

# National Development Bank of Palau(NDBP)

## Executive Summary

Student Consultant, Vipasha Awasthi  
Community Partner, Claire Harvey

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### I. About the Organization

The mission:

*To initiate and promote sustainable economic development within the Republic of Palau.*

NDBP is a 100% government owned bank. It does not provide commercial daily activities and doesn't keep any money. Its main operations is to provide commercial and housing loans to the people of Palau.

### II. Report automation

- The employees need to make several monthly reports. There was a need to improve the report making process for the employees as it would at times take a day's work or more.
- Worked with Estrada and Karla to understand the report making process and decided to create Excel macros to automate the process.
- Worked with VBA to create different macros for each of the report. The macro would ask the user for the input of month end date and then calculate all the other required fields.
- The macros were installed on the employee laptops. A separate document was created and shared with them to guide them to install the macros in future.
- This solution helps in reducing the day's work into a work of 15-20 mins. Thus, achieving 20% increase in the employee's performance.

### III. Business Continuity Plan

- NDBP faced a ransomware attack on their system. That resulted in loss of their critical online data and inability to issue cheques quickly to customers.
- A Business Continuity Plan(BCP) was laid out to cover all the important details about NDBP's working and to decide actions for future emergency.
- BCP is in final stages of reviewing and would be implemented at the earliest availability of all senior members of NDBP.

### III. Back-up and recovery

- NDBP had recently faced a ransomware attack on their system. That resulted in loss of their critical online data. They had to manually input the data in their system from the hardcopy records. Also, a few employees couldn't recover some part of their data.

- Evaluated the current software to find security risks. Critical observation of usage of outdated OS in the bank.
- All of NDBP's systems were updated to Windows 10 pro.
- Cloud storage decided as the alternative secure backup option for the bank and Microsoft Azure finalized as the ideal service for the bank's needs.
- Lack of Commercial support in Palau by Microsoft led to discarding of the proposal.
- Another proposal to implement Amazon Web Services(AWS) for cloud storage left midway due to lack of time to complete the goal in remaining time.
- Recommendations
  - To pursue this goal further and implement the cloud storage for better security and recovery.
  - May reach put to AWS customer agent, Daniel Bishop at [dbish@amazon.com](mailto:dbish@amazon.com).

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**About the Consultant**

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Vipasha is a graduate student for Masters in Information Systems Management. She will graduate in following fall.

# National Development Bank of Palau(NDBP)

## Final Consulting Report

Student Consultant, Vipasha Awasthi  
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### I. About the Organization

#### Organization

The mission:

*To initiate and promote sustainable economic development within the Republic of Palau.*

The national development bank is a 100% government owned bank. It does not provide commercial daily activities and doesn't keep any money. Its main operations is to provide commercial and housing loans to the people of Palau.

#### Facilities

The bank operates in one building build on a land size of approx. 600sq mt. The building is secured with CCTV cameras capturing the entrance and the parking areas. Also, a security personnel guards the building from 6pm – 6am. Around 20 employees work in the bank. Each employee is provided with a personal laptop by the bank. 3 of the employees have been provided with desktops. There are 3 printers for use in the office, 1 colored and 2 black and white. All the printers are 2 in 1 scanners as well. All managers and the executive assistant have their own personal printers. There is one scanner machine separately provided to the front desk.

#### Programs

The bank provides two types of loan programs, housing and business.

The different types of housing loans provided are as follows:

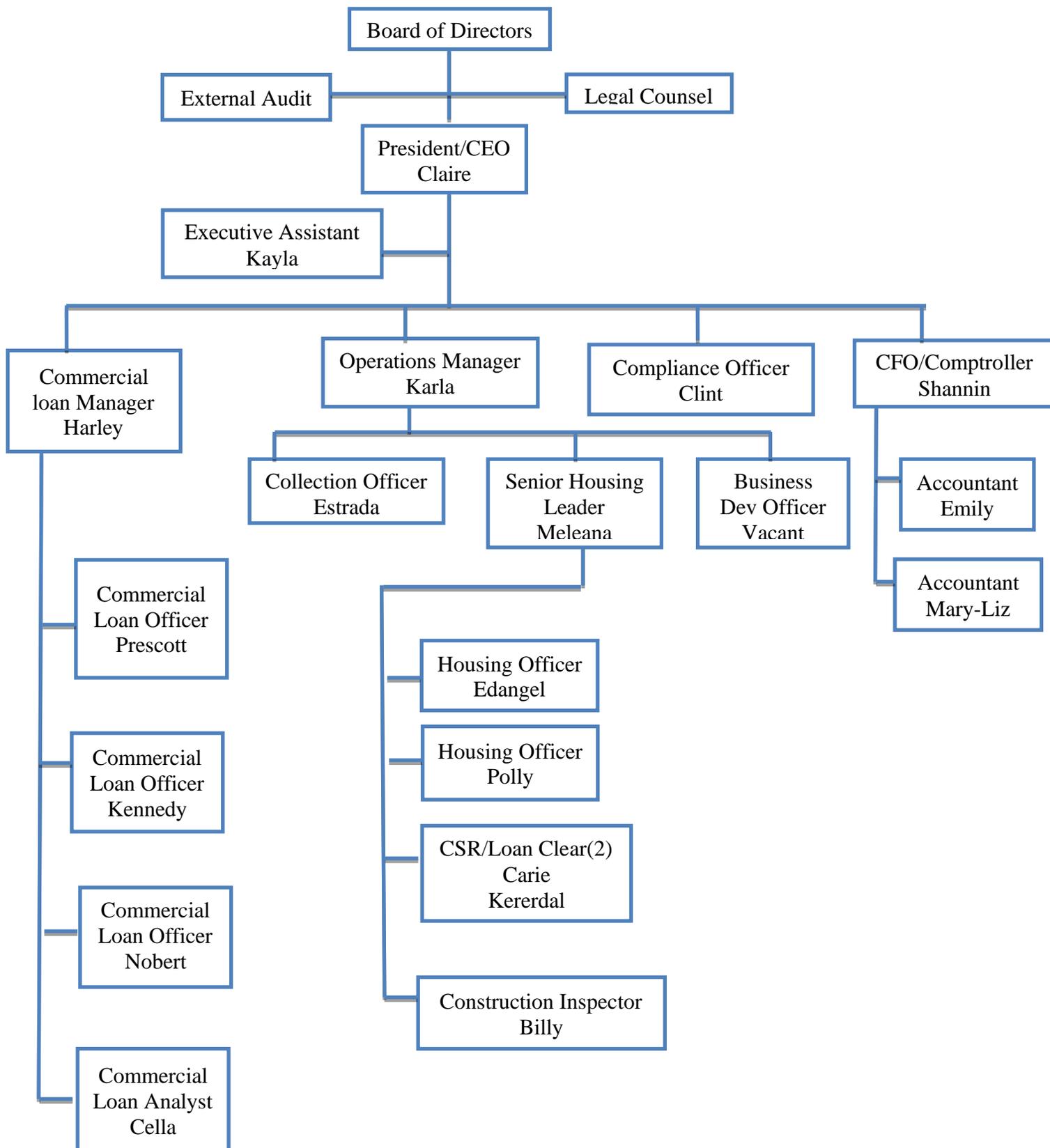
- Housing loans
- First time homeowner
- Micro-finance loan – housing
- Pre-development loan housing

The different types of business loans are as follows:

- Agriculture / Aquaculture loan
- Microfinance
- Pre-development loan
- Fishing loan
- Tourism loan
- Business loan
- Commercial loan

Both the commercial as well as housing loan departments use laptops to store all the client related as well as loan related information on different software.

**Staff**



All employees have access to the software needed to perform the required activities. Applications used by them regularly are mentioned below. Some have been trained in the software, some did not get any training and learned through use only. This is applicable to the software which are used since last 15 years. Whenever a software update is performed, they are trained for it.

### Technology Infrastructure

Operating Systems	3 laptops have windows 10(Emily, Karla and Carie), rest all windows 7
Server	Windows Server 2012
Banking system for loans management	ASI Insite v 8.0.56
For Accounting	Sage ERP MAS90 v 4.50.5.0
For commercial loans(loan analysis)	Optimist version 7
For backup	Acronis
Firewall	Untangle
Antivirus	Kaspersky endpoint security 10

Internet connection (all connections are in the server) one hidden wifi for scanning, one wifi in the CEO office, all other employees connect through LAN,

Are their problems related to this technology infrastructure?

Yes. The OS needs to be updated. Using unsupported versions of windows OS.

Is there new hardware or software that would make their technology infrastructure run better?

Yes. Update to windows 10 is required.

### Technology Management

Technology is managed by an external agency called the Computers Plus. For every small or big technical problem, an IT technician is called to resolve the problem. The consulting firm charges them on an hourly basis rate for every onsite requirement.

All tasks related to the backing up of critical data, installing and updating the software and virus detection is handled by the external IT consultant only.

Currently, the backup of all the information is done in 2 ways. Firstly, a daily backup is done on an external hard disk ( size 6TB ). This disk is then replaced by another hard disk every Friday by the Computers Plus technician and this backed up hard disk to kept in their office. In this way, a remote backup of the data, up to the last week, is always present in the Computers Plus office.

Secondly, a daily backup is done in another hard disk (size 3TB). This is removed from the server room every day while leaving the office and kept in personal possession by the CFO. This secondary backup is done as in the past when the organization was hit with malware, they had lost that week’s data, as the remote backup at the Computers Plus was till the previous week.

### Technology Planning

All the decisions about technology planning is done by the President and the board members. There is no technology planning committee. If there is any need for a new software update or new hardware requirement for any of the employees, the managers, or the external IT consultant brings the concerns to the President's attention and then the decision is made accordingly. No, they have never had any need to have a technology plan in the past. They do not have a long list of problems across any of the areas.z

## **Communication**

Each employee has access to the shared folders created for them. The information internally is passed through the shared folders. The shared folders are backed up in the server. Other information is shared through email. NDBP has its own official email shared with the Gmail.

The bank has its own website, but it hasn't been updated since a long time.

## **Information Management**

Information critical to the bank are the documents related to the loans. This information is managed both electronically and in hardcopy. Different software are used by each department to store and process the client information.

The automatic backup happens every day at the end of the day and all the databases related to software, except for optimist, are backed up through the server.

## **Business Systems**

All accounting related process are managed in SAGE.

# **II. Report automation**

## **Motivation**

Currently, the employees need to make several monthly reports for their board and president's office. These reports are made from data fetched from ASI system. There was a need to improve the report making process for the employees as it would at times take a day's work or more.

## **Outcomes**

For this goal, I started with talking with all the employees who had to make this report. This included Karla, Clint and Estrada. At first, I was in another direction and was thinking to improve the way data is fetched from ASI. But after talking with them and understanding their work, I realized that it would be better to make macros in Excel for the report automation.

I started with working with Estrada, as he was the one who does the initial steps for the report. He gave me the raw data excel file and the final report excel file and explained to me the way all the additional columns were added.

Over the period of two weeks, I worked with VBA to create different macros for the different reports that were needed. However, there are some inherit fault in the data obtained from the ASI system. Some of the loans, the dates related to the loans are not obtained in a recognizable format. In those cases, employee has to look into the account details of the user to obtain the loan related dates. This is something which I could not fix for them.

Hence the final product is a set of macros which run on the data. The macro would ask the user for the input of month end date and then calculate all the other required fields. After that the employee needs to verify for the faulty dates and correct them over.

The macros were installed on the employee laptops. A separate document was created and shared with them to guide them to install the macros in future. The effectiveness of the comprehension of the document was tested by Karla by performing the steps listed in it on her own. Also, the macros were tested on the latest month's raw data, and both Karla and Estrada were able to successfully work with the macros.

This solution helps in reducing the day's work into a work of 15-20 mins. Thus, achieving 20% increase in the employee's performance.

### **III. Business Continuity Plan**

#### **Motivation**

NDBP had recently faced a ransomware attack on their system. That resulted in loss of their critical online data and inability to issue checks quickly to customers. The situation caused panic among the employees and they had to make sudden and quick decisions. Thus, that experience brought the attention for the need of a Business Continuity Plan to be able to be prepared in advance for any such future unforeseen incidents.

#### **Outcomes**

For this goal, I started with initial research for the suitable Business Continuity Plan(BCP) template to cover all the important and required information for the plan. I found the desired template from Financial Industry Regulatory Association(FINRA). The required information for the BCP was collected from Karla and Claire.

The BCP was created with details including emergency contact details, NDBP's Policy, business description, office location, alternative physical location of employees, customer's access to funds and securities, data backup and recovery, financial and operational assessments, mission critical systems, alternative communication between NDBP's employee, customers and regulators and critical business constituents, banks and counter-parties.

These details provide in-depth information about the bank's current working status and its means to operate in case of an emergency. There are few areas where updates need to be made in the BCP by NDBP's management, such as the data back and recovery and a few details about its revision dates. The BCP is in its final stage, however we could not pass the final draft through the president, Ms. Claire, as she was out of office.

The BCP remains with NDBP in form of a digital copy maintained by Claire, Karla and Clint. It has been discussed with Claire and can be easily updated and finalized at their earliest availability.

### **III. Back-up and recovery**

#### **Motivation**

NDBP had recently faced a ransomware attack on their system. That resulted in loss of their critical online data. They had to manually input the data in their system from the hardcopy records. Also, a few employees couldn't recover some part of their data. Since then, they have been taking two backups, one weekly and one on daily basis. Thus, there was a need for a secure and systematic way of backing up the critical bank data.

#### **Outcomes**

For this goal, my first step was to understand the entire detailed description of the events before and during the ransomware attack to understand the how the bank used to function before, what could be the possible cause for the ransomware attack and what changes they brought to the system following the attack.

A critical observation was that the entire bank, except for three laptops, were running on Windows 7 OS. Microsoft is ending all types of support for Windows 7 OS by the end of this year. That was be a high security risk for NDBP if they continued to use the same OS.

Hence, a budget plan was proposed to Claire for upgrading the Windows 7 Pro OS to Windows 10 Pro OS. This was further approved by the board members and implemented immediately. All of the NDBP's systems started to run on Windows 10 pro.

For an alternative for the current backup strategy, I had found cloud backup to be the next best option for NDBP to use for better security and data recovery. Many of the employees and board members of NDBP were apprehensive of storing their critical data on cloud as they were not sure about the security cloud provided. Hence, I found evidence to support that it was indeed safe to use, and many other national level banks were already heavily using cloud on their daily basis. I then prepared a comparative description about the available cloud storage providers and the most suitable in terms of compatibility and pricing. This resulted in Microsoft Azure cloud storage services to be the most suitable for NDBP's current needs. A detailed 5-year pricing model was created to provide estimates of cloud storage in accordance to the current and expected growth of the backup data over the next 5 years.(see appendix)

However, when I started to test the working of Azure, I found out that Microsoft Azure was not commercially supported in Palau. Pursuing Azure was not a feasible option anymore. The next best option was Amazon Web Services (AWS) to implement cloud storage for NDBP. I wanted to make sure that there are no hinderances for this plan, I restarted my work on this goal by making sure I was in touch with a customer care agent to provide proper guidance about implementing the AWS in Palau. AWS is supported in Palau and we could implement it. But since I had a few weeks left for the completion of the internship and this task required more time, I could not initiate the process of cloud backup for NDBP.

## **Recommendations**

This goal can be pursued further and completed with the proper assistance to NDBP. The AWS customer agent, Daniel Bishop, was very helpful to me and could be reached out at [dbish@amazon.com](mailto:dbish@amazon.com). He provided me with a lot of useful information and told that AWS can send a technical team to assist in installing and managing the AWS services.

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## **About the Consultant**

Vipasha Awasthi is a graduate student in Master in Information System Management in Heinz College at Carnegie Mellon University. She will be taking part in the Technology Consulting in the Global Community internship over the summer and return in the fall to finish her graduate course.

# Appendix A.

The screen shot below is from the 5-year pricing plan created for Microsoft Azure's storage services.

The screenshot shows an Excel spreadsheet with the following data:

Current increase rate of the backup data						future estimates at the current increase rate				
	System data (gb)	user data (gb)	total (gb)	increase (gb)		Time	System data (gb)	User data (gb)	backup size (gb)	Azure monthly charge
last month	721.4	445.5	1166.9	41.9	present	744.5	464.3	1208.8		\$105.30
this month	744.5	464.3	1208.8		6 months	883.1	577.1	1460.2		\$121.12
increase rate	3.30%	4.20%			1 year	1021.7	689.9	1711.6		\$146.80
					2 years	2043.4	1379.8	3423.2		\$283.61
					3 years	3065.1	2069.7	5134.8		\$430.41
					4 years	4086.8	2759.6	6846.4		\$567.22
					5 years	5108.5	3449.5	8558		\$714.02

distribution of cost for one year		
Month	Size (gb)	Azure cost
July	1250.7	\$108.04
Aug	1292.6	\$110.66
Sept	1334.5	\$113.27
Oct	1376.4	\$115.89
Nov	1418.3	\$118.50
Dec	1460.2	\$121.12
Jan	1502.1	\$133.73
Feb	1544	\$136.35
March	1585.9	\$138.96
Apr	1627.8	\$141.57
May	1669.7	\$144.19
June	1711.6	\$146.80
<b>Total for a year</b>		<b>\$1,529.08</b>

**Windows 7 Pro update to Windows 10 Pro**

Systems	Cost per system	total cost
16	\$199	\$3,184.00

Note: There would be monthly increase in data size, hence the table above just shows the expected data size at the beginning of each of the year. The monthly cost for the next one year is shown in another table below. That gives us the total cost for the year. Similarly, that can be calculated for each year separately.

3 systems are new and already came with windows 10 pro installed. Karla informed she needs to replace one system with a new one. So even that will have windows 10 pro pre-installed. Hence the required number is 16 instead of 20.