**Future Data Roadmap**

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**Purpose of Future Data Roadmap:** Technology is rapidly evolving. Companies must be able to keep up with the pace of today’s current technological innovation. If an organization stagnates in their development and growth measures, they will be left out in the competitive market and growth cannot occur. Artificial Intelligence, Cloud Computing, and the Internet of Things can solve many of the challenges being faced by data currently. These technological areas, along with others offer solutions to Data Generation Efficiency, Connectivity, Storage issues, Budget Solutions, Workload Reduction, etc.

**Summary of Business Problem and Objective:**

* **The organization name**: **Tangerine Bank**
* **Tangerine Bank** is a subsidiary of Scotia Bank, and it is an online bank.
* Tangerine, launched in Canada in April 1997, and introduced the country’s first no fee, high interest savings account.
* It was the first bank in Canada to offer the direct banking business model, and the **motivation** for Tangerine Bank was to offer more favorable rate compared to competing banks by avoiding the costs associated with running a network of branches.

**Business Problem Organization is trying to solve:**

* Tangerine Bank has a growing customer base. It offers services such as savings accounts, chequing accounts, credit card services, mutual funds, and mortgages. Majority of the customers at the bank are liability customers with deposits of varying sizes.

**Problem Definition:** The **number of customers who are borrowers (asset-based customers) is small**, and the bank is **interested in expanding** **its asset-based customers** to bring in **more loan business, and in the process, earn more revenue for the bank through interest on loans.**

* The retail marketing departmenthas decided to devise campaigns to better target their marketing and **increase the success ratio of loan borrowers and retain them as bank customers.**
* The department wants to build a model that will help identify the potential customers who have a higher probability of purchasing a loan. This will increase success ratio and **reduce the costs of the marketing campaign by only targeting those with more chance of success.**

**Business Objective:** **Service quality** is the top reason customers switch banks. Banks have a lot of customer data, but effective and personalized service is lacking because there is a lack of big data analysis to **learn about customers and their expectations**. Tangerine Bank needs **to employ data analysts** and professionals in the marketing and finance field to **gain insights** from the large amount of data the bank collects. Tangerine Bank plans to **achieve greater customer loyalty** through **personalized offers.** The bank will **utilize the power of big data** to get an understanding of each customer. Through analytics process, Tangerine Bank **will reduce business risk by using predictive analytics and saving costs**.

**Aim for Organization:** In order to meet Tangerine Bank’s changing Data Collection Technology Plans, future patterns must be anticipated and ways to improve technology within the organization should be considered, so that Tangerine Bank stays competitive in the financial market.

**Purpose:** Technology is changing at a rapid pace. If Data Plan cannot change with the times, it will have a limited lifetime in organization. Planning for future trends and identifying where they can improve the pipeline ultimately provides greater value for organization.

## Assignment Objective: Create a future roadmap for data problem. This will include an analysis of the trends identified in the lesson: Artificial Intelligence, Cloud Computing, and the Internet of Things.

**Write a short paragraph (5-7 sentences) describing how each of the trends in the lesson might impact data problem in the future.**

**Including:**

**A. Artificial Intelligence**

**B. Cloud Computing**

**C. Internet of Things**

**Artificial Intelligence, Cloud Computing and Internet of Things** have the ability to transform the banking sector. Artificial Intelligence and Cloud Computing will **allow banks to redefine their workflow, create innovative products and services, and transform customer experiences**. The introduction of Cloud Computing and Artificial Intelligence will allow for banks to change from repetitive and process driven tasks to tasks that are strategy focused and innovative and will drive the financial industry forward with the changing technology. It will provide a good balance of interaction between customers, employees, and AI led services. Artificial Intelligence and Cloud computing will change the idea of process driven banking to one of analytics driven banking. Internet of Things has allowed the monitoring and controlling of processes via the internet rather than through manual tasks**. Internet of Things has made business faster, cheaper, and more systemic**. The benefits of IoT in the banking industry include Enhanced Customer Experience, Personal Banking, Curated Experiences and Rewards, Secure banking through blockchain technology, and ability to analyze data of customers needs and market trends.

1. **Artificial Intelligence**

* Tangerine Bank collects large amounts of customer data on a daily basis. This takes time to collect and process, and oftentimes individuals have to go into the system to correct any data processing issues.
* The Use and deployment of AI in the consumer banking sector is varied with consumer banking, financial products, back-end operations, and across different stages of operations.
* Technologies such as Natural Language processing for phone transcripts, Natural Language Generation, and Machine Learning (Neural Networks and Deep Learning) are used to assist with area od Business and Management Operations, Customer Insights and personalization, Business Strategy insights, Financial Operations, Fraud Detection and Management, Wealth Management and Algorithm Trading.
* AI is used to create AI algorithms which can be used to offer more “personalized engagement” between the Tangerine Bank and its customers and utilize cognitive engagement solutions to predict customer needs and demands and offer tailored solutions for them.
* AI technology can observe content, behavior, and other data sources and build models off of which actionable insights can be offered about people and content, matches products and services to customers, models client behavior patterns, and facilitates the delivery of personalized advice based on digital profiles and transactional history.

1. **Cloud Computing**

* Tangerine Bank can reduce their financial capital costs into a smaller operating cost by using cloud computing. There is no need for heavy hardware and software. The nature of cloud computing allows institutions to pick and choose the services they wish to use on a pay as you go basis.
* Cloud Computing allows for Tangerine Bank to gain a higher level of data protection, fault tolerance, and disaster recovery because the provider of the technology is responsible for managing the security.
* Cloud based financial service offerings will leverage social and mobile media and can transform the banking experience for Tangerine Bank Customers. Private Cloud storage will help change the core banking infrastructure, and help bank keep more control over the location of sensitive customer data. Public cloud and cloud based shared services can change the non-core non differentiated banking activities and allow for more collaboration in workforce.

3.**Internet of Things (IoT)**

* IoT provides customer data that helps Tangerine Bank identify their customers ‘business needs and value chain, e.g., retailers, suppliers, and distributors.
* The customer information accessible via IoT allows Tangerine Bank to provide value-added services, personalized banking services, and products, and financial assistance to ensure that the parties involved, the consumer and the bank are all at a benefit.
* Tangerine Bank can use IoT technology to expand their range of services beyond traditional ones offered to their customers. For example, U.S. banks began using IoT initiatives to help motivate their clients to keep fit. Bonuses and financial rewards are granted when the customers complete achievements.
* Tangerine Bank utilizes smart branches that allows bank managers to reduce both the number of staff and the maintenance costs while also reducing the waiting time for the client. The managers create a connected system of communication between different branches at different locations.
* Tangerine bank can use IoT to keep track of customer financial practices and help improve their financial skills. If a user has set a credit card limit, the app will monitor the customer’s spending all day long. An alert will be elevated as the limit approaches.

**2. For each trend listed above, address the following specific topics:**

**A. Are there any current or historical data challenges the future technology could solve?**

**B. Are there any privacy or legal implications the businesses would need to consider in adopting the future technology?**

1. **Are there any current or historical data challenges the future technology could solve?**

**Artificial Intelligence**

* AI libraries can help find business insights which can help the organization make more informed key decisions.
* AI ca improve traditional analytical methods that company currently use and bring in revenue that they might have missed if AI was not implemented.
* AI could help decrease the inequalities faced in different markets if it is implemented by more companies.
* AI has the potential to contribute to economic growth by increasing the labor market.
* Automation of AI will have a lasting impact on how companies can utilize their workforce. The diagram below illustrates this.

Table

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**Cloud Computing**

* Cloud computing would be able to decrease storage and database maintenance costs as there is no need to have separate storage space for each bank department.
* All data is in one place and accessible allowing for more productivity.
* Digitalization between bank and customer will allow for more transparency and provide the appropriate services to their customer.
* Data centers go through many attacks from the hackers which lead to the loss of crucial information in the bank. Such attacks can be eliminated by authenticating the data centers through cloud computing. Every data stored is safe with hybrid cloud computing technology.

**Internet of Things**

* With IoT becoming more mainstream and easily available for organizations to attain information about clients and their preferences, the company can store all the data collected from IoT directly to their devices.
* Becoming an IoT driven company means that security measures need to be improved. Organizations with customer related IoT data must communicate what data is being gathered from customers and what the company intends to do with that information.
* Company does not have the necessary processes in place to check IoT data for errors and omissions, so the quality of data is not always reliable. A separate project needs to be planned and this may increase operational costs.

B. **Are there any privacy or legal implications the businesses would need to consider in adopting the future technology?**

**Artificial Intelligence**

* Customer Privacy is essential to be maintained by financial institutions within Canada and governed by law (PIPEDA). Privacy must be maintained.
* When models are being applied on a dataset, important customer information should be anonymized.
* Employees who are working on the dataset must undergo training and only authorized personal should be allowed to work on projection, with sharing of information strictly prohibited.
* Legal Contracts signed by those authorized and working with the project and dataset to make sure there are clear on their tasks, responsibilities, and liabilities should anything go wrong.

**Cloud Computing**

* When the bank data is converted onto the cloud from the Core Banking System, there is a greater risk of data leaking.
* Encryption must be applied to promote data integrity and ensure user information is not altered during data transmission.
* A full understanding of how to use and when to use cloud services must be given to employees. A lack of proper training may allow for many employees to not understand the impact of their decisions relating to data privacy.
* Cloud environment is in the control of service provider. There is a threat of data stolen, misused or theft, as consumers have no control over cloud. Greater protective measures must be established on the service providers end through software as well.

**Internet of Things (IoT)**

* The IoT poses the largest security threat as it is connected directly to the main data source.
* Use Secure Sockets Layer Protocol (SSL). Most of the websites use SSL certification for encryption and protection of user data.
* Ensure IoT device storage authentication. Two -factor authentication, and biometric, and make sure that nobody can have unauthorized access to devices.
* Introduce a security model that connects IoT information storage to a network and detects the vulnerable places where data can be hacked, or there may security breaches.

**References**

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**5.WEEK 14 DATA 1203 CLASS NOTES**