

INTERNSHIP REPORT on

# **Risk and Feasibility Analysis of Nano Lending Program in Bangladesh**



**INTERNSHIP REPORT**  
**Risk and Feasibility Analysis of Nano Lending Program in  
Bangladesh**

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March 21, 2021

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Dear Sir,

**Subject: Submission of the Internship Report titled “Risk and Feasibility Analysis of Nano Lending Program in Bangladesh”**

This my great pleasure to submit my internship report on “**Risk and Feasibility Analysis of Nano Lending Program in Bangladesh**”, which was a requirement for graduating from the BBA Program of IBA, University of Dhaka. The broad objective of the report was to evaluate the risk and feasibility of the nano lending program from the perspective of City Bank Limited. The report has been formulated using both primary and secondary data.

I hope that the paper is aligned with the format and guidelines that were provided and I will be looking forward to receiving your feedback on the assignment. This research report has been prepared under your supervision and will not be reproduced without your permission.

Sincerely,



Md Monwar Hossain

Roll: ZR- 64

Batch: 25<sup>th</sup>, BBA Program

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Many people have contributed in a variety of ways in the preparation of this internship report. Without the help of them, it was not possible to produce this paper.

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## EXECUTIVE SUMMARY

Nano Lending means instant loan up to a certain amount without using any collateral. This loan is very popular in some African and Asian countries. Recently, this loan has been introduced in the economy of Bangladesh. The main service providers behind this facility are City Bank Limited, bKash and ANT Group. City Bank Limited will act as the lender, bKash as the platform and ANT Group will be the analyst behind the credit scoring process. So, all bKash users will be eligible to avail this loan. This loan product is an EMI-based three-month term loan with a credit limit up to 10 thousand Bangladeshi Taka.

In this program, City Bank and bKash act as pioneer as they are the first ones to bring it to this country. This program has been in some African countries for quite some time. Kenya has already seen multiple competitors with this product. Tanzania, Nigeria, Egypt have also been through nano financing through mobile applications. In Asia, this program is being launched in Pakistan and Philippines mostly. The program is not much popular in Developed countries. In Europe, only Fidor Bank in Germany provides the nano lending service. In these countries, the interest rate charged is much higher than that of traditional bank loans as the rate of default is also high.

In Bangladesh, the nano lending program has three service providers. All users of bKash are eligible for the instant nano loans. Firstly, the user's information is processed by ANT based on the spending pattern and outstanding balance. Then, ANT group develops a credit score for each customer, which is later used to put the customer in a risk segment. Based on the risk segment assigned, each customer is given a credit limit for the nano loans. The main sources of revenue from these loans are 9% annual interest income, 2% loan processing fee, 2% penal fee and early settlement fee. Of the total operating income, bKash will charge a commission of 35% for their platform and technology during the commercial phase.

In risk analysis, it has been found that the most crucial risk the program might face is credit default risk. From the experience of nano loans in other countries, it can be estimated that the rate of non-performing loans will be pretty high. However, there are some risk mitigation measures in place which will be able to ease the situation a little. The other risks are reliability on ANT Group's credit scoring method and data privacy breach due to cross-border dependency. Proper countermeasures are suggested to take place to tackle these risks.

In feasibility analysis, some quantitative calculations took place. The viability of this project has been estimated based on different non-performing loan rates. A simplified income statement has been generated with NIM to find out the profitability of the project. A break-

even calculation was also done to determine the volume to lend out to customers to generate break-even. A chart has been showed to identify maximum NPL rates at break-even for different disbursement volume.

A qualitative analysis is thoroughly done to identify subjective issues with this program. Some key issues have been identified in this analysis. Based on these issues and the risks faced earlier, some recommendations are given to maintain profitability of the project.

## 1.0 INTRODUCTION

### 1.1. Background

Nano lending is a process which gives the borrower the opportunity to take a loan almost instantly without any collateral. This product is used before in some African and Asian countries. The loans are disbursed through mobile financial services and are regulated by the central bank of respective country. Recently this feature has been introduced in Bangladesh through bKash and City Bank Limited. The pilot project for nano lending has also started in mid-2020. However, the project bears some risks which might cause significant trouble in future. The report identifies these risks in a detailed manner. The feasibility of this project is also discussed in brief in this report.

### 1.2. Origin of the Report

This is an internship report prepared for the completion of the BBA Program of IBA, University of Dhaka. I was attached with the Finance department of the City Bank Limited as an intern. This report titled, “Risk and Feasibility Analysis of Nano Lending Program in Bangladesh” was prepared on the basis of my internship placement and my working experience in CBL.

### 1.3. Objectives

#### 1.3.1. Broad Objective

The objective of this report is to identify the risks and feasibility of Nano Lending program of City Bank in Bangladesh.

#### 1.3.2. Specific Objectives

The report has following objectives to achieve-

- i. To identify the risk factors of the nano lending program being launched in this scenario.
- ii. To try to come up with viable solutions to mitigate the risks
- iii. To measure the quantitative feasibility of the program
- iv. To analyze qualitative aspects of the program
- v. To recommend ways to solve the issues with nano lending

### 1.4. Scope

This report has a mix of both quantitative and qualitative aspect of the nano lending program. The financial aspect of the nano lending program is highlighted in this report. The report has

been prepared from the point of view of City Bank Limited. The paper focuses more on the feasibility of the program rather than the operational details of it.

## 1.5. Limitations

This report does not cover a big sample size of interviewees. As this is a completely new project for the organization, there are very few experienced employees in this project.

Market data regarding the nano lending program could not have been collected as this concept is completely new in the industry so it's a blue ocean market. Information from other country has been taken as benchmark here.

Data has been collected from City Bank employees only. Data from other service providers-bKash or ANT's point of view was ignored in this report.

## 1.6. Methodology

### 1.6.1. Data Collection

#### 1.6.1.1. Primary Data Collection

The data have been collected from interviews via phone and in person. However, only CBL employees took part in this interview. Mr. Golam Yeazdani, Head of Internet Banking, was the main interviewee for this process. Muhammad Rezaul Islam, Senior Manager of ICFR & GL Control also took part in the interview. Data from other employees have also been collected to get a brief overview of the whole idea of nano lending. Moreover, relevant information and feasibility methods have been collected from senior management of City Bank Limited. A questionnaire has been used to collect the data. The questionnaire is attached in the appendix section.

#### 1.6.1.2. Secondary Data Collection

The secondary data have been collected from various websites. These data have been used for literature study regarding nano lending and risk identification of nano lending program implemented in various countries around the world. The websites used are mentioned in the appendix section.

### 1.6.2. Data Analysis

The collected data have been processed to analyze the risk factors that have been exposed in other countries. The information from this analysis has been used to identify potential risks the project might face. The analysis also shows the feasibility of this project in various scenarios. Qualitative analysis has been done based on subjective judgement and information collected from other countries.

## 2.0 LITERATURE REVIEW

### **Financial Inclusion:**

Financial Inclusion ensures availability of formal financial system and its usage for everyone in a particular economy (Sarma & Pais, 2010). The proper definition of financially excluded in terms of credit would include people who do not have access to credit despite their demand of it (Johnston & Morduch, 2008). Financial inclusion brings some benefits to the economy. Cost of capital can be reduced via financial inclusion since it allocates productive resources efficiently. Management of finances for all classes of people also becomes easier upon access to financial resources. The exploitation of informal sources of credits such as loan sharks and money lenders can be reduced if an inclusive financial system is introduced. Financial inclusion promotes efficiency and development of the society as it ensures safe saving practices and efficient allocation of resources available to everyone.

In order to avoid exclusion and promote more financial inclusion countries have already started taking legislative reform measures. Financial inclusion is especially important for the 'underbanked'. These are the people who have bank accounts but do not have access to more traditional credit facilities such as traditional loans and credit cards. Rather, they have to depend on alternative financial services such as money orders, check-cashing services and payday loans. Most of these users get their services from agent banking facility.

### **Banking for the unbanked people:**

The term "Unbanked" focuses on people who do not have any access to banking system in any capacity (Johnston & Morduch, 2008). These are mostly people from rural areas where the influence of exploitative loan sharks and money lenders is rampant. These unbanked people are forced to take these loans from loan sharks as they are not familiar with traditional or micro finance banking system.

Microfinance came into place for one specific need: hundreds of millions of poor and very poor households seek capital to build small businesses, but as they could not use any collateral, the access to traditional loans were restricted. Current microbanks offer more flexible collateral requirements and thus captures the untapped market.

### **Nano Lending/Instant Lending:**

Instant loans are those types of loans which don't require too much of the documentation and are approved really quick without any asset showcase. The process to avail these loans is much convenient compared to the traditional bank loans. Most lenders – banks and non-banking finance institutions (NBFIs) – offer personal loans as an unsecured loan offering. Unsecured

loans do not require any collateral against the loan to be borrowed. It is this feature that makes personal loans fairly popular today. The paperwork needed for instant loans is easily processed. With the arrival of fintech, the lending section has seen an exponential growth. With the likes of mobile money lenders, P2P platforms, marketplace platforms, and online lenders, access to finance have been easier and less time consuming to avail. The idea to make the process of financing easier for unbanked and underbanked population is what has fueled the growth of fintech and lending giants.

There are **7 major** digital lending models that can be found globally-

1. Online lenders
2. P2P platforms
3. Marketplace platforms
4. E-commerce and social platforms
5. Supply chain lenders
6. Tech enabled lenders
7. Mobile lenders

#### **Nano Lending on a global scale:**

With access to real-time data on the business of sellers using their platform to sell, e-commerce giant Amazon, set out to sanction \$1 Bn in credit to 20,000 small business owners in the U.S., U.K., and Japan. If the idea works, this will be attractive for e-commerce giants and will be one of the potential digital lending innovations.

In India, there are companies such as 'Telangana', 'LenDen Club', 'LendBox', 'CashKumar', 'I-Lend' and a lot more that provide such instant or personal loans. These companies don't require much paperwork to sanction loans and require the borrowers to upload a selfie with their 'Adhar' cards to process it. Interest rates are sky high since loan terms are for a short period and involve minimal paperwork that too over phones.

In Nigeria, the Instant lending industry has boomed significantly. There are a bunch of companies that provide instant loans throughout the day. Such apps include- Renmoney, Carbon, Branch, Aella Credit, Fairmoney, Migo, Lidya, KiaKia and a lot of other ones. The interest rates of these loans range between 15-34% per annum. Some of these companies even provide 'reduced interest rate' facility which is if you repay your debts before the due debt, you get discounts in your interest.

In Africa\_Overall, 23% of adults in the Africa region have an account. Within Africa, there is a large variation in account ownership: 24% of adults in Sub-Saharan Africa report having an account at a formal financial institution, though this ranges ranging from 51% in Southern Africa to 11% in Central Africa .In the Democratic Republic of Congo and Central African Republic, more than 95% of adults are —unbanked (i.e. do not have an account at a formal financial institution).

Men are more likely to have connected with a financial institution than women in Africa. However, the gender gap is relatively small. Adults in the highest within economy income quintile are almost four times as

likely to have a formal account as those in the lowest income quintile, on average.

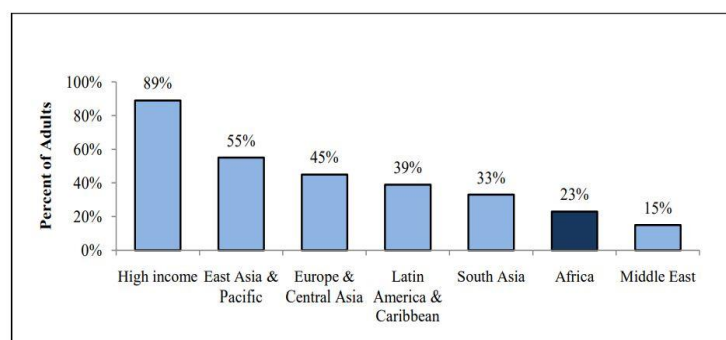
Mobile money has achieved the broadest success in Sub-Saharan Africa, where 16% of adults report having used a mobile phone in the past 12 months to pay bills or send or receive money. In Kenya, where the M-PESA service was commercially launched in 2007, 68% of adults report using mobile money. Within Africa, in Eastern and Central Africa, more than 20% of adults report using mobile money (Demirgüç-Kunt, Asli; Klapper, Leora, 2012).

In Europe, banks such as ‘Fidor’ has extended such facilities in countries like Germany, UK etc. Fidor provides instant loans up to 3000 pounds at a rate of 12.5% per annum. This service of ‘Fidor’ bank is known as “Speed Overdraft”. Potential borrowers are only eligible for such a loan if the person has been a customer at fidor bank for at least 6 months; the aforementioned person can demonstrate a turnaround of 1500 pounds per month for the last 6 months; if the business of the person has been in operation for at least 2 years and if the business is based on Germany.

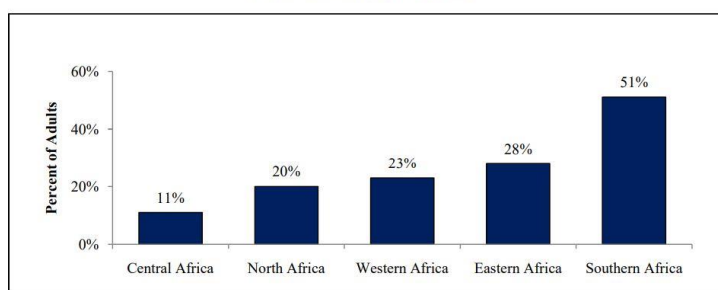
In Africa, some countries have faced adverse effect of the nano lending program. The major problem the countries faced is the credit risk default. Tanzania recorded a non-performing loan rate of 31% which is very troublesome for a financial institution to sustain. The other countries

Figure 1: Account Penetration

Panel A: Regional Comparison



Panel B: Sub-Regional Comparison



Source: Demirgüç-Kunt and Klapper, 2012.

have faced similar fate. Kenya showed an NPL ratio of 12% in nano lending. Out of their blacklisted population, most of them have been recorded for defaulting nano loans. The major flaw came out to be taking loan from one app and paying back another existing loan with it. There had been no way to trace it back as these loans are unsecured in nature. However, it shows that these loans are heavily unreliable in nature and there is a high chance of credit default in nano lending program.



## 3.0 OVERVIEW OF CITY BANK

### 3.1. Company Profile

City Bank Limited is one of the longstanding financial institutions within the country that have successfully been through a significant number of economic events across its journey of over 37 years. The bank was founded in 1983 by 12 enthusiastic businessmen. City Bank Limited was the first private commercial bank in Bangladesh. With a workforce of 5200, they have been serving the interest of the citizens of the country. At present, the bank has 132 branches with over 395 ATM and CDMs. The bank has over 642 agent banking outlets, 116 SME-S units, and over 15 thousand merchants with 7 priority centers. Since inception, the bank has been a case study in the field of evaluation, having transformed from a traditional organization to a multi-faceted institution that embraces global best practices. City Bank Limited has set milestones towards becoming the most complete bank in the country. The Bank fosters a unique winning culture which offers enjoyable experiences.

City Bank Limited got listed in the DSE on 1986 and since then, is working as a public company. The company has 32% directors share with 38.76% of Public ownership. The bank has four different subsidiaries- City Brokerage Limited, City Bank Capital Resources limited, CBL Money Transfer Sdn. Bhd., and City Hong Kong Limited.

### 3.2. Mission Statement

City Bank Limited follows a specific set of Mission, Vision and Values. They are stated here in brief.

#### 3.2.1. Vision

The vision of the bank is to become the Financial Supermarket with a Winning Culture Offering Enjoyable Experiences.

#### 3.2.2. Mission

The missions City Bank Limited follows are-

- To offer wide array of products and services which will differentiate and create excitement for all customer segments
- To be the "Employer of choice" which will offer an environment where people excel and leadership is thrived.
- To challenge processes and platforms to enhance effectiveness and efficiency within the organization

- To promote innovation and automation while guaranteeing and enhancing excellence in providing service
- To ensure respect for community, good governance and compliance in everything the bank does.

### 3.2.3. Values

In City Bank Limited, the management follows five specific goals and have appointed five value ambassadors to represent each goal. These goals are- Result Driven, Accountable & Transparent, Courageous & Respectful, Engaged & Inspired, Customer Delight.

### 3.3. Business Model of City Bank Limited

The banking sector of Bangladesh have adopted different business models in different times. The two major models are Centralized Banking and Decentralized Banking. City Bank Limited follows the Centralized Baking Model. In this model, the operation runs centrally. Processing of all transactions is carried out from a central location. Through this system, the City Bank Limited maintain their presence without relying much on branch banking. Other than City Bank, BRAC Bank and Eastern Bank Limited currently operate through centralized banking model.

### 3.4. Organogram of City Bank Limited

The topline organogram of City Bank Limited has been collected from the website. It has been highlighted here-



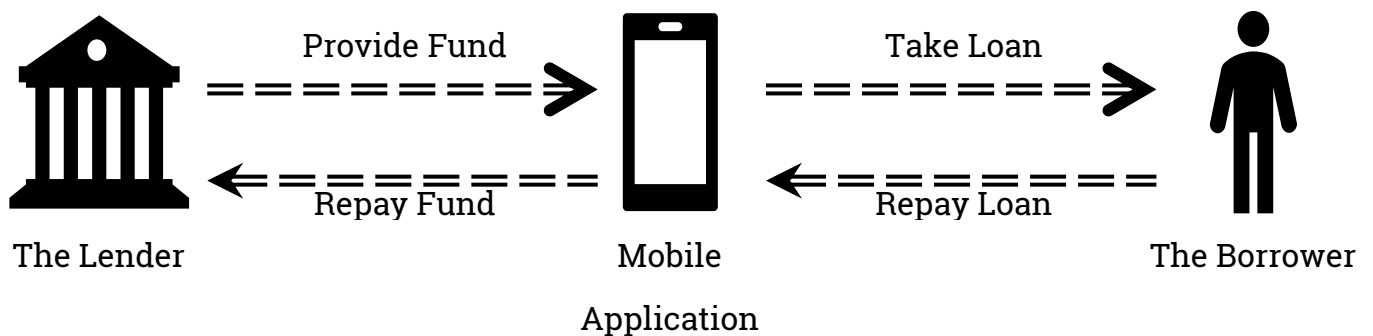
Figure 1 Organogram of City Bank

## 4.0 OVERVIEW OF NANO LENDING

### 4.1. Introduction of Nano Lending

Nano Lending is a system which provides the opportunity for people to get short amount of loans almost instantly. These loans are disbursed via mobile application platforms. Usually these loans are backed by a commercial bank working behind the curtain, but this is not always the case. The loans usually long over for three months, or less than that and the borrower gets penalized if the borrowed amount is not repaid back in time. The nano lending process is done under close supervision of the central bank. However, if the regulation permits, telecommunication companies can also run their own nano lending venture at a small scale.

In general, the nano lending process consists of three different parties- the commercial bank as the lender, the mobile application platform and the borrower.



*Figure 2 Nano Lending in Brief*

### 4.2. Opportunity in Nano Lending

The main purpose of nano lending is to bring the underbanked and unbanked population under the umbrella of banking sector. These nano loans also help the borrower to borrow money instantly. These loans support the livelihoods, emergency needs, school fees and healthcare for the poor of the world. Currently, nano loans are popular in under-developed and developing countries as people in these countries are crippled with traditional loans from unofficial sources. Nano lending can be a great instrument for financial inclusion and easy access to credit for the borrowers. This digital loan project helps the common people to get access to credit instantly without any collateral and opens up new opportunity for the banks and mobile financial services.

## 5.0 NANO LENDING IN GLOBAL SCALE

### 5.1. Nano Lending in Developed Countries

The nano lending program or the instant loan program is not that much popular in developed countries. The program has flourished in African and Asian Developing countries. The main reason behind this is the interest income from the instant loan. In most developed nations, the interest rate charged is quite low. In some countries, the rate is almost zero percent per annum. In Germany, however, there is one instant loan service by Fidor Bank. This loan, named Fidor Speed Overdraft, allows the borrower to get up to 3,000 euros without providing any collateral. The process is fast, flexible and completely un-bureaucratic. This loan charges an interest rate of 12.50 percent per annum which is much higher than the traditional bank loans of Germany. The loan is open to anyone who has been a customer of Fidor Bank for at least six months and has been in Germany for quite some time. Fidor Bank performs a credit scoring for the purpose of the credit decision.

### 5.2. Nano Lending in Developing & Underdeveloped Countries

Nano Lending program is quite popular in Developing and Underdeveloped Countries. The program has been seen in African and Asian countries.

In Africa, several countries have introduced nano lending program to ensure financial inclusion. 'Tala mobile' a California based company has been providing such micro loans to residents in Kenya, Tanzania and the Philippines. Loans average \$50 and has an interest rate of 11%. The users just have to download an app that basically records their contact history, network, movement and sanctions loans based on their behavior. "Tyme Global" is another such company that provides instant loans to people in South Africa. Their loans range in between 10,000-50,000 with a payback period of 12-36 months. In Nigeria, "Branch" offers nano loans at an interest rate of 15 to 34 percent per annum.

In Egypt, a Fintech named 'Kashat' has introduced the country's first ever mobile based nano-lending system that offers short term small loans ranging between USD 6.33 to USD 95. Kashat targets the financially excluded or the unbanked sector of the population to include them in the financial ecosystem. The users need to create their profile using only their national ID card and a selfie of themselves. The users are then given loans limiting up to 1500 Egyptian dollars if their profile is approved. Kashat charges 16 to 18 percent interest rate per annum on these loans. Also, there is a flat fee of 8 Egyptian Dollars.

In Asia, the program is seen in around three countries. 'Tez', a similar company of 'Kashat' provides instant loans in Pakistan. Tez also has a facility to loan up to Rs 10,000 for a month

to borrowers. The only eligibility to receive loans from 'Tez' is to have a smartphone. 'Tez' uses a robust data analytical model to analyze consumer behavior. The company has prepared an algorithm that continuously studies behavior of people who default and people who pay back their loans in order to decide whom to lend to. Pakistan also has another such company named 'EasyPaisa' owned by Telenor Microfinance Bank that provides such instant loans. People with Telenor SIM cards having an EasyPaisa account are eligible. A 2.5% extra charge is credited if payback is not done in time and legal actions according to the law of Pakistan is taken if loan is defaulted.

## 6.0 COMPETITIVE LANDSCAPE

City Bank Limited is the pioneer in introducing the nano lending program in Bangladesh. However, there has been one program introduced by an organization named “Rapid Cash Tech” which provides instant loan through its own app. This program enables the users to get instant loan up to 10,000 taka with interest of 14% APR and a processing fee of 5-20% with a term loan of up to 91 days. Even though this is very similar to traditional nano lending program, it has some differences. This program is not authorized by the Central Bank of Bangladesh neither it is backed by any commercial bank of the country. So, the sustainability of this loan is very low. This organization does not follow the loan rate restriction imposed by the Central Bank and has lots of hidden charges in loan transactions. Thus, the Rapid Cash program has not been able to generate a sustainable market base even it has passed a year in this market. With extensive branding in social media, it has been trying to create a demand in the market.

## 7.0 NANO LENDING IN CITY BANK

### 7.1. Initiation of Nano Lending in Bangladesh

The idea of bringing the revolutionary nano finance system in Bangladesh started back in 2019. The product is an EMI based 3-month long term loan with a reducing balance simple interest system. The City Bank Limited partnered with bKash and applied for approval from the central bank. On April 15, 2020, CBL along with bKash got the approval from the central bank to run this project. The City Bank Limited started beta testing since then and started pilot run from July 15, 2020. The pilot run is supposed to continue till July 14, 2021. In the meantime, the City Bank Limited is planning to disburse a loan amount of 8.5 crore BDT overall in rolling amount. As of now, the bank has disbursed 3 crore 17 lakhs taka through bKash as a part of the pilot run of nano lending program. During the pilot run, one of the parties involved, ANT Financial is going to bear the responsibility of any sort of credit default. The party is going to charge a risk premium of 14.3% on top of 35% commission paid to bKash for this responsibility during the pilot run project.

### 7.2. Service Providers in Nano Lending

The Nano Lending program of City Bank Limited has four different parties involved. These are-

- i) The User- borrower of the loan
- ii) The City Bank Limited- Lender of the loan
- iii) bKash- The Platform for the loan
- iv) ANT Group- Credit Score Analyzer

A brief description of the service providers is given below:

#### 7.2.1. bKash

bKash is the leading fintech organization at present in Bangladesh. It specializes in Mobile Financial Services (MFS). From its inception in 2011, bKash has been trying to provide financial inclusion to underbanked and unbanked people in Bangladesh. Recent addition to bKash's arsenal of various digital innovative products is nano lending program. bKash app will be used as the platform for this loan. Users of bKash app will be eligible to apply for this unsecured loan. This loan amounts up to 10,000 Bangladeshi taka and it does not require pre-authorization from CIB. For the service as a middleman, bKash will charge 35% of the operating income as commission from City Bank Limited.

### 7.2.2. ANT Group

Ant Group is a subsidiary organization of Chinese Alibaba Group. It was previously named ANT Financial. ANT group is currently the holder of China's largest digital payment platform Alipay. ANT Financial bought ownership of a portion of bKash in 2018 and thus got involved in this nano lending program. ANT Group acts as the brain behind this nano lending program. The group collects customer data from bKash. Then, by analyzing the spending patterns, outstanding balance of the customers', ANT group develops a credit score. From the generated credit score, customers are placed in different risk segments. During the pilot run of nano lending program in Bangladesh, ANT Group is bearing all the responsibility of credit risk default. However, for this task, ANT group is charging a risk premium of 14.3% on top of the 35% commission paid to bKash.

### 7.2.3. City Bank Limited

City Bank Limited works as the fundamental structure behind the whole nano lending system. According to the central bank of Bangladesh, fintech institutions do not have permit to disburse loans. So, bKash had to collaborate with a bank to start this nano lending program. City Bank Limited goes into this collaboration with bKash with its lending facility. City Bank Limited generates interest income and pays a commission of 35% to bKash for using its platform.

## 7.3. Operation Details in Nano Lending

There are three parties included in the process of nano lending in Bangladesh. City bank will act as the lending partner whereas bKash will be the platform for disbursing the loans. ANT Financial Group, an investment partner of bKash, will be in charge of credit scoring and credit policy analysis in this nano lending process. In this process, firstly, the ANT Financial analyze the spending and behavioral pattern of an individual bKash user. Then, based on his behavioral pattern, ANT group provides a credit score as an evaluation marker. Based on the given credit score, the individual is placed in different risk segment groups. The risk segment is used to offer the user a specific credit limit. The user can borrow that amount or less than that amount as per wish. The risk segments are as follows-

- i) **Low Risk Segment:** Customers who have sufficient balance over a period of time and go through frequent transactions are placed in this segment. Users of low risk segments are offered up to 10,000-taka credit limit as instant loan under this program.



- ii) **Medium Risk Segment:** Users with moderate outstanding balance and less frequent transactions are placed in this segment. These users are offered up to 5,000-taka credit limit as instant loan.
- iii) **High Risk Segment:** Users with less outstanding balance and little to zero transactions are placed in this segment. These users are offered up to 2,000-taka credit limit for this loan.

#### 7.4.Revenue Model of Nano Lending

The revenue model of this process depends upon few categories (Islam, 2021). There are four different types of payment. These are-

- i) **Loan Processing Fee:** Whenever an individual takes the loan from bKash, there is a loan processing fee of 2.3% which includes 15% VAT charge. This charge occurs for each time the user takes a loan from bKash.
- ii) **Interest Income:** There is an interest charge on the loans taken by users. The interest rate is 9% per annum for any amount of term loan. As the nano loans take place for a duration of 3 months, the annual rate is converted to quarterly or monthly rate.
- iii) **Penal Income:** Penal fee is charged whenever a borrower fails to repay the loan within given time. Usually, if the borrower repays the loan within 3 months, there will be no penal fee charged. The penal fee is fixed to be 2% per annum charged on a daily basis on the outstanding balance.
- iv) **Early Settlement Fee:** Early Settlement Fee is charged if the user repays the loan instantly or within 15 workdays. The charge is 2% on the total amount repaid.

## 8.0 FINDINGS: RISK ANALYSIS

### 8.1. Risk Factors in Nano Lending

#### 8.1.1. Credit Default Risk

Credit default risk or Credit Risk focuses on the inability of an individual to repay the loan disbursed from the bank through mobile application. This is the most significant risk factor in this nano lending project. If people borrow the money and don't return it, the loans turn out to be non-performing loans (NPL) and ultimately affect the bank in an adverse way. For the nano lending program in City Bank, the bank will not share the portion of loss from Non-Performing Loans with other partners.

There is no adequate data on defaulters as of now. The pilot project is not finished yet to come up with accurate representation of information as 3<sup>rd</sup> quarter has only started. As of now, payment overdue during the pilot phase is only 2.6% for 30 days and 0.4% for 90 days term loans (Yeazdani, 2021). There is high possibility of defaults as these loans are unsecured and do not get verified by the Credit Investigation Bureau (CIB).

However, the data from other countries are very alarming. In some African countries, nano finance project showed red flags in credit default. In Kenya, the nano loan programs showed a total of 12% defaulters and in Tanzania, the percentage was 31% of defaulters. Majority of blacklisted credit borrowers in Kenya borrowed from multiple nano lending platforms. The scenario is different in some Asian countries. Nano lending has already been introduced in Pakistan, Philippines and some other countries where the rate of non-performing loans is less than 5%. So, for this project, the rate is yet to be calculated as there is inadequacy of data. According to the management committee of City Bank, the rate is not supposed to be more than 5%.

#### 8.1.2. Credit Scoring Reliability

Credit Scoring process is done by ANT Financial group, a subsidiary of Alibaba group and also an investment partner of bKash. The credit score is created from the behavioral pattern of bKash users. Firstly, the data is collected on user's spending pattern, outstanding balance and daily transactions. Then the ANT Financial group run analytics to analyze the patterns and develop a credit score for each user. Based on the credit score, the user is placed in appropriate risk segment.

The risk behind credit scoring lies in the fact that even though the full process is done by artificial intelligence, there is a chance of miscalculation due to cross border dependency. Often, the data can be misleading and produce false credit score. This might lead to a potential

credit default for the bank. As the full process is still ambiguous to other parties except ANT Financial, the other parties are skeptical about the reliability of the credit scoring method.

### 8.1.3. Data Privacy Breach

The risk of data privacy breach is a pretty significant one as there will be an enriched database to store user data of all nano credit borrowers. bKash will store user's transaction patterns, spending limit and credit availability. These data will be processed by ANT Financial to produce behavioral patterns. Storing these data safely is an issue as there are continuous cyber threats that might breach the existing data privacy regulations. Also, these data will be used to categorize risk segments for the banks to target its desired market with appropriate credit limits. Using these data properly will require safe storage with guarantee of no privacy violation from any of the parties responsible.

All three parties involved in this project shares the risk of data responsibility. Using these data for any other causes except the proper one shall violate the privacy of users along with the contract signed. However, there is little to no scope to find out the exact usage of these data due to information asymmetry. As ANT Financial group deals with the lion's share of users' confidential data, there is a high risk the data can be used for different purposes.

## 9.0 FINDINGS: RISK MITIGATION TECHNIQUES

City Bank Limited along with bKash took some steps in mitigating the risks. (Yeazdani, 2021)

These are-

To reduce the credit default risk, the parties took a 4-step action plan.

- i) **In-app Notification:** Firstly, if an individual does not repay the loan in time, bKash app will send the person an in-app notification as an alert.
- ii) **SMS Alert:** After that, if the person is unreachable through the app, bKash will send a SMS to notify the person to repay the loan.
- iii) **Auto Deduction:** If the individual does not cooperate to return the loan, bKash will deduct the amount from the user's outstanding balance automatically. This process can be partial deduction also based on the outstanding balance.
- iv) **Report to CIB:** If bKash is unable to run this process due to unavailability of outstanding balance, bKash reports to City Bank Limited. City Bank then reports the person as defaulter to Credit Investigation Bureau (CIB) in Central Bank.

To mitigate other risks, bKash and City Bank Limited suggested ANT Financial to use strong data protection and strong analytics to ensure the credit scoring process is reliable.

## 10.0 FINDINGS: FEASIBILITY ANALYSIS

### 10.1. Quantitative Analysis

For the Pilot Project, quantitative analysis shows a positive result with a contribution margin of 50.7%. The reason behind this would be the Non-Performing Loans. During the pilot phase, all non-performing loans will be responsibility of ANT group, the credit score analyst of the whole project.

#### 10.1.1.Assumptions

The quantitative analysis is run based on a few assumptions. The data is taken for monthly calculation.

The assumptions are-

- i) The volume to lend out to customers is taken as 5 crores.
- ii) Non-Performing loan for the projection is assumed to be 2% per annum.
- iii) Penal Income is ignored for the simplicity of the projection.
- iv) Salary Expense is taken as Operating cost and assumed to be 100,000
- v) There is no other fixed cost taken as data regarding these costs are unknown
- vi) The interest income is calculated according to amortization schedule.

#### 10.1.2.Financial Projection (Annual)

There have been several calculations and all the information showed are taken to annual basis to get a clear picture of the feasibility of the project.

With 2% Annual NPL-

	Monthly	Yearly
Volume to lend out (in crore)	5 (in crore)	
Interest Rate		9%
Cost of Fund	0.41%	4.88%
Non-Performing Loan	0.17%	2%
Loan Processing Fee	-	2%
Fixed Overhead Cost	0.01 (in crore)	1,200,000
Commission paid to bKash	35%	

Table 1 Assumptions (2% NPL)

Month	Q1	Q2	Q3	Q4	Total
Total Income	0.18	0.18	0.18	0.18	0.70
Total Cost	(0.13)	(0.13)	(0.13)	(0.13)	(0.53)
Operating Profit	0.04	0.04	0.04	0.04	0.17
Non-Performing Loan	(0.03)	(0.03)	(0.03)	(0.03)	(0.10)
<b>PBT</b>	<b>0.02</b>	<b>0.02</b>	<b>0.02</b>	<b>0.02</b>	<b>0.07</b>
Tax Expense	(0.02)	(0.02)	(0.02)	(0.02)	(0.06)
<b>PAT</b>	<b>0.002</b>	<b>0.002</b>	<b>0.002</b>	<b>0.002</b>	<b>0.01</b>

Table 2 Income Statement (2% NPL)

\*All values are taken in Crore BDT

However, the situation changes when the non-performing loan crosses 2% and touches 3% per annum.

With 3% Annual NPL-

	Monthly	Yearly
Volume to lend out (in crore)	5 (in crore)	
Interest Rate		9%
Cost of Fund	0.41%	4.88%
Non-Performing Loan	0.25%	3%
Loan Processing Fee	-	2%
Fixed Overhead Cost	0.01 (in crore)	1,200,000
Commission paid to bKash	35%	

Table 3 Assumptions (3% NPL)

Month	Q1	Q2	Q3	Q4	Total
Total Income	0.18	0.18	0.18	0.18	0.70
Total Cost	(0.13)	(0.13)	(0.13)	(0.13)	(0.53)
Operating Profit	0.04	0.04	0.04	0.04	0.17
Non-Performing Loan	(0.04)	(0.04)	(0.04)	(0.04)	(0.15)
<b>PBT</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.02</b>
Tax Expense	(0.02)	(0.02)	(0.02)	(0.02)	(0.06)
<b>PAT</b>	<b>(0.011)</b>	<b>(0.011)</b>	<b>(0.011)</b>	<b>(0.011)</b>	<b>(0.04)</b>

Table 4 Income Statement (3% NPL)

\*All values are taken in Crore BDT

### 10.1.3. Interpretations:

From the calculation illustrated above, it can be seen than with 2% non-performing loan, the program still makes a profit of 1 lakh with an investment of 5 crore. Even though the profit from the venture looks like a very small amount, it shows the possibility of survival of this program in this economy. However, if the non-performing loan reaches a rate of 3% per annum, the venture generates a loss of 4 lakhs with a n investment of 5 crore. So, the biggest challenge for the survival and continuation of this program would be to keep the rate of NPL below 2% at any cost.

### 10.2. Break Even Analysis

The Break-Even analysis is done to find out the amount that needed to be disbursed to start generating a profit. For simplicity, the calculation is done without taking non-performing loans into account. Also, salary expense is taken as fixed cost incurred every month. No other fixed cost has been taken into account.

For each user, the borrowed amount is taken as 5 thousand BDT.

One Quarter	
Total Operating Income	175.19
Total Cost	102.09
Contribution Margin	73.10
CM Ratio	0.01
Salary Expense	300,000.00
<b>Break Even Customers</b>	<b>4,104.07</b>
<b>Break Even Volume</b>	<b>20,520,373</b>

*Table 5 Break-Even Analysis*

The analysis shows that if City Bank can disburse around 2 crore per quarter, it can achieve break-even point. The Program also needs to reach more than 4 thousand people per quarter to generate a positive profit for the bank.

### 10.3. What-If Analysis

A what-if analysis is run to check the desired NPL Ratio of the project to manage the profits for the bank. It has been found that no matter the number of borrowers or volume lent out to borrowers, if the NPL ratio crosses the 3.5% annual limit, it will result in a loss for the project.

		Non-Performing Loan Rate				
		Optimistic		Neutral	Pessimistic	
	0.01	1.50%	2.00%	2.50%	3.00%	3.50%
Disbursement Volume in Crore	5	0.03	0.01	-0.02	-0.04	-0.07
	10	0.14	0.09	0.04	-0.01	-0.06
	15	0.25	0.17	0.10	0.02	-0.05
	20	0.36	0.26	0.16	0.06	-0.04
	25	0.46	0.34	0.21	0.09	-0.04

Table 6 What-If Analysis

In here, the profit is shown in crore. It can be seen that, with a rise in NPL rate, the profit starts decreasing. When the NPL rate crosses 3.5% per annum, the profit shows a negative result for the nano lending project. For the initial 5 crore disbursement planned, the loss incurs when the NPL rate touches 2.5% per annum.

#### 10.4. Profitability Calculations

Profitability of this project is calculated through NIM, ROE and ROA calculations in various scenarios. The result depends mostly on the non-performing loans. So, two scenarios are illustrated here with two different NPL rate per annum.

NIM Calculation (with 2% NPL)					
	Q1	Q2	Q3	Q4	Total
NIM (Inc NFI After Commission with NPL)	6.75%	6.75%	6.75%	6.75%	6.75%
NIM (Inc NFI After Commission with NPL with Operating Cost)	4.35%	4.35%	4.35%	4.35%	<b>4.35%</b>
ROI	0.06%	0.06%	0.06%	0.06%	<b>0.23%</b>
ROE	0.46%	0.46%	0.46%	0.46%	<b>1.86%</b>

Table 7 NIM with 2% NPL



NIM Calculation (with 3% NPL)					
	Q1	Q2	Q3	Q4	Total
NIM (Inc NFI After Commission with NPL)	5.75%	5.75%	5.75%	5.75%	5.75%
NIM (Inc NFI After Commission with NPL with Fixed Cost)	3.35%	3.35%	3.35%	3.35%	3.35%
ROI	-0.32%	-0.32%	-0.32%	-0.32%	<b>-1.26%</b>
ROE	-2.53%	-2.53%	-2.53%	-2.53%	<b>-10.11%</b>

Table 8 NIM with 3% NPL

This information is aligned with the financial projection shown earlier. The project generates a negative ROE when the NPL rate touches 3% per annum. It however generates a positive result with 2% non-performing loan per annum.

However, to find the desired NPL rate, another calculation has taken place. In this chart, we have calculated desired NPL to achieve break-even in our program.

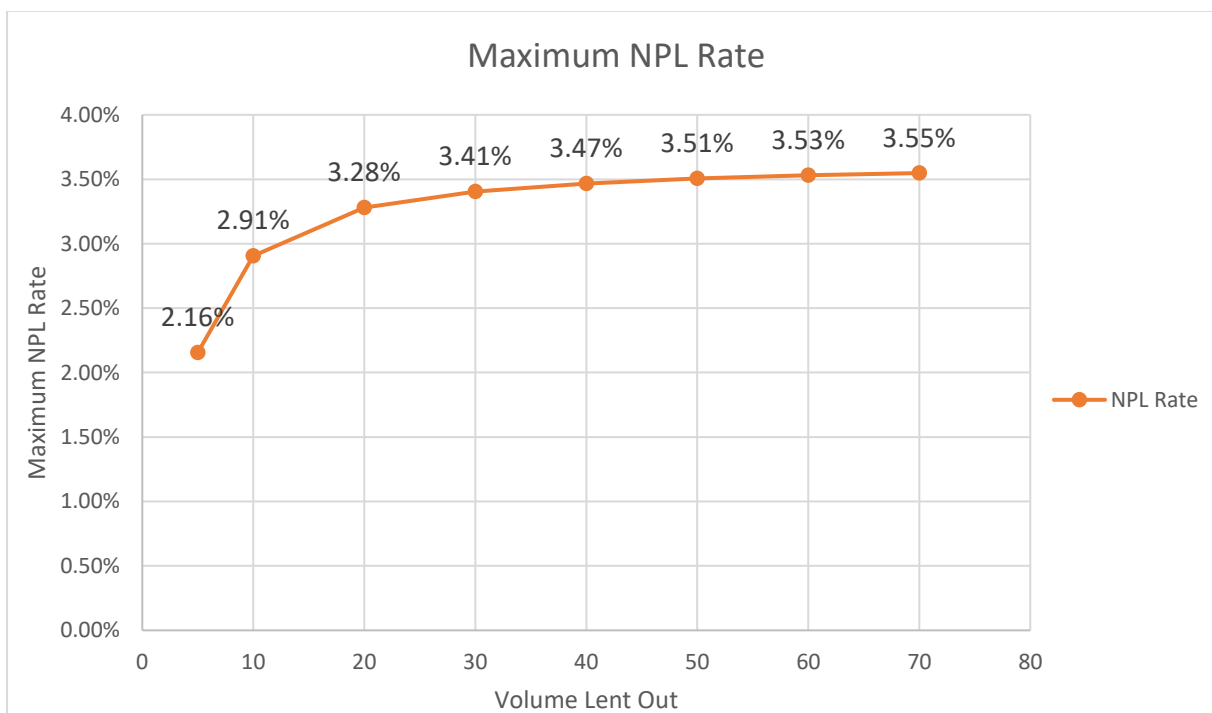


Figure 3 Maximum NPL Rate

The chart shows that the curve becomes flat as the volume (in crores) increases. However, it can be seen that the volume has very little impact on the non-performing loan rate. Any rate higher than 3.5% will lead to a negative result in profitability regardless the amount lent out. The profitability of this project will only occur when the Non-Performing loan stays within the range of 2-3.5% per annum.

## 11.0 FINDINGS: QUALITATIVE ANALYSIS

**Low Rate of Interest:** In nano finance, usually the rate of interest is higher than conventional term loans. In some countries, the interest rate in nano finance is higher than that of microfinance. However, in Bangladesh, City Bank Limited charges only 9% interest on nano loans as per government regulation. This comparatively low rate of interest creates an adverse impact as it is not high enough to tackle the issues created by non-performing loans. So, the risk of people defaulting nano loans will create a significant impact in this project. Charging only 9% as interest on outstanding balance is too less as it's been charged on amortization basis

**High Cost of Fund:** The cost of deposit in City Bank is currently 4.88% which is pretty high considering the money being invested in nano finance. The bank has decided to invest 1 million dollars in this project as prefund to disburse through bKash. This huge sum will cost the bank a very high amount in cost of deposit which will also impact the profitability greatly. The cost gets doubled as City Bank has to pay the depositors interest on the amount as well as let bKash deposit the prefund amount in City Bank. So, the cost of fund becomes higher than it should be.

**Cross-Border Dependency:** The program relies on ANT Group for analyzing the credit score of consumers and placing them in different risk segments. However, it is not as easy as it sounds. ANT Group, being a Chinese entity follows a different set of regulations than that of Bangladesh. So, there is some dependency on Chinese regulations to be followed while analyzing the credit score of consumers. This cross-border dependency might become an issue while disbursing the loans.

**Threat to Credit Cards:** The nano lending program offers instant access to credit without any collateral. At present, credit cards charge 19% interest on overdue amount after 45 days of payment. This rate is much higher than that of Nano lending. This will shift the demand of credit cards significantly towards using nano lending program. So, the nano lending program will become a significant threat to traditional credit card system.

**High Commission paid to bKash:** In this nano lending program, the operating income will be distributed to all parties. The income generated from interest and loan processing fee will be taken as total operating income. After the pilot run, when the project goes into the commercial phase, City Bank Limited will have to pay 35% of total operating income to bKash for their platform and technology. This rate is way higher and one of the principal causes for the nano lending program to fail in adverse situation. Paying high commission to bKash declines the profitability of City Bank Limited from this program.

## 12.0 RECOMMENDATION

This program requires a few recommendations to improve its features which will be able to solve existing issues with the program. The recommendations are as follows-

**Freeze Funds:** City Bank Limited can recommend bKash to freeze the account of the borrower to a certain amount a few days before the payment deadline. This will restrict the user from using all of his/her outstanding balance and default on payment of loan. On the deadline of payment, the fund will be automatically deducted from the user's balance. This will help significantly in dropping the rate of non-performing loan of this program.

**Start Own Lending Initiative:** City Bank Limited has a very strong presence in digital financial services. Using 'CityTouch', a dedicated app for City Bank customers, all banking products can be availed in a very short period of time. City Bank should focus on user acceptance of CityTouch more as this can be used for the bank's own lending initiative. In this case, the bank will generate more traction for the CityTouch app as well as be saved from paying a huge commission to bKash for using their platform.

**Negotiate about Commission:** City Bank Limited offers the nano lending program with collaboration with bKash who will be the platform for this program. However, bKash will charge a commission of 35% of total operating income during the commercial phase. During the pilot run, the organization is charging 49.7% of total operating income as it provides a guarantee against credit risk default. This commission rate is too high for City Bank Limited to sustain its profitability. So, the bank should re-negotiate with bKash about the commission to be paid to ensure sustainability of the business.

**Cater to Low-Risk Segment:** ANT Group analyzes the spending pattern and outstanding balance limit of bKash users and comes up with a credit score for each customer. Based on the credit score, the customer is placed in a risk segment. Low risk segment refers to people with sufficient outstanding balance and frequent transactions. To reduce the chances of credit default, loans should be catered to this segment as these users will have sufficient balance to pay off the interest and principal amount. However, catering to only this segment may not allow the business to reach break-even and ensure sound profitability.

## 13.0 CONCLUSION

Even though the project bears some risks the pilot run shows the project can become a successful venture. If the non-performing loans can be managed somehow to keep it below the desired level, there should not be anything to worry about. The project has introduced Bangladesh to a great era of financial inclusion. The financial projections as well as the qualitative analysis shows positive aspects of the nano lending program. The credit default risk is the only problem the project might face in future. But with proper steps taken to mitigate this risk, the program will remain a successful one.

## APPENDICES

### Appendix A: References

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## Appendix B: Questionnaire

This is an informal questionnaire used for interviewing two people about the nano lending program. The questions are as follows:

01. Name:
02. Designation:
03. Tenure in City Bank:
04. Role in Nano Lending Program:
05. Please provide a brief idea of the nano lending program.  
\_\_\_\_\_
06. When did City bank start the Nano Lending Project? \_\_\_\_\_
07. Who are the service providers in this project?
08. Can you please elaborate the operating process of nano lending in Bangladesh?  
\_\_\_\_\_
09. What are the revenue sources of this program? \_\_\_\_\_
10. What are the major risk factors of nano lending program? \_\_\_\_\_
11. What are the measures taken to mitigate these risks? \_\_\_\_\_