of activity so that service will be more efficient and effective (Priya et al., 2018). Bank NTT is currently transforming in developing operational systems towards a super bright bank, namely carrying out innovations in the era of digitalization in the form of additional service features, including loan application features such as initiating consumer credit applications via Kiosk K and Bank NTT mobile banking, making it easier for prospective debtors in the process. Application for a consumer credit loan amid the COVID-19 pandemic situation. The results of an in-depth interview with Helena Herlina Seni Sae—Candidate for Head of the Credit Supporting Division (6 September 2021), stated that:

*“Credit expansion in the era of the COVID-19 pandemic was carried out through the creation of new products in the form of credit schemes for places of worship and the development of independent micro products by increasing the independent credit ceiling from 5 million rupiahs to 10 million rupiahs, so that it could encourage micro business on the one hand, and “as well as breaking the chain of loan sharks, improving the KIOSK Smartbank Application from just an application (specifically for Multipurpose Credit), to the future to reach the disbursement stage, and new products for instant credit, accompanied by continuously increasing credit human resource capacity through education and training.”*

Research findings show innovation ideas in the form of creativity at the diction

level, namely combining the acronyms for the names of the big islands in NTT (FLOBAMORA—Flores, Sumba, Timor, and Alor) with standard NTT bank products to become the innovative product Flobamora Dia Bisa Savings, combining words/terms IT, for example, mobile banking pay becomes NTT pay mobile banking where customers can make non-cash transactions (electronic banking) via an Android cellphone (without having to come to the bank) such as inter-bank transfers, paying telephone bills, subscription TV, electricity, BPJS Health, pay QRIS, PDAM, e-PBB P2, samsat and others; combining the name of a traditional house on the island of Timor (Lopo) with the word IT digital to become Lopo digital Bank NTT, the b'pung farmer application, a combination of local languages and international technology standard languages that have never been found in various banks and have never existed before in NTT banks, namely Be Pung Mobile, which refers to the Kupang language, means Beta Punya Mobile or I Have Mobile because it is easy to remember and is an inseparable part of one's own possessions (Aryadinata and Samopa, 2019; Gupta, 2012; Priya et al., 2018). B'pung farmer, i.e., beta has a farmer or my farmer. It means that there is creativity and innovation at the diction level up to its implementation as part of marketing promotions that rely on the value of language as a power to support the use of technology owned by NTT Bank. There are at least 111,079 m-banking users, 17,490 QRIS merchants, 8099 he can agents, and 1770 EDC units sold at Be Ju Bisa. Digital transformation has gone through several milestones, namely: (1) 2019: updating the Core Banking System (CBS), preparing IT human resources, refocusing and revitalizing business units, (2) 2020: diversification of MSME credit products, development including mobile, smart branches, di@ can, lopo di@ can, continue digitalization of regional government, (3) 2021: assisted village festival, online onboarding, inter-optimality and interconnectivity, digital lounge, continued digitalization of regional government, independent micro-credit, (4) 2022: be ju can/be smart generation II, e-money, continued digitalization of regional government, 5) 2023: digital loans, continued digitalization of regional government, and foreign exchange banks.

Several implications exist for developing innovations in digitizing NTT bank services, including updating standard operating procedures (SOP), accelerating human capital capacity building, and changing Flobamora's corporate culture. The research results refer to external customers' views, namely the importance of developing m-banking response speed in transactions and the need for adjustment guidelines when forgetting the m-banking access password. These conditions must be met in order to realize the acceleration of Indonesia's digital transformation (Chen et al., 2023).

As a comparison, digitalization innovations at BPD SulutGo are BSGtouch, BSGcash, BSGsamsat, BSGsms (<https://www.banksulutgo.co.id>). BPD Sulsebar namely Sulsebar Mobile, Sulsebar Merchant, Aganku Mobile, Aganku Partner, Macca (<https://banksulsebar.co.id>). For BPD Bali, digital innovation consists of Mobile Banking, Internet Banking, Laku Pandai, Automatic Teller Machine/ATM, Laku Pandai ATM Cash Recycle Machine (CRM), QRIS cross border, Open Application Programming Interface (API)—Snap, BPD Bali Internet Business/Corporate Banking (IBB), Balipay Electronic Money, BPD Bali Mai Laku, Bank BPD Bali ATM/Debit Card, cardless services, QRIS Domestic and QRIS cross

border, Government Credit Card (KKPD), SamsatOnline, E-Restribution and E-Ticketing, E-Link, EDC Merchant (On Us) (Bank Bali's Performance Soars Thanks to Digital Innovation; Ahmad Chury (<https://www.topbusiness.id>). Then, for Bank DKI, digital innovations include super apps Jakone Mobile, scan QRIS to zakat and donations, JakErte, JackOne Abank, CMS, online credit application, digital lending application, jackCard (<https://www.bankdki.co.id>). For BPD North Sumatra, digitalization innovation is infrastructure improvement, mobile development of Bank Sumut banking, e-forms, debit cards, cardless ATMs, and development innovations in online credit application applications (<https://www.marketeers.com>). Meanwhile, Bank Papua's digitalization innovation is oriented to support the implementation of Electronic Regional Government Transactions (ETPD) and accommodate industry 4.0-based customer transactions. Bank Papua launched Bank Papua's WhatsApp Business Corporate (WABA) services, namely Papua Customer Care (PACE), CMS Corporate internet banking, Laku Pandai (Papua Pandai and payment system using Indonesian Standard Quick Response (QRIS).

If we look closely at the digitalization innovations in the state bank group (Himbara) in Indonesia, such as Bank Rakyat Indonesia (BRI), namely Go Smaller—focused on MSMEs, Go Shorter—providing short tenors according to needs, and Go Faster—serving the community with more comprehensive, better access to finance. Easier, faster and more affordable. BRI's transformation strategy is through the big concept of BRIVolution, which refers to 3 frameworks: digitizing core, digital ecosystem, and new digital proposals (<https://idx.co.id>). Meanwhile, for the State Savings Bank (BTN), various digital innovations are BTN Mobile Banking, BTN Properti Portal, BTN Cheap Home Portal, BTN Solusi, and the Batara Spekta Program (<https://www.btn.co.id>). Furthermore, Bank Nasional Indonesia (BNI) has 3 digital products: BNIDirect, Api Open Banking, and BNI Mobile Banking (<https://www.bni.co.id>). BNI Direct is an integrated solution for payment, liquidity, and value chain management services to simplify transactions and business, especially for corporate customers. API Open Banking is here to make it easier for business people to develop digital businesses. BNI Mobile Banking is a mainstay for individual and corporate customers in making transactions without delay. Other Himbara banks are Bank Mandiri with Livin by Mandiri as financial super apps and Kopra by Mandiri with Wholesale Digital Super Platform (<https://www.bankmandiri.co.id>). For private banks such as Bank Central Asia (BCA), digital e-banking innovations are BCA mobile—all banking transactions are made simple, comfortable, practical, and accessible. CS Digital—a practical solution for changing cards; BCA Klik Pay—paying for online shopping is more practical; Onklik—online transactions made simple with one click; eBranch—making reservations at branches more convenient, KlikBCA—safe and comfortable banking services, myBCA—find out about my BCA, QRIS—scan QR for a practical way to pay, Welma—transactions are more accessible mutual funds, bonds and insurance information (<https://www.bca.co.id>).

In ASEAN countries, including digital banking in Malaysia, namely Juris Spectrum: unlimited possibilities at your fingertips—the only powerful digital banking platform you will ever need. Juris Spectrum is an end-to-end digital banking platform offering customers and businesses a unique, holistic digital banking

experience. Powered by connectivity and agility. Juris spectrum is composed of a robust digital core and state-of-the-art customer engagement, lending, deposit, and collection capabilities. The future of banking is here. Unlock the unlimited possibilities with us. Power the movements. Forever: (1) customer engagement platform; (2) core banking; (3) lending and deposits; (4) digital collections; (5) data analytics AI. Connect everything: (1) cloud-based; (2) open banking API; (3) access the digital ecosystem; (4) connect to regulatory bodies. Reimagine Tech Agile: (1) mobile apps & mobile-first platform; (2) codeless technology; (3) state-of-the-art security (<https://www.juristech.net>). Meanwhile, in Singapore, for example, there are 9 best digital banks (Tim Doman, 2023, <https://topmobilebanks.com>), namely: best digital bank overall—trust; best for everyday use—Revoluet; best for savings account—GXS; best for international use & transfers—Wise; best for business—Aspire; best for SMEs—Airwallex; best for freelancers—Wise; best for company registration—Sleek; best for buy now, pay later—Atome; best digital wallet—You Trip.

From the explanation of bank digitalization innovation as stated above, there are at least general similarities regarding bank digitalization innovation, namely: (1) that digitalization innovation is a necessity for bank businesses in adapting to the rapid development of technology (Segupta, 2014; King and Anderson, 1995; Dundon, 2002; Sundbo, 1998) human capital competencies and talents related to social skills, higher and cognitive skills, basic cognitive skills, technological skills, and physical manual skills (Santoso et al., 2020), (4) digitalization innovation requires partnerships with various parties. It can improve by 40% profit and reduce operational costs (Manggla et al., 2020, <http://www.mckinsey.com>), (5) banks still use face-to-face transactions—a hybrid approach. Meanwhile, the fundamental difference between NTT bank's digitalization innovation and other BPDs in Indonesia is that it amalgamates local and global diction, such as bpung mobile, (2) in the case of NTT bank, digitalization innovation is not yet fully profitable, contrary to the findings of Manggla et al. (2020). It is due to credit restructuring and rescheduling due to COVID-19 and the provision for impairment losses (CKPN), thereby reducing profits.

## **4.2. Strategy and policy**

Bank NTT is facing various challenges, conditions of weakening economic growth, tight fiscal policy, tight developments in financial technology, restructuring, and credit rescheduling, which impact revenue and profits. As presented in **Table 4** above, various indicators show that the condition of Bank NTT is still relatively adequate in facing business competition. Next, analyzing Bank NTT's position (Bank NTT/RBB Business Plan 2022–2024) was analyzed by analyzing strengths, weaknesses, opportunities, and threats/SWOT. Next, the SWOT analysis of Bank NTT is as follows. **Table 5** presents an internal environment analysis using the parameters strengths/S and weaknesses/S.



**Table 4.** NTT bank digitalization innovation development model (source: research findings).

Main aspects	Various aspects of main activities
Business operations	<ul style="list-style-type: none"> <li>a. Funding services: CMS, smarth branch, digital lounge, smarth teller, QRIS, KUBE, EDC, Be Ju Bisa, Laku Pandai, be pung mobile, digital agent DI@ bisakredit: mbanking kiosk K smart bank, mbanking lopo dia bisa, be pinjam, mobile beng, be pung, and penempatan</li> <li>b. Cardless cash withdrawals and transfers using banking</li> <li>c. Tax payments using m-banking, e-commerce (Tokopedia), modern channels (Alfamart, Indomart), Mobile Point Sales (MPOS)</li> <li>d. Development of foreign exchange banking where digital transactions of Bank NTT adapted to foreign exchange (forex) transactions such as foreign currency demand deposits, foreign currency savings, and foreign currency deposits</li> <li>e. COB Dana and COB loan application for customer initiation</li> <li>f. Loss application for rating micro debtors and state civil servants (ASN)</li> <li>g. Online CMS and SP2D applications for local governments</li> </ul>
Bank business support	<ul style="list-style-type: none"> <li>a. General: e-office development (internal bank correspondence process for management, bank executive officers, and all bank employees)</li> <li>b. Human resource management: development of electronic application-based performance measurement, balance sheet score card/BSC (internal bank) adaptation approach, online attendance (Mondace) on mobile electronic-based official travel development, official travel/Mojadi, and requests for leave, permits and sick letters using the MoCIS application</li> <li>c. Goods and services procurement activities using electronic applications</li> <li>d. Development of electronic-based archives (e-archives)</li> <li>e. Development of digitalization of insurance complaints: cash in save (CIS) and Cash in Transit (CIT) with the aim of real team guarantees</li> <li>f. Developing a minimum statutory reserve (GWM) calculation application that can also monitor customer transactions by system</li> <li>g. E-learning to increase HR competency and compliance</li> </ul>
Supervision	<ul style="list-style-type: none"> <li>a. Development of electronic-based internal supervision and advice by the board of commissioners</li> <li>b. Development of micro-supervision and assessment of bank health levels by electronic-based financial services authorities</li> <li>c. Development of macro supervision by Bank Indonesia regarding the national payment and clearing system as well as electronic-based real-time gross settlement (RTGS)</li> </ul>

**Table 5.** Internal environmental analysis (RBB NTT, 2022–2024).

No.	Strengths (S)	Weight (%)	Rating	Score
1	Assets spread across NTT	10	4	0.40
2	Bank with health level 2 (two)—healthy bank	15	4	0.60
3	Partnership with provincial government, city districts, communities, universities, mass media	10	4	0.40
4	Bank office network in all districts and cities in NTT	5	3	0.15
5	Reputation and brand awareness are getting stronger	5	3	0.15
	Total	45	18	1.70
No.	Weakness (W)	Weight (%)	Rating	Score
1	Development of HR standardization, HR supporting infrastructure, and development of HR that has digital competency	15	4	0.60
2	Development of company culture in improving employee performance	10	4	0.40
3	Digital-based product and service innovation to support business transactions	10	3	0.30

**Table 5.** (Continued).

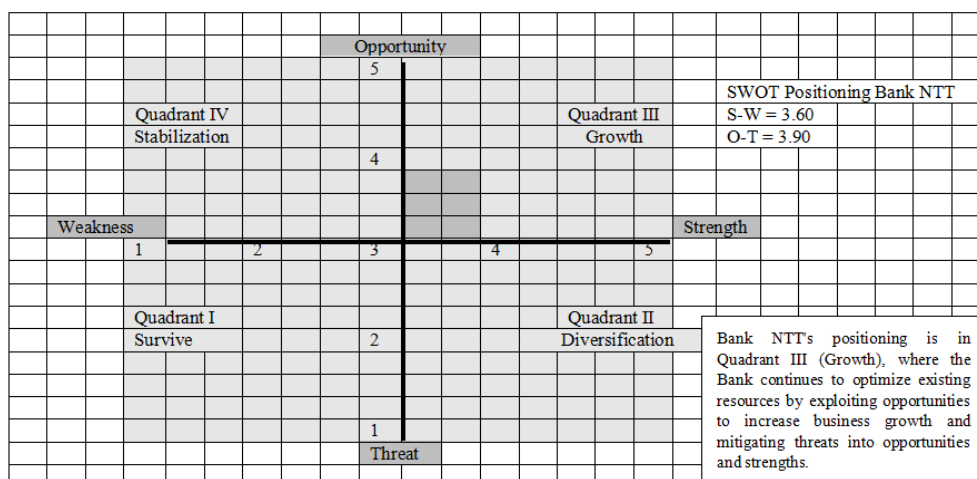
No.	Weakness (W)	Weight (%)	Rating	Score
4	Adequate updating of SOPs to improve governance	10	3	0.30
5	There is stability and/or a decrease in income, an increase in operational and non-operational costs so that banks carry out efficiency	10	3	0.30
	Total	55	17	1.90
	Total (S + W)	100	35	3.60

Analysis of Bank NTT’s external environment, namely opportunities and threats (OT), is presented in **Table 6**.

**Table 6.** External environmental analysis (RBB NTT, 2022–2024).

No.	Opportunity (O)	Weight (%)	Rating	Score
1	Fund and credit market opportunities are still high	5	4	0.20
2	Utilization of digital services to develop transactions and increase fee based income	10	4	0.40
3	Continuing business partnerships with BUMN, BUMD, cooperatives, universities, schools and other private sectors is still open	10	3	0.30
	Total	25	11	0.90
No.	Threats (T)	Weight (%)	Rating	Score
1	The rapid development of the digital economy in banking products and services has resulted in banks losing customers	20	4	0.80
2	Fulfilling the bank’s core capital of IDR 3 trillion resulted in the bank having to merge so that the bank’s business scale was limited	15	4	0.60
3	Due to the COVID-19 pandemic, restructuring and rescheduling, stagflation threatens the continuity of bank businesses	15	4	0.60
4	Risk mitigation after credit restructuring policy for national economic recovery	10	4	0.40
5	Changes in regulations according to economic demands affect bank operations	15	4	0.60
	Total	75	20	3.00
	Total O + T	100	31	3.90

Referring to the SWOT analysis in **Tables 5** and **6** in order to maximize strengths (strengths/S) and opportunities (opportunities/O), the following Bank NTT analysis chart is presented as follows (**Figure 1**):



**Figure 1.** Analysis chart.

Based on the results of the SWOT analysis that has been carried out, it can be seen that a comprehensive and systematic assessment of internal and external factors can determine the current competitive position and potential for banking growth in the future. In the SWOT quadrant, Bank NTT is in quadrant 3. In this position, the bank is in a growing industry. Bank NTT can expand the market, improve facilities, especially from a technological aspect, and intensify its business partnerships with the provincial government, city districts, communities, universities and mass media. On the other hand, even though banks have enormous market opportunities, there are still several internal weaknesses and external threats that need to be minimized so that companies can obtain better market opportunities. The latest phenomenon in the banking industry refers to the implementation of the digital economy. Judging from the results of the SWOT analysis, it can be seen that the digitalization context has the highest score of weaknesses and threats for Bank NTT. This shows that there is an urgency to apply the concept of financial technology. The concept of financial technology is a form of application of financial technology to improve the efficiency of operational activities and the quality of bank services to its customers. Customers are given greater convenience and experience with the presence of information technology through financial transactions. The presence of digitalization in the banking industry can help reach all corners and reduce operational costs to be more economical. Moreover, plans and strategies must be made by the banking industry to overcome the weaknesses and challenges faced after COVID-19. Several strategic policy milestones are being taken: (1) 2019–2021: development of human resource supporting infrastructure, cultural and organizational development, standard operating procedures, systems, and applications. (2) 2022–2024: development of business products and services, modernization of electronic payment systems/digitization, service improvements, operational status as a foreign exchange bank, and efficiency programs. (3) 2025–2027: Foreign exchange bank operations, research, and study of preparation for initial public offering/IPO, joint business group to achieve capital of 3 trillion rupiah, and IPO implementation. Although various efforts continue to be made to identify weaknesses and threats to banking development, this sector is often left behind, especially in the digitalization process. As a result, there is a high risk of losing competition which can disrupt the banking

business process itself.

## **5. Conclusion**

The pattern of innovation carried out by the Bank NTT fund division strengthens the theoretical view that Bank NTT is an open system involved in seeking information and knowledge. Then, this information and knowledge is created as a basis for innovation. Epistemologically, the knowledge created refers to the ongoing relationship between tacit and explicit knowledge, which encourages the creation of new concepts or ideas. Even though these new ideas are in the minds of individuals, ontologically, the critical factors for developing and sharing knowledge lie in individual, group, organizational, and inter-organizational relationships. Relationships are meant in the context of Bank NTT, where individuals and groups are given autonomy to search for information and create knowledge as a basis for innovation. Providing autonomy in the context of knowledge creation as a basis for innovation is also a sign that transformational leadership is needed. The information obtained is created through formal institutions through meetings to realize the innovation concept. Next, the innovation concept is socialized through the presentation of the innovation concept and then submitted to cross-level and inter-organizational groups to obtain approval from the board of directors in a circular manner.

The innovation concept is studied under the coordination of the compliance directorate and the risk management division, which involves the board of commissioners (BOC)—the board of commissioners—the chairman and members of the risk monitoring committee, and the board of directors. Implementing these innovative ideas can be realized due to the use of Bank NTT's new IT system, namely T24. Procurement of a new IT system must receive consideration and approval from the Bank Indonesia Representative of East Nusa Tenggara Province and the Financial Services Authority (OJK) and a compliance and risk review. The cross-level involvement of Bank NTT's external and internal institutions is primarily intended to make procuring and utilizing the new IT system more prudent because there are various inherent risks, including operational risk, reputation risk, and legal risk.

Furthermore, during the current crisis, the strategic choice taken by Bank NTT is to innovate and reorganize the organizational structure rather than exiting the business altogether. Bank NTT is also implementing an organizational transformation where a new directorate, namely the Information Technology/IT Directorate, must obtain approval from the GMS and OJK. Specifically, the previous general directorate was changed to the information technology and operations directorate by the mandate of the EGMS on 18 October 2021, in Kupang. The Indonesian Banking Development Roadmap (RP21) published by the OJK contains directions and references for short-term and gradual development throughout 6 (six) years. The short-term development aims to optimize the role of banking in accelerating the national economic recovery process due to the impact of the COVID-19 pandemic. Meanwhile, structural development is aimed at strengthening national banking so that it has better and higher competitiveness and makes a more

optimal contribution to the national economy.

The implications of the innovation in digitizing NTT bank services include updating standard operating procedures (SOP), changing corporate culture from Flobamora to Bintang, and accelerating the increase in human capital capacity. The implications of research on bank management refer to the innovation of procurement of new IT systems. Banks can increase their attention to service quality and maintain customer trust to maintain the quality of digital banks among customers. Moreover, with post-COVID-19 conditions that require people to make digital transactions. With the changes in the financial industry towards digitalization, it is necessary to strengthen risk management in financial service institutions. The implications of the research results for policymakers need to be considered in the transformation towards digital banking related to equitable internet access in Indonesia, cybersecurity, and employment.

Researchers realize that this research is still not perfect, there are weaknesses, deficiencies and limitations. This research is a single-case study so there are several limitations in terms of generalization, bias and time. The results of single-case study research cannot be replicated or generalized. This means that it will be quite difficult to generalize the findings from one case study to other situations. In addition, there is generally a risk of bias in single-case studies because the researcher's personal opinions and preferences can influence the research results. Time is also a limitation in this research. This form of research requires the researcher to be present in the social activity being observed. Another limitation is that the key informants in this research were only the board of commissioners, directors, division heads and NTT bank employees. This research does not include external key informants such as customers and competitors to strengthen its findings. Recommendations for future research are the importance of studying the determinants of digital service innovation in bank services, such as transformational leadership style, good corporate governance, and organizational commitment.

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