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**COMPANY: REVOLEDGE SOLUTIONS**

**FINAL REPORT**

**CLIENT: THE BANK OF NOVA SCOTIA (SCOTIABANK)**



**8 December 2023**

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# Executive Summary

**Project Genesis and Goals:**

RevolEdge, in a strategic partnership with Scotiabank, initiates the Digital Banking Kiosk Project. This initiative aims to transform the traditional banking landscape, integrating cutting-edge digital solutions to enhance customer service efficiency and accessibility.

**Innovative Solution Design:**

The project introduces advanced digital kiosks, equipped with biometric authentication and a comprehensive array of banking functions. These kiosks are designed to provide secure, user-friendly, and versatile banking experiences, catering to both routine and complex financial needs.

**Market Analysis and Strategic Fit:**

An in-depth market analysis underscores the project’s alignment with contemporary banking trends and Scotiabank’s commitment to innovation. The project is strategically positioned to enhance Scotiabank’s competitive edge in the rapidly evolving financial services sector.

**Financial Outlook and Benefits:**

The financial projections for the project indicate a robust return on investment over a five-year horizon, affirming its economic viability. The kiosks are expected to drive operational efficiencies, increase the customer base, and open new revenue streams.

**Risk Management and Deployment Strategy:**

A comprehensive risk management plan is in place, addressing potential challenges with proactive mitigation strategies. The phased deployment strategy ensures seamless integration and scalability, adapting to diverse banking environments.

**Operational and Customer Impact:**

The project is set to revolutionize customer interactions at Scotiabank, offering an enhanced banking experience while optimizing operational workflows. It supports Scotiabank’s vision of delivering top-tier financial services through innovative technology.

# List of Team Members and Responsibilities

**Phase 1 (Week 1-5)**

|  |  |  |
| --- | --- | --- |
| Team Member Name | Role | Responsibilities |
| Amaan Ishtiyaque Shaikh | Project Manager | Supervising the project, ensuring completion of work by team members, resource allocation, and making decisions on project direction. |
| Reeny Susan Roy | Team Lead | Setting the goals for the project, delegating tasks, planning the project timeline, and setting deadlines for tasks. |
| Jainam Saurin Shah | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |
| Bhavya Jain | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |
| Dinesh Kumar | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |

**Phase 2 (Week 6-10)**

|  |  |  |
| --- | --- | --- |
| Team Member Name | Role | Responsibilities |
| Bhavya Jain | Project Manager | Supervising the project, ensuring completion of work by team members, resource allocation, and making decisions on project direction. |
| Jainam Saurin Shah | Team Lead | Setting the goals for the project, delegating tasks, planning the project timeline, and setting deadlines for tasks. |
| Dinesh Kumar | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |
| Amaan Ishtiyaque Shaikh | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |
| Reeny Susan Roy | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |

**Phase 3 -: (Week 11-15)**

|  |  |  |
| --- | --- | --- |
| Team Member Name | Role | Responsibilities |
| Dinesh Kumar | Project Manager | Supervising the project, ensuring completion of work by team members, resource allocation, and making decisions on project direction. |
| Bhavya Jain | Team Lead | Setting the goals for the project, delegating tasks, planning the project timeline, and setting deadlines for tasks. |
| Jainam Saurin Shah | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |
| Amaan Ishtiyaque Shaikh | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |
| Reeny Susan Roy | Business Analyst | Doing research, analyzing data, identifying pain points, developing solutions, and budgeting. |

# Overview of RevolEdge Solutions

RevolEdge Solutions, headquartered in Toronto, Canada, is a prominent player in the global consulting industry. Our operational hub in Toronto is a centre of excellence and a testament to our dedication to innovation. Our team of more than 350 professionals from diverse backgrounds is committed to revolutionizing businesses through strategic planning and technological innovation.

**The Mission of RevolEdge Solutions**

At our core, we strive to enable organizations to navigate the intricacies of the contemporary market effectively. We achieve this goal by providing state-of-the-art strategic insights and integrating the most recent technological advancements into our solutions. Our unwavering dedication lies in fostering sustainable growth and optimizing operational efficiency for our esteemed clients.

**Core Service of RevolEdge Solutions**

* **Strategic planning:** Our expertise lies in developing all-encompassing strategic blueprints that align with our clients' enduring goals, particularly sustainability and expansion.
* **Market analysis:** Our approach to market research is thorough, providing valuable insights into industry trends, competitor strategies, and emerging market opportunities.
* **Technology integration:** We specialize in integrating cutting-edge technology solutions to optimize operations and improve customer engagement, acknowledging technology's crucial role in contemporary business.

**Methodology of RevolEdge Solutions**

* **Customized approach:** Our methodology involves profoundly understanding our client's business, culture, and market position, ensuring our recommendations are highly customized and relevant.
* **Data-driven decision-making:** Our methodology prioritizes data analysis, offering evidence-driven solutions that mitigate risks and optimize potential returns.
* **Agile project management:** We adopt an agile approach to project management, allowing for flexibility and adaptability in rapidly changing business environments.

**Client Relationships**

* **Collaborative Partnership**: Our clients can expect open and honest communication from us as we work together to achieve project success. We value a collaborative approach throughout the entire project lifecycle.
* **Customized Solutions**: We understand that each client has their challenges and opportunities. That's why we offer tailored solutions that effectively address their specific needs.

**Innovation**

Our focus on innovation is unwavering as we constantly seek out new methodologies and technologies, ensuring our position as leaders in the consulting industry. Our strategies are effective in the present and future, allowing us to navigate market changes and technological advancements easily.

**Impact and Success**

Our experience, especially with esteemed clients such as Scotiabank, showcases our proficiency in managing intricate projects and achieving substantial outcomes. Our strategic contributions have resulted in noteworthy enhancements in our clients' operational efficiency, market standing, and overall business expansion.

## RevolEdge Solutions: A Legacy of Innovation and Success

1. **Digital Transformation for Major Retail Chain**

**Project Overview:** Implemented an end-to-end digital transformation for a leading retail chain, integrating advanced eCommerce platforms and in-store digital systems.

**Achievements:** Increased client's online sales by 40%, enhanced in-store customer experience, and streamlined inventory management.

1. **Healthcare Data Analytics Platform**

**Project Overview:** Developed a comprehensive data analytics platform for a national healthcare provider, enabling better patient data management and predictive analytics.

**Achievements:** Improved patient outcomes by 25%, reduced operational costs, and facilitated research in medical trends and treatments.

1. **Smart City Infrastructure Development**

**Project Overview:** Partnered with a European city to develop smart city infrastructure, including IoT-enabled public services, traffic management systems, and energy-efficient solutions.

**Achievements:** Enhanced city-wide energy efficiency by 30%, reduced traffic congestion, and improved public service delivery.

1. **FinTech Solutions for Banking Sector**

**Project Overview:** Delivered cutting-edge FinTech solutions to several banks, including mobile banking apps, blockchain-based security systems, and AI-driven customer service tools.

**Achievements:** Significantly improved customer satisfaction rates, enhanced security measures, and streamlined banking operations.

1. **Advanced Manufacturing Automation**

**Project Overview:** Automated manufacturing processes for an automotive company using AI and robotics, leading to a smart factory model.

**Achievements:** Increased production efficiency by 35%, reduced manufacturing errors, and fostered a safer working environment.

1. **E-Learning Platforms for Educational Institutions**

**Project Overview:** Developed and implemented customized e-learning platforms for various educational institutions, integrating interactive learning and assessment tools.

**Achievements:** Enhanced learning experiences, increased student engagement, and facilitated remote education capabilities.

1. **Environmental Monitoring and Reporting System**

**Project Overview:** Created an environmental monitoring system for a government agency, using sensors and data analytics for real-time reporting and decision-making.

**Achievements:** Enabled more effective environmental policy implementation, improved data accuracy, and raised public awareness of environmental issues.

1. **Supply Chain Optimization for E-commerce**

**Project Overview:** Overhauled the supply chain systems for a global e-commerce company, implementing AI-driven logistics and inventory management solutions.

**Achievements:** Reduced delivery times by 20%, minimized logistical errors and enhanced customer satisfaction.

RevolEdge’s portfolio of successful projects across various sectors showcases our commitment to innovation, excellence, and client satisfaction. Our solutions have consistently driven growth, efficiency, and transformation, cementing our reputation as a leader in the technology solutions sector.

## Our pioneering project with Scotiabank

We presented Scotiabank with an innovative proposal to revolutionize the banking experience by deploying digital banking kiosks. This project aimed to enhance customer satisfaction and increase security effectiveness.

This project's scope included installing, maintaining, and operating digital banking kiosks in underserved remote regions of Canada and selected city locations as part of a pilot program.

These kiosks were designed to offer various services, from simple cash withdrawals to complex loan applications, all accessible 24/7 with advanced security measures like fingerprint and facial recognition for authentication.

Our proposal also included comprehensive transactional services and advanced advisory leveraging AI insights, showcasing our commitment to merging functionality with futuristic design.

At RevolEdge Solutions, our primary objective does not solely focus on technological progress. Instead, we strive to fundamentally change how banking and other services are perceived and encountered. Our unwavering dedication to constant enhancement, active involvement in the community, and user-centred approach to design guarantees that our solutions go beyond mere transactional tools. They become reliable companions in our client's development and triumph.

At RevolEdge Solutions, we are consultants and partners in our clients' growth. We are dedicated to continuous innovation and striving to exceed expectations in all that we do. We aim to catalyze transformative change, helping businesses thrive in an ever-evolving world.

## Organizational Structure

1. **Executive Leadership**

* **CEO (Chief Executive Officer):** Leading the company and making major corporate decisions.
* **CFO (Chief Financial Officer):** Managing the company's finances, including financial planning, management of financial risks, and financial reporting.
* **CIO (Chief Information Officer):** Directing the company's technological vision and strategies.
* **COO (Chief Operating Officer):** Overseeing the company's operational procedures and efficiencies.
* **CMO (Chief Marketing Officer):** Leading the marketing efforts, branding, and customer engagement strategies.

1. **PMO (Project Management Office)**

* **Project Manager:** Leading various projects, responsible for planning, execution, and delivery.
* **Business Analysts:** Conducting market analysis, requirement gathering, and ROI assessments.

1. **Technical Department:**

* **Head of Technology:** Overseeing the development and implementation of technology strategies.
* **Software Development Teams:** Designing, developing, and maintaining software solutions.
* **IT Security Team:** Ensuring the security of IT systems and data.
* **Infrastructure and Network Management:** Overseeing and maintaining the physical and digital infrastructure necessary for the company's operations.

1. **R&D (Research and Development) Department:**

* **R&D Director:** Leading innovative technology and product development.
* **Innovation Teams:** Exploring new technologies and methodologies for business advancement.
* **Prototype Development Teams:** Specialized in designing and creating prototypes for new products or services.

1. **Operations and Logistics Department**

* **Supply Chain Management:** Manages the flow of goods and services, including procurement and logistics, to ensure efficient operations.
* **Kiosk Deployment and Installation Teams:** Specializes in setting up and installing digital kiosks at designated locations, ensuring functionality and operational readiness.
* **Operational Support Teams:** Provides essential support for daily operations, ensuring smooth and efficient business processes across departments.

1. **Marketing and Sales Department**

* **Sales Teams:** Focus on driving sales and expanding market reach, both in regional and international markets.
* **Marketing and Branding Teams:** Develop and implement marketing strategies and campaigns and manage brand image.
* **Customer Relations and Engagement Teams:** Handle customer interactions, ensuring satisfaction and fostering long-term engagement.

1. **Finance and Accounting Department**

* **Financial Analysts and Planners:** Responsible for financial forecasting, budgeting, and strategic financial planning to guide the company's financial decisions.
* **Accounting and Reporting Teams:** Handle the company's accounting processes, financial record-keeping, and preparation of financial reports for internal and external use.

1. **HR (Human Resources) Department**

* **Recruitment and Talent Acquisition:** Manages the hiring process, focusing on attracting and recruiting top talent to meet the company's workforce needs.
* **Training and Development:** Develops and implements training programs to enhance employee skills and professional growth.
* **Employee Welfare and Engagement:** Ensures employee well-being and fosters a positive and engaging work environment.

1. **Customer Support Department**

* **Customer Service Representatives:** Handle inquiries and issues from customers, providing assistance and ensuring a high level of customer satisfaction.
* **Technical Support Teams:** Offer specialized technical assistance for products and services, resolving technical issues and supporting customers with complex queries.

1. **Legal and Compliance Department**

* **Legal Advisors:** Provide legal counsel and guidance on various matters, ensuring the company's operations comply with legal requirements.
* **Compliance Officers:** Monitor and enforce adherence to laws, regulations, and internal policies, mitigating legal and regulatory risks.

# Scotiabank as the Ideal Client

Scotiabank stands out as a prime client for RevolEdge Solutions, chiefly due to its robust footprint in the dynamic market in North America. As a leading financial institution with a deep-rooted presence in diverse international markets, Scotiabank has consistently demonstrated a forward-thinking approach, especially in embracing technological advancements to enhance customer experience and operational efficiency. This aligns perfectly with RevolEdge Solutions’ expertise in delivering cutting-edge digital banking solutions. Our proficiency in creating bespoke digital transformations, combined with Scotiabank’s expansive network and willingness to innovate, presents a unique opportunity. This collaboration can pave the way for a revolutionary transformation in banking services, significantly improving customer satisfaction and accessibility and providing profitability for Scotiabank.

Scotiabank now cutting on branches in the Atlantic provinces, our digital kiosk solution will be the optimal solution for Scotiabank’s footprint in these aloof provinces. Our custom solutions are designed to navigate the unique challenges and leverage these opportunities, making us an ideal partner for Scotiabank. We envision a partnership where RevolEdge Solution’s innovative prowess in digital banking solutions will complement Scotiabank’s expansive reach and deep market understanding, setting new benchmarks in the banking industry and fostering sustainable growth.

Given the recent developments at Scotiabank, including branch closures and a strategic shift towards digital banking, Scotiabank emerges as the ideal client for RevolEdge's Digital Banking Kiosk project. The project's innovative approach and technological solutions are perfectly aligned with Scotiabank's evolving business model and customer service needs.

1. **Addressing Branch Closures and Community Impact:**

Scotiabank's recent closures in Nackawic, Nova Scotia, Bonavista, and other locations reflect a strategic move towards digital solutions in banking. These closures, while strategically sound, have significant impacts on local communities and customers who rely on physical branches. RevolEdge's digital banking kiosks can fill this gap effectively, offering a versatile range of banking services in these affected areas. This not only maintains banking access for local customers but also aligns with the increasing preference for digital banking solutions among consumers.

1. **Adapting to Evolving Banking Trends:**

The banking industry is witnessing a paradigm shift with a growing inclination towards digital platforms. Scotiabank's decision to close physical branches is a strategic response to this trend. By partnering with RevolEdge to deploy digital kiosks, Scotiabank can continue to offer its customers convenient, secure, and comprehensive banking services, mitigating the impact of branch closures and reinforcing its commitment to digital innovation.

1. **Enhancing Customer Experience and Accessibility:**

The digital kiosks designed by RevolEdge are equipped with advanced features like biometric authentication, multi-transaction capabilities, and user-friendly interfaces. This ensures that customers in remote and urban areas alike have 24/7 access to banking services, thereby enhancing customer experience and accessibility, key aspects of Scotiabank’s customer service ethos.

1. **Strategic Response to Workforce Changes:**

Scotiabank's recent workforce reduction as part of its strategic restructuring aligns with the deployment of digital kiosks, which can help optimize operational efficiency and reduce long-term operational costs. The kiosks serve as a strategic tool, complementing the existing workforce while ensuring uninterrupted service delivery.

The integration of RevolEdge’s Digital Banking Kiosks into Scotiabank’s service model is a strategic move that addresses current challenges and aligns with emerging banking trends. It offers a solution that mitigates the impact of branch closures, adapts to customer behaviour changes, and enhances overall banking accessibility and efficiency. This partnership not only showcases Scotiabank's commitment to innovation but also positions it as a leader in digital banking transformation.

# Competitive Analysis Findings

## SWOT Analysis of Scotiabank, TD, CIBC & BMO

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | SCOTIABANK | TD | CIBC | BMO |
| STRENGTHS | **Leading Bank in the Americas:** Over 90% of Scotiabank's earnings come from six diversified markets - Canada, the United States, and the Pacific Alliance (Mexico, Peru, Chile, and Colombia).  **Strong Financial Performance:** Despite economic challenges, the bank achieved an 8% return on equity and 15.6% on an adjusted basis. The bank's Canadian Banking business grew earnings by 15%.  **Digital Advancements:** The bank has invested significantly in its digital offerings, with 50% of retail banking sales now digital. They've launched new tools and services like their mobile banking app and Advice+.  **Diverse Business Segments:** The bank offers various services, including personal banking, commercial banking, wealth management, corporate banking, investment banking, and capital markets.  **Community Engagement:** Over the past decade, the bank has contributed more than $800 million in community investment, focusing on young people, economic inclusion, and financial literacy.  (Scotiabank, 2022) | **Strong Financial Performance:** Marking significant growth, TD reported earnings of $17.4 billion ($15.4 billion on an adjusted basis) in 2022.  **Broad Client Base:** Having 27 million customers worldwide as of 2022, TD is one of North America's largest banks.  **Digital Advancements:** Significant numbers of digital customers demonstrate TD's capabilities and reach.  **Strategic Acquisitions:** Through the transactions, TD targets adding scale, capabilities, and over a million new customers to its roster.  (TD, 2022) | **Strong Brand Identity:** A financially strong and diverse bank in Canada and the United States, CIBC emphasizes delivering value to its investors.  **Broad Client Base:** Personal banking, business, public sector, and institutional clients in Canada, the United States, and around the world are served by the bank, totalling 13 million.  **Financial Performance:** A net income of $6.2B was reported by CIBC, along with an adjusted net income of $6.6B. At the same time, the bank has a return on equity of 14.7%, which is impressive.  **Diverse Business Segments:** From Personal Banking to Business Banking, Commercial Banking, Wealth Management and Capital Markets, CIBC covers all ground.  **Digital Advancements**: Ranked #1 in the JD Power Online Banking Satisfaction Study, CIBC has received recognition for its online banking experience.  (CIBC, 2022) | **Historical Significance:** BMO has a proud 205-year history, showcasing its stability and long-standing presence in the financial sector.  **Strong Financial Position:** BMO is the eighth largest bank in North America by assets, with total assets of $1.14 trillion.  **Diverse Offerings:** BMO provides a broad range of services, including personal and commercial banking, wealth management, global markets, as well as investment banking.  **Broad Client Base:** The bank serves twelve million customers across Canada, the US, and select global markets.  **Digital Recognition:** BMO has been recognized for its digital capabilities, including being named the overall leader in The Forrester Digital Experience Review™ for Canadian Mobile Banking Apps in Q4 2022.  (BMO, 2022) |
| WEAKNESSES | **Economic Challenges:** The bank encountered difficulties due to persistent financial volatility, geopolitical conflicts, and the lasting impact of the global pandemic.  **Dependence on Key Markets:** Despite having a diversified presence, Scotiabank relies heavily on six critical markets for a significant portion of its earnings. This conce­ntration makes the bank vulnerable­ to economic fluctuations in these re­gions. (Scotiabank, 2022) | **Economic Challenges:** TD, like other banks, faced challenges from the global pandemic, geopolitical conflicts, and rapidly changing economic conditions.  **Dependence on Key Markets:** While TD has a diversified presence, its primary operations are centred in North America, making it susceptible to economic fluctuations. (TD, 2022) | **Decrease in Earnings Per Share:** CIBC reported a reduction in its earnings per share from the previous year, with a reported EPS of $6.68 in 2022, down 4% from 2021.  **Negative Operating Leverage:** The bank reported a negative operating leverage of 1.9% in 2022, indicating a decrease in efficiency.  (CIBC, 2022) | **Challenges in implementing standards**: There are possible difficulties with implementing International Financial Reporting Standards (IFRS) in various international business activities.  **Enterprise Risks:** Considerable attention is required for enterprise-wide risk management strategies.  (BMO, 2022) |
| OPPORTUNITIES | **Sustainable Finance:** Scotiabank has established a prominent position in sustainable finance, providing valuable support to clients as they navigate toward a more sustainable future. The bank's commitment and dedication have been duly acknowledged; with prestigious accolades such as being named North America's Best Bank for Sustainable Finance.  **Digital Transformation:** Investing in digital tools and platforms can significantly improve the customer experience and foster business growth.  **Community Initiatives:** The bank has launched the ScotiaRISE program, a $500 million commitment to promoting economic resilience. This initiative presents various opportunities for community engagement and making positive impacts.  (Scotiabank, 2022) | **Digital Transformation**: TD's emphasis on digital advancements and its large base of active digital customers suggests promising growth opportunities in digital banking.  **Sustainable Finance:** TD is dedicated to fostering a sustainable and inclusive future. Their Global Climate Action Plan and other ESG initiatives demonstrate this commitment, offering growth opportunities and community engagement.  (TD, 2022) | **ESG Commitment:** CIBC has dedicated efforts towards their ESG commitments, actively focusing on building integrity, trust, access to opportunities and accelerating climate action. Their initiatives include Carbon Place, a platform for voluntary carbon credits, and partnerships to lessen the digital skills gap.  **Investments in Climate Technology:** CIBC plans to invest $100 million in limited partnership investments for climate technology and energy transition funds.  **Client-Centric Approach:** With a focal point on high-growth, high-touch customer segments, building future differentiators and digital investments, CIBC's approach is all about enhancing the client experience.  (CIBC, 2022) | **Advancement Prospects:** There are prospective economic advancements and projections for 2023.  **Building Relationships:** There is potential for collaboration with other financial institutions or industries.  **Combating Uncertainties:** There is an emphasis on proactive measures to address uncertainties and potential occurrences.  (BMO, 2022) |
| THREATS | **Competitive Landscape:** The banking industry is characterized by intense competition, as numerous significant players strive to gain a larger market share.  **Economic Uncertainty:**  The bank recognizes the obstacles presented by economic uncertainty, geopolitical tensions, and the continued impact of the pandemic.  **Regulatory Changes:** The regulatory changes can significantly impact the bank's operations and profitability. As banks are subject to strict regulations, any modifications to these regulations can create challenges for them.  (Scotiabank, 2022) | **Competitive Landscape:** The banking sector is highly competitive, with several major players vying for market share.  **Economic Uncertainties:** TD acknowledges challenges posed by economic uncertainty, geopolitical tensions, and the ongoing effects of the pandemic.  (TD, 2022) | **Economic Uncertainty:** The 2022 annual report mentions an uncertain economic environment with rising interest rates to address inflation & forecasted slowdown in economic growth.  **Competitive Landscape:** The banking sector in North America is highly competitive, with several major players vying for market share. CIBC needs to innovate and adapt to stay ahead continuously.  (CIBC, 2022) | **Threats to Innovation:** There are inherent risks and uncertainties associated with forward-looking statements.  **Regulatory challenges:**  There are challenges in adhering to and navigating through the ever-changing regulatory environment.  **Financial market risks:**  There are risks linked to global financial markets and prevailing economic conditions.  (BMO, 2022) |

## PESTEL Analysis of Scotiabank and the Banking Sector in Canada

|  |  |  |
| --- | --- | --- |
| Element | Factor | Business Impact |
| Political | * Geopolitical tension occurs in the form of sanctions due to the Russian conflict. * Government policies * Tax policies | * The geopolitical tension affects the rise in business and strategic risks. It may result in an increasing cost of capital deployment or more inefficient allocation. * Government policies are efficient in the bank's working structure and sustaining development. * Changes in tax policies always have a significant role in the operational decisions and maintaining the bank's profitability. |
| Economic | * Stock Exchange * Currency Exchange Rates      * Inflation rate | * The Stock market has a great influence on investments and earnings, as well as capitalization. * Scotiabank functions internationally, so the exchange rate changes affect the transactions. * A mild inflation rate helps the stability of the company. |
| Social | * Education * Age Factor | * A higher percentage of an educated customer population helps the bank work smoothly. * The great number of youth is favourable to the bank's progress. |
| Technological | * Social media * Data security * AI Implementation | * In this age, social media is critical for marketing and promotional activities for the bank. * The bank should have a firewall to prevent cyber-attacks and protect the bank's crucial data. * Implementing AI in the banking system will help increase customer satisfaction and efficient functioning. |
| Environmental | * Regulations & Standards * Climate changes * Waste management regulations | * The bank must comply with environmental rules and regulations for its operations. * Climate change risks may affect banking operations, so the bank should have a backup to manage those risks. * The bank must follow government waste management regulations to avoid penalties. |
| Legal | * Health & Safety * Employment Laws * Anti-Discrimination law | * Scotiabank prioritizes following regulations governing the health & safety of employees. * The bank should follow the Employment law contracts authorized by the government bodies. * The country has a diverse population with many immigrants, so the bank must ensure no discrimination in the company. |

(*PESTEL Analysis of Scotiabank*, n.d.)

## Balanced Scorecard for Scotiabank, TD, CIBC & BMO

### Scotiabank's Balanced Scorecard

#### Financial Aspect

* The return on equity is calculated to be 14.8% (Scotiabank, 2022).
* There is an 8.0% increase in diluted earnings per share (Scotiabank, 2022).
* The revenue growth is 1.27%, higher than the previous year, 2021 (Scotiabank, 2021).

**Calculations**

Comparing the data of 2022 and 2021:

Adjusted Revenue of the year 2022= $31.8 Billion (Scotiabank, 2022)

Adjusted Revenue of the year 2021 = $31.2 Billion (Scotiabank, 2021)

The Profitability (Net Profit Margin) is calculated to be 33.65%.

#### Customer Aspect

* The client satisfaction and loyalty are high.
* The NPS (Net Promoter Score) is 23.
* 52% are promoters, 19% are passives, and 29% are detractors (Comparably, n.d.)
* New customer acquisition.
* The calculated partnerships and market share were at an 11% average in 2022.

#### Operational Aspect

* The productivity ratio for 2022 is 54.4%, which is slightly higher than the productivity ratio for 2021, which was 53.2%.
* Scotiabank strictly follows company compliance and management processes.
* The capital ratios for Scotiabank are high.
* Scotiabank has excellent social responsibility.
* The bank has good engagement with the community.

(Scotiabank, 2022)

### BMO's Balanced Scorecard

#### Financial Aspect

* The return on equity is at an average of 22.9%.
* The value of diluted earnings per share growth is 19.99.
* Revenue growth is 31.52% higher in 2021 than in the prior year.
* The reported and adjusted dividend payout ratios in 2022 were 48.8% and 46.3%, respectively, compared to 41.8% and 40.3% in 2021. (BMO, 2022)

#### Customer Aspect

* BMO has failed in the Customer Satisfaction asset because they have a severely low average Net Promoter Score of -57 NPS.
* 14% are promoters, 15% are passive, and 71% are against it.
* Gaining client trust and offering satisfactory service
* According to 2022 research, the market share is 9.4% of the average total. (Comparably, n.d.)

#### Operational Aspect

* The reported gross efficiency ratio for BMO was 48.0%, down from 57.0% in 2021.
* The reported operational leverage was 19.6% in favour of the bank. Adjusted operating leverage was 1.3%, and the reported operating leverage was 29.0% on a net revenue basis.

(BMO, 2022)

### CIBC's Balanced Scorecard

#### Financial Aspect

* The return on equity is calculated to be 14.0%.
* Revenue growth increased by 24.0% in 2022 compared to the prior year, when it only increased by 7.9%.
* The Net Profit Margin (profitability) is evaluated at 27.96% (CIBC, 2022).

#### Customer Aspect

* CIBC's Net Promoter Score, which is 10 NPS, is respectable.
* 46% are promoters, 18% are passive, and 36% are against.
* The dividend was $3.27 by the end of 2022(Comparably, n.d.).
* CIBC greatly believes in fostering and strengthening client relationships.
* CIBC aims to enhance productivity using data and technology(CIBC, 2022).

#### Operational Aspect

• CIBC's reported gross efficiency ratio is 58.6%, slightly higher than 57.6% in 2021.

• The reported operating leverage was a positive 1.9%, dropping 720bp (basis points) from 2021 (CIBC, 2022).

## 

### TD Bank's Balance Scorecard

#### Financial Aspect

* The reported growth rate for diluted earnings per share is 11.5%.
* The yearly Revenue for Toronto Dominion Bank in 2022 was $48.714B, a 27.23% increase over 2021 (TD Bank, 2022).

• In 2022, the net interest margin grew by 13 basis points to 1.69% from 1.56%, principally due to better deposit margins in rising rate environments (Macrotrends, n.d.)

#### Customer Aspect

* The Net Promoter Score (NPS) of TD Bank Group is -13, with 37% Promoters, 13% Passives, and 50% Detractors.
* The bank maintained a substantial market share and gained momentum across the businesses.
* TD Bank retains its market share in Personal Non-Term deposits with industry-leading market share gains (Comparably, n.d.).

TD Bank holds its primary market share in Interac Mobile Wallet(TD Bank, 2022).

#### Operational Aspect

* TD's reported efficiency ratio is 50.3%, compared with 54.1% in 2021.
* The Reported operating leverage was positive, with an increase of 4bps, which made it 380 (TD Bank, 2022).

# List of Project Ideas

After a comprehensive competitor analysis, RevolEdge Solutions developed several ideas to give Scotiabank an edge.

**Idea 1:** **Converting Traditional Branches to Digitalized Ones with Kiosks**

**Current Scenario:**

Scotiabank is transitioning to digital channels, which is causing old branches to close. The proposed strategy entails turning branches into digitalized areas equipped with modern kiosks, in line with changing client expectations.

**Plan:**

The digitalized branches will include modern kiosks capable of a variety of financial transactions, as well as extended hours and tailored experiences. These kiosks will include biometric authentication for safe transactions as well as the collection of vital customer data for targeted marketing.

**Benefits:**

1. **Cost Savings:**

* Reduction in staffing costs through automated tasks.
* Operational efficiency gains with fewer errors.
* Smaller, digitalized branches reduce overhead costs.

1. **Revenue Enhancement:**

* Kiosks with extended hours attract more transactions.
* Personalized product recommendations for cross-selling.
* Valuable data for improved product offerings and marketing.

**Idea 2: Increase Market Share in Pacific Alliance Countries**

**Current Scenario:**

Scotiabank has a significant market share in the Pacific Alliance countries of Chile, Colombia, Mexico, and Peru. The region has enormous economic potential, particularly in infrastructure development and investment banking.

**Plan:**

Scotiabank intends to strengthen its Pacific Alliance position by using its local and global expertise. Investment banking, infrastructure development, and assistance to middle-market businesses seeking growth capital are among the areas of emphasis.

**Benefits:**

1. **Infrastructure Opportunities:**

* Significant prospects for infrastructure development.
* Scotiabank's role in bond underwriting and advisory services.

1. **Middle-Market Focus:**

* Targeting middle-market businesses for specialized financial services.
* Offering treasury management, foreign exchange, and working capital loans.

**Idea 3: Next-Gen Secure Web Banking Access Authentication System (NGWAAS)**

**Description:**

Introducing the Next-Gen Secure Web Banking Access Authentication System (NGWAAS) as an alternative login method for web banking, alongside the existing credentials-based system. NGWAAS leverages biometric technology, incorporating thumbprint and facial recognition for swift and secure access to web banking.

**Features:**

1. **Biometric Authentication:**

* Customers can enable NGWAAS by providing their thumbprint and facial recognition data.
* Eliminates the need for remembering usernames, passwords, OTPs, or mobile device authentications.

1. **Accessibility:**

* Allows customers to log in from any computer worldwide with a fingerprint scanner and camera.
* Enables access in situations where a mobile device is unavailable.

1. **Family Access:**

* Permits customers to authorize family members for account access using their biometric and facial data.
* Particularly useful in emergencies when the customer is unavailable.

1. **Security Protocols:**

* Notifications via text or email for added security.
* Session flagging for investigation in case of issues, although unlikely with biometric authentication.

**Benefits**:

1. **Ease of Access:**

* Simplifies login process, reducing customer frustration and service inquiries.
* Eliminates the need to store banking information on external accounts.

1. **Higher Customer Satisfaction and Retention:**

* Enhances overall satisfaction with convenient biometric login.
* Increases loyalty to the bank, as satisfied customers are likely to stay.

1. **Attraction of New Customers:**

* Differentiates Scotiabank as an innovative and secure banking option.
* Attracts tech-savvy customers seeking modern solutions.

1. **Technical Edge Over Competitors:**

* Positions Scotiabank as a tech-savvy institution, attracting a broader demographic.
* Facilitates potential collaborations with fintech companies.

**Idea 4: AI-Driven Chatbots**

**Description:**

Implementing AI-driven chatbots enables Scotiabank to provide efficient and instant customer support, enhancing the overall customer experience.

**Benefits:**

1. **Enhanced Customer Support:**

* AI-driven chatbots offer instant and accurate responses.
* Improved efficiency in addressing customer queries and concerns.

1. **24/7 Availability:**

* Continuous support and engagement, contributing to customer satisfaction.

1. **Cost Efficiency:**

* Reduced dependence on human resources for routine queries.

**Idea 5: Personalized Financial Planning**

**Description:**

Providing individualized financial planning services allows consumers to obtain specialized advice, build a deeper relationship with the bank and assist customers in meeting their financial objectives.

**Benefits:**

1. **Personalized Financial Advice:**

* Customized financial planning based on individual customer needs.
* Strengthened customer trust and loyalty.

1. **Customer Relationship Building:**

* Improved engagement through personalized financial guidance.

**Financial Goal Achievement:**

* Assistance in setting and achieving financial goals.

**Idea 6: Optimized Onboarding**

**Description:**

Automating the onboarding process guarantees customers' accounts are set up faster and more smoothly, eliminating friction and improving the entire onboarding experience.

**Benefits:**

1. **Faster Account Setup:**

* Reduced time and effort required for new customers to open accounts.
* Enhanced customer satisfaction during the onboarding journey.

1. **Friction Reduction:**

* Minimized paperwork and simplified processes.

1. **Positive First Impression:**

* Improved overall customer experience from the start.

**Idea 7: Enhanced Mobile Banking**

**Description:**

Improving mobile banking capabilities helps to a more user-friendly experience by giving clients quick and accessible ways to manage their funds while on a journey.

**Benefits:**

1. **User-Friendly Experience:**

* Intuitive and easy-to-use mobile banking interfaces.
* Increased customer engagement with mobile services.

1. **Convenience:**

* Access to banking services anytime, anywhere.

1. **Competitive Edge:**

* Meeting customer expectations for advanced mobile banking.

**Idea 8: Data Analytics for Marketing**

**Description:**

Implementing data analytics allows Scotiabank to give personalized discounts and services based on client behaviour and preferences, allowing for focused marketing efforts.

**Benefits:**

1. **Targeted Marketing:**

* Accuracy in promotion delivery depending on consumer preferences.
* Increased effectiveness of marketing efforts.

1. **Customer Insights:**

* Understanding customer behaviour for better product/service development.

1. **Personalized Services:**

* Customizing offerings to individual customer needs and preferences.

**Idea 9: Explore Partnerships for Cross-Border Financial Services**

**Description:**

Exploring partnerships for cross-border financial services involves collaborating with other financial institutions or service providers to offer seamless and integrated financial services across borders.

**Benefits:**

1. **Global Reach:**

* Access to a broader customer base beyond domestic boundaries.
* Increased market presence and brand visibility.

1. **Diversification:**

* Offering a variety of financial services to cater to diverse customer needs.
* Potential revenue growth through cross-border transactions.

1. **Efficiency and Innovation:**

* Leveraging the expertise and innovations of partner organizations.
* Streamlining cross-border transactions for enhanced customer satisfaction.

**Idea 10: Introduce Blockchain Technology for Secure and Transparent Transactions**

**Description:**

Introducing blockchain technology entails implementing a decentralized and secure ledger system to ensure transparent and tamper-resistant financial transactions.

**Benefits:**

1. **Security Enhancement:**

* Improved protection against fraud and unauthorized access.
* Enhanced trust and confidence among customers.

1. **Transparency:**

* Transactions recorded on a public ledger for increased transparency.
* Reduced chances of errors and discrepancies.

1. **Streamlined Processes:**

* Efficient and automated smart contracts for faster transaction processing.
* Cost savings through the elimination of intermediaries.

**Idea 11: Enhance Cybersecurity Measures to Protect Customer Data**

**Description:**

Enhancing cybersecurity measures involves implementing advanced technologies and protocols to safeguard customer data from potential cyber threats and breaches.

**Benefits:**

1. **Customer Trust and Loyalty:**

* Assurance of robust security measures fosters trust.
* Increased customer loyalty and retention.

1. **Data Integrity:**

* Protection against data breaches, ensuring the integrity of customer information.
* Compliance with data protection regulations.

1. **Operational Continuity:**

* Minimized disruptions due to cyberattacks, ensuring uninterrupted services.
* Reputation management through proactive cybersecurity practices.

**Idea 12: Develop a Digital Wallet for Seamless Transactions**

**Description:**

Creating a digital wallet involves developing a secure and user-friendly platform for customers to conduct transactions seamlessly using their mobile devices.

**Benefits:**

1. **Convenience:**

* Easy and quick transactions without the need for physical cards or cash.
* Integration with various payment methods for flexibility.

1. **Security:**

* Secure transactions through encryption and authentication measures.
* Enhanced protection against fraud and unauthorized access.

1. **Customer Engagement:**

* Increased customer engagement through a modern and tech-savvy banking feature.
* Potential for loyalty programs and personalized offers.

**Idea 13: Implement a Customer Feedback Loop for Continuous Improvement**

**Description:**

Implementing a customer feedback loop involves establishing a systematic process to gather, analyze, and act upon customer feedback to enhance products and services continually.

**Benefits:**

1. **Customer-Centric Approach:**

* Aligning products and services with customer preferences and expectations.
* Building a customer-centric organizational culture.

1. **Quality Improvement:**

* Identifying areas for improvement based on real-time customer feedback.
* Enhancing overall service quality and customer satisfaction.

1. **Brand Reputation:**

* Demonstrating responsiveness to customer concerns improves brand reputation.
* Positive word-of-mouth marketing through satisfied customers.

**Idea 14: Streamline Internal Communication with Collaboration Tools**

**Description:**

Streamlining internal communication involves adopting collaboration tools to improve communication and information sharing within the organization.

**Benefits:**

1. **Efficiency:**

* Faster and more efficient communication among team members.
* Reduced delays in decision-making processes.

1. **Knowledge Sharing:**

* Facilitating the sharing of ideas, information, and expertise.
* Enhancing overall organizational knowledge and learning.

1. **Remote Collaboration:**

* Enabling seamless collaboration for remote or geographically dispersed teams.
* Improved teamwork and project coordination.

**Idea 15: Optimize ATM Placement Based on Customer Traffic Data**

**Description:**

Optimizing ATM placement involves analyzing customer traffic data to strategically position ATMs for maximum accessibility and usage.

**Benefits:**

1. **Customer Convenience:**

* Placing ATMs in high-traffic areas for customer convenience.
* Reducing wait times and enhancing accessibility.

1. **Cost Efficiency:**

* Maximizing ATM usage to optimize operational costs.
* Data-driven decisions for efficient resource allocation.

1. **Improved Customer Experience:**

* Enhancing the overall customer experience through strategic ATM placement.
* Meeting customer needs and expectations in various locations.

**Idea 16: Develop a Comprehensive Financial Education Platform**

**Description:**

Developing a financial education platform involves creating an online resource to educate customers on various financial topics, promoting financial literacy.

**Benefits:**

1. **Empowering Customers:**

* Providing customers with knowledge to make informed financial decisions.
* Fostering a sense of financial empowerment and independence.

1. **Brand Trust:**

* Establishing the bank as a trusted source of financial information.
* Building trust through educational initiatives.

1. **Customer Retention:**

* Increasing customer loyalty by adding value through educational resources.
* Encouraging long-term relationships based on financial guidance.

**Idea 17: Introduce Green Banking Initiatives for Sustainable Practices**

**Description:**

Introducing green banking initiatives involves implementing environmentally friendly practices and services to contribute to sustainability goals.

**Benefits:**

1. **Environmental Impact:**

* Reducing the carbon footprint through sustainable banking practices.
* Contributing to environmental conservation and climate responsibility.

1. **Brand Image:**

* Enhancing the bank's reputation as a socially responsible and sustainable entity.
* Appealing to environmentally conscious customers.

1. **Cost Savings:**

* Implementing energy-efficient solutions and reducing waste for potential cost savings.
* Demonstrating financial responsibility through sustainable practices.

**Idea 18: Implement Process Automation for Operational Efficiency**

**Description:**

Implementing process automation involves leveraging technology to automate repetitive tasks and streamline operational processes within the bank.

**Benefits:**

1. **Operational Efficiency:**

* Faster and error-free execution of routine tasks.
* Resource optimization and reduced operational costs.

1. **Time Savings:**

* Enabling employees to focus on higher-value tasks.
* Accelerating decision-making processes through automation.

1. **Enhanced Accuracy:**

* Minimizing the risk of human errors in manual processes.
* Improved data accuracy and reliability.

**Idea 19: Enhance Accessibility Features for Differently Abled Customers**

**Description:**

Enhancing accessibility features involves implementing features and services that cater to the needs of differently-abled customers, ensuring inclusivity.

**Benefits:**

1. **Inclusivity:**

* Providing equal access to banking services for all customers.
* Demonstrating a commitment to diversity and inclusion.

1. **Customer Satisfaction:**

* Meeting the unique needs of differently abled customers for improved satisfaction.
* Building positive customer relationships.

1. **Compliance:**

* Aligning with accessibility standards and regulatory requirements.
* Avoiding potential legal issues related to accessibility.

**Idea 20: Explore Opportunities in the Growing Fintech Ecosystem**

**Description:**

Exploring opportunities in the fintech ecosystem involves identifying and partnering with emerging technology startups to enhance and expand banking services.

**Benefits:**

1. **Innovation:**

* Accessing advanced technologies and innovations from fintech partners.
* Staying ahead of industry trends through collaboration.

1. **Expanded Services:**

* Offering new and innovative financial products and services.
* Diversifying revenue streams through fintech partnerships.

1. **Competitive Advantage:**

* Gaining a competitive edge by integrating fintech advancements.
* Differentiating the bank as a forward-thinking and tech-savvy institution.

**Idea 21: Develop a Unified Platform for Seamless Cross-Channel Banking**

**Description:**

Developing a unified platform involves creating an integrated system that allows customers to seamlessly access and manage their banking services across multiple channels.

**Benefits:**

1. **Customer Convenience:**

* Providing a consistent and seamless experience across various banking channels.
* Allowing customers to switch between channels effortlessly.

1. **Operational Efficiency:**

* Streamlining backend processes for better coordination between channels.
* Reducing the complexity of managing multiple banking channels.

1. **Data Integration:**

* Centralized data for a holistic view of customer interactions and transactions.
* Facilitating personalized services based on comprehensive customer data.

1. Implement predictive analytics for fraud detection.
2. Introduce contactless payment options for convenience.
3. Optimize branch locations based on customer demographics.
4. Develop a gamified savings app to encourage financial literacy.
5. Implement a customer loyalty program for enhanced retention.
6. Explore opportunities for digital identity verification.
7. Introduce a robot-advisory platform for investment guidance.
8. Enhance the scalability of online banking infrastructure.
9. Explore partnerships with emerging technology startups.
10. Implement a customer-centric culture through training programs.
11. Optimize credit scoring models for fair lending practices.
12. Introduce virtual reality (VR) for immersive banking experiences.
13. Develop an API marketplace for third-party integrations.
14. Enhance remote account opening capabilities.
15. Implement geolocation-based offers for customers.
16. Explore blockchain-based smart contracts for efficient transactions.
17. Develop a knowledge-sharing platform for employees.
18. Introduce voice-activated banking services.
19. Optimize complaint resolution processes for customer satisfaction.
20. Implement a paperless documentation system for efficiency.
21. Explore opportunities in the growing digital mortgage market.
22. Develop a mobile app for real-time financial advice.
23. Launch a sustainable investment portfolio for environmentally conscious customers.
24. Implement a real-time credit score monitoring service for customers.
25. Enhance cross-border fund transfers with reduced fees for specific regions.
26. Introduce a financial wellness app focusing on budgeting and saving goals.
27. Implement machine learning algorithms for personalized product recommendations.
28. Explore partnerships with educational institutions for student-focused financial services.
29. Launch a virtual financial advisor for immediate consultation.
30. Introduce a collaborative budgeting tool for joint accounts.
31. Implement a digital signature solution for paperless transactions.
32. Enhance AI-powered fraud detection for secure transactions.
33. Develop a secure platform for cryptocurrency investments.
34. Introduce a loyalty program for small business customers.
35. Optimize the mortgage approval process using AI and automation.
36. Implement biometric authentication for enhanced security.
37. Explore opportunities in the decentralized finance (DeFi) space.
38. Launch a subscription-based premium banking service with exclusive benefits.
39. Implement geofencing for targeted location-based promotions.
40. Enhance data privacy measures through advanced encryption techniques.
41. Introduce an AI-driven financial assistant for day-to-day money management.
42. Explore opportunities for partnerships with e-commerce platforms.
43. Launch an online community for customers to share financial tips and advice.
44. Implement a two-factor authentication system for added security.
45. Enhance the mobile app with voice recognition features for hands-free banking.
46. Introduce a digital inheritance planning service.
47. Explore opportunities for impact investing in socially responsible projects.
48. Implement an e-wallet for contactless in-store payments.
49. Develop a comprehensive financial literacy program for school partnerships.
50. Enhance the remote check deposit feature for business customers.
51. Implement advanced data analytics for predictive customer service.
52. Launch a virtual reality-driven financial education experience for schools.
53. Explore opportunities in the peer-to-peer lending space.
54. Introduce a secure platform for buying and selling digital assets.
55. Implement chat-based customer service for quick query resolution.
56. Explore partnerships with local businesses for joint promotions.
57. Introduce a secure document-sharing platform for customer convenience.
58. Enhance employee training programs with virtual reality simulations.
59. Explore opportunities in the decentralized identity (DID) space.
60. Implement biometric login options for enhanced account security.
61. Launch a personalized savings challenge feature within the mobile app.
62. Explore opportunities for providing microloans to underserved communities.

# Top Two Project Ideas

## Solution 1: Digital Banking Kiosk Solution

The digital banking kiosk will carry out various banking transactions, from simple cash withdrawals to complex loan applications, giving advice, opening a bank account, and many more.

The kiosk can process multiple transactions simultaneously, reducing wait times and improving operational efficiency. Over time, a kiosk's operating costs are lower than an entire branch's, resulting in potential savings.

The kiosk will offer extended hours so customers can access 24/7 banking services for various banking needs, including account opening, cheque deposit, and cash deposit. With easy-to-use user interfaces, digital branches can provide personalized experiences, product recommendations, and seamless integration with digital banking platforms.

The kiosk will also work as a web banking device for the customers, where customers can log in to their web banking by either existing credentials-based login or by an alternative method, which is just by using their fingerprint & and facial recognition together. The customer can enable this feature by registering for this feature and enabling them, and they can log in without any account information like customer ID, username, password, debit card details, mobile number, OTP, etc. Customers can log in with this alternative method and can do all web banking processes including but not limited to e-transactions, bill payments, paying with credit cards, adding, or removing beneficiaries, etc.

The kiosk will include regular and biometric ATM features. Fingerprint authentication and face recognition will protect the integrated biometric ATM transactions. The customer can authenticate the transactions using the fingerprint scanner, followed by facial recognition. This feature eliminates the need to carry physical cards or remember PINs.

A group of people in a bank

Description automatically generated

(Cameron, 2021)

Digital branches collect data on customer behaviours and preferences, which can be used to inform more targeted marketing efforts and product development.

Our state-of-the-art kiosks will include:

* Fingerprint reader
* Face detection camera
* Cheque Deposit
* Cash deposit
* Stripe, chip, and contactless card reader
* ID reader
* Interactive, responsive display
* Two-way video capabilities
* USB and SD memory card input
* Digital document signing
* Document scanning
* Receipt printer

## Solution 2: Pacific Alliance Expansion

**The Presence of Scotiabank**

With an overall market share of 10.2%, Scotiabank has a significant presence throughout the Pacific Alliance nations. The bank has the most powerful presence in Chile (14.5%) and Peru (16.1%), holding the third-largest market share. The combined revenue from these territories is $2.0 billion, with a net revenue of $479 million.

**Significance of the Pacific Alliance**

With a combined GDP of almost US$1.9 trillion, the Pacific Alliance—which consists of Chile, the nation of Colombia, Mexico, and Peru—is the eighth-largest economic bloc in the world. The Pacific Alliance receives significant foreign investment, mostly from infrastructure funds and private equity companies, among other sources. These growing economies, however, encounter difficulties, such as currency volatility and possible policy changes.

**The Function of Scotiabank in Investment Banking**

With over 100 years of local expertise, Scotiabank is a critical player in the M&A activity in the area. The bank focuses on "middle-market" enterprises, which are frequently family-owned and looking for outside investment and offer end-to-end services through ideation to deal execution.

**The Focus on Infrastructure, Authority and Utilities**

* Significant prospects for infrastructure development exist in the Pacific Alliance countries, particularly in the electricity and utility sectors. Owing to favourable rules, nations like Mexico are experiencing substantial expansion in their electricity sector. Renewable energy sources are prioritized regionally, with countries like Chile emphasizing solar and wind power.
* There is a rising need for financing as infrastructure development picks up speed. Debt capital markets provide an alternative funding option to the usual bank loans. In the area, Scotiabank stands out as an essential bond underwriter that supports businesses, especially those unfamiliar with Pacific Alliance's nuances. They help clients structure their fixed-income products and offer advisory services.

**Legacy & Overview**

Due to their significant experience—which spans over fifty years of existence in Latin America—Scotiabank is leading the development of the infrastructure for the Pacific Alliance. They are a key player in determining the future financial environment of the area due to their in-depth local knowledge and global skills.

**The Current Market of Scotiabank on Map**

A map of the north and south america

Description automatically generated

(Scotiabank, 2023)

**Scotiabank in the Pacific Alliance as of Q3, 2023**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Q3/23** | **Mexico** | **Peru** | **Chile** | **Colombia** | **Total/Average** |
| **Scotiabank Market Share** | 7.6% | 16.1% | 14.5% | 5.0% | 10.2% |
| **Market Share Ranking** | 5th | 3rd | 3rd | 6th | n.a. |
| **HDI Score Rank** | High (86) | High (84) | Very High (42) | High (88) | n.a. |
| **Average Total Loans($Bn)** | $45.1 | $23.2 | $57.2 | $12.4 | $137.9 |
| **Revenue($Bn)** | $0.7 | $0.4 | $0.6 | $0.3 | $2.0 |
| **Net Income after NCI($MM)** | $234 | $97 | $150 | ($2) | $479 |
| **ROE** | 25.0% | 15.2% | 9.7% | (0.7%) | 13.9% |
| **# of Employees** | 8,813 | 8,940 | 7,351 | 5,292 | 30,396 |

(Scotiabank, Q3 2023)

**Current Initiatives of Scotiabank in the Region**

* **Investment banking in the Pacific Alliance**

**Overview:** Due to its expanding demands and appealing investment conditions in a low-interest rate global environment, the Pacific Alliance countries (Chile, Colombia, Mexico, and Peru) have become a key focus for infrastructure investment.

**Pacific Alliance:** With a combined GDP of about US$1.9 trillion, the Pacific Alliance is the eighth-largest economic region in the world. Significant foreign investment flows into the member nations of this alliance, particularly from infrastructure funds, private equity firms, sovereign wealth funds, and pension funds.

**Emerging Market Dynamics**: Despite the region's economies being emerging markets, some dangers come with them, including currency volatility, policy changes, and geopolitical events. Investors also closely monitor the impact of US monetary policies, particularly those of the Federal Reserve Board, on market liquidity.

**Role of Scotiabank**: Scotiabank emphasizes the value of having local knowledge thanks to its long history in the area extending back to the 19th century. The bank has played a significant role in M&A activity by providing various services from idea development to deal implementation. They also concentrate on "middle market" businesses, frequently owned by families, that are looking for funding for expansion but do not have access to many internal capital market resources.

**Infrastructure, Power, and Utilities**

**The potential of the Pacific Alliance**: As other established markets have reached saturation, the Pacific Alliance, which consists of the nations of Mexico, Peru, Chile, and Colombia, offers a promising investment environment. Established in 2011, this trade group aims to encourage commerce among its members and harmonize regulatory as well as taxation disparities.

**Infrastructure Opportunities**: Emerging economies, like those in the Pacific Alliance, have a lot of room to grow, especially in infrastructure areas like power and utilities. The demand for investment spans from modernizing outdated systems to building new infrastructure, particularly emphasizing energy from renewable sources. With a solid regional presence, Scotiabank is well-positioned to assist domestic and foreign clients with their investment decisions.

**Growth of the Power Sector**: Mexico's power sector is booming thanks to regulatory adjustments encouraging private investments. The market for renewable energy is heating up, and infrastructure development for effective energy distribution is being prioritized. While Peru seeks to improve its electrical grid, Chile focuses on clean energy sources like solar and wind. Colombia is revising its regulatory structure to broaden its energy resources and draw in foreign investment.

**Debt capital markets funding**: Financing requirements are growing as infrastructure development picks up. While bank loans are a popular way to finance capital projects, debt capital markets—which allow for issuing investment-grade and high-yield bonds—present an alternative. The unsecured capital markets team at Scotiabank focuses on the power and utilities industry, helping clients navigate the complexities of the Pacific Alliance.

**Role of Scotiabank**: As a significant bond underwriter, Scotiabank supports firms, particularly those unfamiliar with the specific difficulties the Pacific Alliance poses. The bank offers various services, including advising responsibilities and helping clients structure fixed-income products. Scotiabank focuses on the Pacific Alliance for its yield and diversity, which unites issuers of bonds with interested investors through a global distribution network.

**The legacy of Scotiabank**: With over 50 years of experience operating in Latin America, the bank's seasoned infrastructures, power, and utilities division stand out. This division combines regional knowledge with international advice, funding, and capital markets capabilities. Their extensive local knowledge and wide range of finance capabilities place them in a leading position to support the expansion of the Pacific Alliance's infrastructure.

**GDP Growth**

|  |  |  |  |
| --- | --- | --- | --- |
|  | PACs Total | Canada | PACs vs Canada |
| Projected GDP Growth | 2.5% | 1.8% | 1.2X |
| GDP Growth World Rank | 6th | 16th | 6th vs 16th |

The Pacific Alliance is a growing banking industry market considering the projected GDP growth. In a growing economy, business growth has immense opportunities (Scotiabank, Q3 2023).

**Population Status**

|  |  |  |
| --- | --- | --- |
|  | PACs Total | Canada |
| Population | 233M | 39MM |
| Projected Growth | 0.7% | 0.8% |
| Median Age | 30 years old | 42 years old |

The population of PAC is approximately six times that of Canada, so there are also opportunities in the region's retail banking sector. Also, the median age in the region is 30 years, so the major population is the youth, providing favourable demographics for growth in the banking industry.

(Scotiabank, Q3 2023)

**A Strategic Plan for the Banking Industry for Mid-Sized Businesses in the Pacific Alliance**

**Introduction**

The Pacific Alliance nations of Chile, Colombia, Mexico, and Peru provide attractive financial prospects for mid-sized businesses through corporate banking services. Mid-sized companies usually require specialist financial services, such as treasury management, foreign exchange services, and working capital loans.

**Opportunity Overview**

With the market becoming increasingly international, the Pacific Alliance presents a strong economic bloc. There is now a shortage of banking services specifically suited to the demands of mid-sized businesses, sometimes viewed as the foundation of these economies. Concentrating on these companies might open a sizable revenue stream and provide essential funding for the area's economic expansion.

**Strategic Projects**

1. **Financial Solutions That Are Specialized**

* **Working Capital Financing**: Create specialized short-term financing options to help firms manage their operating expenditures and ensure they can operate effectively without experiencing liquidity issues.
* **Foreign exchange services**: Offer the companies competitive rates and advising services for foreign exchange so they may better navigate the challenges of global trade as well as currency volatility.
* **Treasury Management:** Assure effective management of the company's financial affairs by offering a full range of services, from managing cash to payment solutions.

1. **Corporate Digital Banking Platform**

Establish a digital banking platform for medium-sized enterprises that provides smooth online transactions, financial information, and business software connections.

1. **Managing Relationships**

Assign specialized relationship managers to each company to ensure individualized service, comprehend specific needs, and provide specialized financial guidance.

1. **Financial seminars and workshops**:

Organize workshops that offer information, efficient procedures, and networking opportunities on the financial difficulties faced by mid-sized businesses in the Pacific Alliance.

**Benefits**

1. **Revenue Boosting**

* **Loan Interest**: Earnings from interest on loans for working capital.
* **Foreign Exchange**: Income from the spread of transactions involving foreign exchange.
* **Service fees:** Earnings from corporate banking services such as treasury management.

1. **Stronger Connections**

There is enhanced enterprise loyalty due to relationship management and customized solutions.

1. **Positioning**

The expansion will create a reputation for the bank as a regional innovator and trusted financing partner for mid-sized businesses.

# Business Analysis Approach

## Selection of Planning Approach for Business Analysis Activities

There are two common approaches for planning the business analysis activities (Mata, 2020):

**Adaptive Approach**

The adaptive approach is iterative and flexible, changing the requirements as the project progresses (Comparably, 2023). This approach applies in cases where the organization develops new solutions or products. The adaptive approach is more interactive and makes use of agile methodologies.

**Predictive Approach**

The predictive approach is detailed, documented, and used in cases where the requirements are defined upfront. The method requires proper planning and in-depth analysis of potential risks (Mata, 2020). The predictive approach, or the 'waterfall' approach, involves early analysis and details of the development process.

The proposed project combines both Adaptive and Predictive approaches.

## Planning Process

The Planning Process for the two solutions is described in this section.

### Solution 1 – Digital Banking Kiosk Solution

**Current Scenario**

Scotiabank has approximately 1,200 branches for customers in Canada, most of which are run traditionally with the help of employees running these branches. Although, In the previous year, the restructuring charge was $93 million compared to $126 million in the current year. This difference is primarily related to the cost of downsizing branches due to customers' faster adoption of digital channels and process automation (Scotiabank, 2022). This digitalization brings state-of-the-art kiosks that can cut down employees in these branches and bring about cost-cutting to run banking branches.

More than 90% of Canadians say new technologies have made banking much more effortless. More than three-quarters (75%) of Canadians plan to continue the digital banking practices they've developed over the last two years. With the abundance of digital products and services available today, confidence in protecting personal and financial data has proven difficult to maintain across many industries. However, in the banking sector, the opposite appears to be true. 86% of Canadians believe their bank offers secure digital banking services, and 87% of customers believe their banks protect personal information. (CanadianBankersAssociation, 2022)

**Plan**

1. **Tailored Demonstration:** We plan to organize a series of demonstrations tailored to your bank's specific needs. We will schedule a set of personalized demos. These will be demo machines for all Biometric systems and kiosks, giving stakeholders a feel of their live working.
2. **Data-Driven Insights:**

Market Analysis - Presenting trends in banking that underscore the shift towards digitalization and the tangible benefits realized by early adopters.

ROI Projections - Detailed financial models showcasing potential savings, increased customer retention, and revenue growth from the proposed solutions.

1. **Addressing Concerns:** Our focus will be identifying and addressing potential challenges during the transition phase and implementing effective strategies to mitigate their impact. Furthermore, we aim to educate and facilitate a smooth adaptation for our customers into the newly digitalized environment to enhance customer retention rates and overall satisfaction.
2. **Pilot Branches Proposal:** The selection process for pilot branches will be based on various factors such as the volume of people visiting, geographical location, and demographic characteristics. We aim to evaluate these criteria carefully to choose the most suitable branches.

During the pilot phase, we are committed to establishing effective communication channels, allowing employees and customers to provide valuable feedback. This two-way feedback system will ensure continuous improvement throughout the pilot program.

1. **Stakeholder Engagement Sessions:** To facilitate effective communication, we have planned engaging sessions where all parties can express their concerns, request further explanations, and contribute valuable insights regarding the suggested resolutions. Additionally, we aim to offer a sneak peek into the extensive training initiatives developed specifically for our bank employees. These programs will be meticulously designed to equip them with the skills and knowledge to proficiently navigate the upcoming system changes.
2. **Support and Training Assurance:** Our commitment lies in offering continuous technical assistance throughout the initial implementation stage, guaranteeing that our clients always receive support. Additionally, we will develop comprehensive training modules tailored to different roles within the bank's staff. These modules aim to equip employees with the necessary skills and knowledge to assist customers and efficiently manage the newly implemented systems.
3. **Digital Branch Design & Layout:** To offer stakeholders a comprehensive understanding of the proposed digitalized branch layout, our organization intends to utilize cutting-edge technology such as virtual reality (VR) or 3D modelling. This innovative approach will enable us to present a simulated tour that showcases how the new design optimizes customer flow, diminishes wait times, and elevates the overall experience. By employing these advanced techniques, we aim to provide an immersive and engaging visualization of our vision for the future branch layout.

### Solution 2 - Increase the market share of Scotiabank in the PAC Region

RevolEdge Solutions has mapped out prospective growth paths for Scotiabank over the next two years through careful study and market trend evaluation. Key findings indicate a positive prognosis for market share growth and financial prosperity, highlighting Scotiabank's potential to increase the resonance of its brand and the strength of its finances.

**Thorough Evaluation of Market Share Growth:**

* Historical market positioning lays the groundwork for future estimates by recognizing Scotiabank's history of consistent growth in the market.
* **Projected Growth Dynamics:** According to our estimate, Scotiabank's market share will increase significantly over the next twenty-four months, with projections showing an average reach of 11%.
* **Strategic Implications**: Scotiabank has a fantastic opportunity to capture a broader range of the market thanks to this growth trajectory. This strategy anticipates breaking records and shows the ability to achieve unmatched market leadership.

**Prospects for Financial Health and Growth:**

* **Diversified Revenue Sources:** Scotiabank's extensive array of financial services and its sizable customer base provide a solid framework for monetary growth.
* **Revenue Projections**: Scotiabank's financial outlook predicts a noteworthy growth in revenues, possibly reaching the benchmark of $2.5 billion, driven by market conditions and internal strengths.
* **Economic Implications**: This growth story highlights Scotiabank's growing sway over the banking industry. The prediction also highlights increased profit margins, assuring stakeholders of a strong financial position going forward.

**Advice for Sustainable Growth:**

* **Synergistic Collaboration**: Combine the data analysis insights from RevolEdge with Scotiabank's inherent growth goals to create customized strategic initiatives.
* **Decision-making Supported by Data**: Develop a data-centric mindset and use customer behaviour analytics and real-time market insights to guide and modify growth strategies.
* **Embracing Technological Advancements**: Give digital transformation priority to satisfy the changing needs of a clientele with advanced digital capabilities. Investigate possible partnerships with fintech companies to deliver a blend of conventional banking trust and contemporary convenience.

Scotiabank is poised to meet and possibly even exceed these defined forecasts since it is on the verge of a transformative development era. RevolEdge Solutions is eager to dive further into cooperation ventures with Scotiabank and ensure a mapped-out pathway that enhances this growth because it is armed with its cutting-edge analytical approaches.

The team from Scotiabank is invited to join RevolEdge Solutions for a conversation to go deeper into any aspect of this research or to discuss joint ventures.

# Description of the problem to be solved

With the rapid adoption of digital banking channels, there is a need to modernize Scotiabank branches with digital kiosks. The project primarily aims to extend Scotiabank's operations to remote areas in Canada. Currently, the cost and effort of operating and maintaining a traditional branch in a remote location is relatively high. Additionally, the customers face the inconvenience of travelling far distances to reach their nearest bank branch. The digital banking kiosk, placed at a secured and accessible location, will enable customers to perform any banking transaction they usually do at a traditional branch. The project also aims to convert some traditional banking branches in the cities into digitalized branches, offering extended hours and more self-service options, improving customer experience, enhancing operational efficiency, and reducing costs.

# Project Selected: The Digital Banking Kiosk Solution

The project scope encompasses installing, maintaining, and operating digital banking kiosks in underserved remote regions of Canada and a few existing city locations as a part of the pilot program. The project aims to revolutionize the banking experience by deploying state-of-the-art digital banking kiosks capable of replicating a human banker's diverse services. It also includes connectivity, security, and ongoing monitoring to ensure uninterrupted service delivery.

A digital bank kiosk will carry out various banking services, from simple cash withdrawals to complex loan applications, giving advice, opening a bank account, and many more. Customers can access 24/7 banking services for various banking needs, including account opening, cheque deposits, web banking, money transfers, bill payments, print passbooks, print transactions, and cash deposits. With easy-to-use user interfaces, the digital banking kiosks can provide personalized experiences, product recommendations, and seamless integration with digital banking platforms.

The kiosk will also work as a web banking device for the customers, where customers can log in to their web banking by either an existing credentials-based login or an alternative method, just by using their fingerprint and facial recognition together. The customer can enable this feature by registering for it. With this feature, customers can log in without account information like customer ID, username, password, debit card details, mobile number, OTP, etc. They can do all web banking processes, including but not limited to e-transactions, bill payments, paying with credit cards, adding or removing beneficiaries, etc.

The kiosk will include regular and biometric ATM features. Fingerprint authentication and face recognition will protect the integrated biometric ATM transactions. Customers can authenticate the transactions using the fingerprint scanner and facial recognition. This feature eliminates the need to carry physical cards or remember PINs.

**Proposed Pricing of Services**

The design of the pricing model for digital kiosk services ensures affordability for customers in remote areas. The fees will be competitive and transparent, focusing on serving the community's financial needs.

**Key Performance Indicators (KPIs)**

The KPIs for this project include kiosk uptime, transaction success rate, customer satisfaction, and financial literacy improvement. Regular monitoring of these metrics will help assess the project's impact.

**Expected Service Delivery**

The project aims to install digital kiosks in 80 remote locations and 20 cities. The deployed solution will be available 24/7, ensuring accessibility for residents in remote areas.

# As-is Process Flow Diagram

A computer screen shot of a diagram

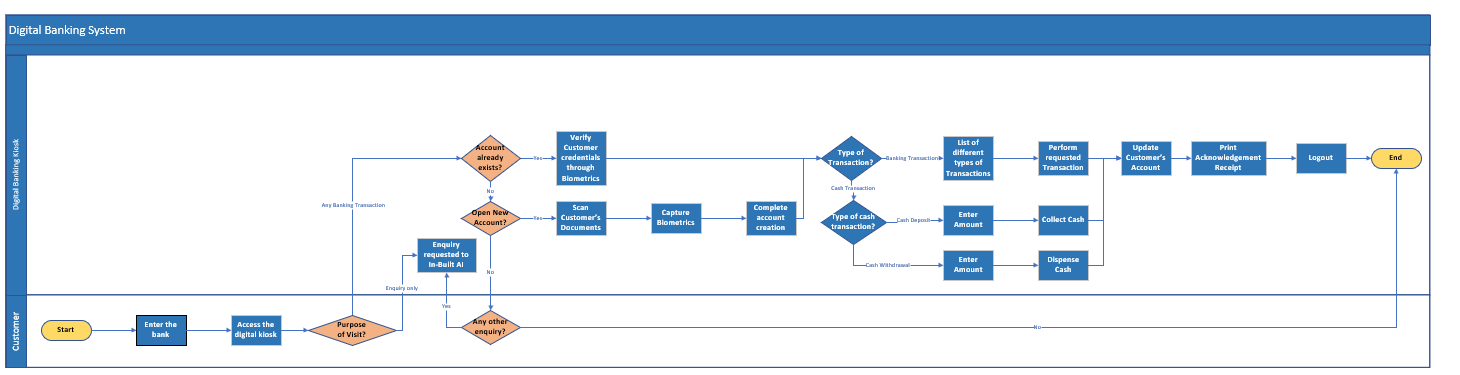
Description automatically generated

The as-is diagram represents Scotiabank's traditional banking process involving the customer, the teller, and the ATM. The customer arrives at the bank branch for a particular service.

If the customer requires a banking transaction, they approach the teller for assistance with the service. The teller first checks if the customer has an existing bank account. If the account exists, the teller first verifies the customer's identity. On completing the verification, the teller proceeds to perform the transaction, which could be a cash deposit, cheque deposit, cash withdrawal, or any other transaction. If the customer requests to open a new bank account, the teller first conducts a verification to ensure that the customer's documents are in order. The teller then creates a new bank account for the customer based on the type of account the customer requires.

If customers need to do an ATM transaction, they approach the ATM and insert their debit card. The ATM then verifies the user through the debit card and PIN entered by the user. On successful verification, the ATM displays the transaction options from which the customer can choose. If the selected transaction type is cash withdrawal, the customer enters the required amount, and the ATM dispenses the cash. The customer can also deposit money into the ATM, which adds to their bank account. The other services include cheque deposits, balance inquiries, transferring money between the customer's accounts, and updating credit and debit card PINs.

# To-Be Process Flow



The proposed project of RevolEdge Solutions involves the implementation of a digital banking solution using kiosks. The to-be diagram represents the future banking process flow, which consists of the customer and the digital banking kiosk.

The customer enters the branch and approaches the digital banking kiosk. The customer chooses the type of service required. If the customer has an existing bank account, the kiosk verifies the customer through biometrics. The biometric verification involves the customer's fingerprint followed by facial recognition. Once the customer logs in successfully, the different types of transactions are listed from which the customer chooses the required service. On completing the transaction, there is an update on the customer's account, and they receive an acknowledgment receipt. All these transactions do not require the intervention of a teller, which distinguishes the new banking solution from the traditional banking system. The customer can also open a new bank account through the digital banking kiosk. The kiosk first scans the customer's documents through the digital scanner present in the kiosk. It then captures the customer's biometrics comprising fingerprint and facial recognition. The bank account creation is complete after the customer digitally signs the documents through the digital signing feature available in the kiosk.

The digital banking kiosk also includes ATM functionality, which includes all the services that customers usually avail at a regular ATM. To log in to the system, the customers can use their biometrics, eliminating the need to use a debit card and remember the PIN. If the customer chooses to withdraw cash, the kiosk dispenses the money after the customer enters the required amount. If the customer opts to deposit cash, the kiosk collects the cash after confirming the amount entered. After completing these transactions, the kiosk provides the customer with an acknowledgment receipt after updating the customer's account. If the customer has any query requiring additional help, the built-in AI feature of the kiosk assists.

**Link to the VISIO File-:** [Process Flow Diagrams](https://stuconestogacon-my.sharepoint.com/:u:/g/personal/bjain6175_conestogac_on_ca/EdFnILqNrPtOvjFCMc9lZpsBAIDkHNKAd749av2NzS8UWQ?e=udxDaB)

# Business Requirements

As part of the pilot program, the RevolEdge digital banking kiosk project seeks to revolutionize banking experiences for customers across Canada, especially in remote regions without any banking presence. The project integrates cutting-edge AI and software technologies to deliver round-the-clock banking services, strengthening Scotia Bank's brand presence and service reach and gaining a new customer base in remote locations.

The pilot program has 100 digital branches, each with two RevolEdge Digital Banking Kiosks. Strategically, 80 of these branches target remote areas of Canada, many lacking any bank presence. This approach bridges a service gap and taps into a new customer base.

## Overview of Functional Requirements

* **Effortless Access:** Users can securely and effortlessly access their accounts using a combination of facial recognition and fingerprint authentication if they choose to enable this feature. This feature is available on top of existing regular credentials-based login.
* **Comprehensive Transactional Services:** Beyond traditional banking transactions, the kiosk can facilitate web banking, e-transfers, bill payments, ATM withdrawals, cheque deposits via an in-built document scanner, and even print passbooks or documents.
* **24/7 Onboarding:** Users can open new bank accounts at any hour. The kiosks will dispense new account kits on account creation. There will be an efficient system in place to detect fraudulent documents. The kiosk's in-built card reader will allow users to activate their debit cards instantly.
* **Advanced Advisory:** Leverage AI insights for tailored financial advice, enhancing user financial planning.
* **Assistance Features:** In-built tutorials and help sections guide users through processes, complemented by AI-assisted video calling support.

## Overview of Informative Security Requirements and Privacy Protection

* **Multi-Factor Authentication:** Combines facial recognition and fingerprint technologies, ensuring optimum security.
* **Data Protection:** Includes top-tier encryption standards for communication and storage, shielding user data from breaches.
* **Regular Security Audits:** Routine checks and patches ensure consistent protection against emerging threats.

## Overview of Performance Requirements

* **Hardware Prowess:** High-performance processor, expansive storage, and top-tier network adaptability facilitate smooth operations. An 18-inch vertical multi-touch QLED display ensures an intuitive user interface.
* **Reliability and Uptime:** Robust components, including cash and new account kit storage systems, card readers, multiple printers, and scanners, maintain a 99.5% operational uptime.

## Overview Of Availability Requirements

* **Uninterrupted Operations**: Kiosks designed for 24/7 operation with restocking and maintenance planned during non-peak hours.
* **Support System:** AI-assisted support and banker video calling for complex issues, ensuring users always have support.
* **Maintenance Support:** Maintenance Engineers are always on 24/7 standby to travel in case of any hardware issue with the kiosks.

## Overview of Technical Requirements

* **Integrated Software:** Combines progressive AI and advanced software technology with continuous research and development to provide regular upgrades to remain cutting-edge.
* **Interoperability:** Synchronous operation with Scotia Bank's existing IT system, promoting real-time data sharing.

## Legal Requirements

* **Regulation Alignment:** Ensures unwavering adherence to Canadian banking norms.
* **Universal Access:** Design compliance with accessibility standards for a universal user experience.

## Optional Requirements

* **Branding Customizations:** Aesthetic touch-ups like paint and stickers aligning with Scotia Bank's brand.
* **User Feedback Loop:** An integrated system to collect user feedback, aiding in continual kiosk betterment.

# Solution requirements (Functional and Non-functional)

## Functional Requirements

**Feature 1: User Authentication**

**Purpose:** To securely identify users and provide access to banking service

**Table 1**

*User Authentication*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Section** | **Requirement Identifying Number** | **Requirement Description** | **Requirement prioritization (H, M, L)** | **Traceability** | **Requirement Notes** |
| **User Authentication** | FR-01 | The users can authenticate via a combination of facial recognition and fingerprint scanning. | H | User Experience | Biometric integration |
| **User Authentication** | FR-02 | The system shall allow web banking credentials-based login. | H | User Security | Backup login method |
| **User Authentication** | FR-03 | The system shall allow users to withdraw money by inserting a debit card and providing the PIN. | M | User Experience | Debit card authentication |

*Note*. From Conestoga, n.d.

**Feature 2:** **Account Management**

**Purpose:** To facilitate users' management of their bank accounts and services.

**Table 2**

*Account Management*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Section** | **Requirement Identifying Number** | **Requirement Description** | **Requirement prioritization (H, M, L)** | **Traceability** | **Requirement Notes** |
| **Account Management** | FR-04 | The users shall be able to view account balance and transaction history. | H | Core Banking Function | Basic banking function |
| **Account Management** | FR-05 | The system shall facilitate intra-bank and inter-bank fund transfers. | H | Core Banking Function | Transfer capability |
| **Account Management** | FR-06 | The users shall be able to set up and manage recurring payments. | H | Core Banking Function | Automatic Payment setup |
| **Account Management** | FR-07 | The system shall provide options for updating personal information. | M | Core Banking Function | Account information change |
| **Account Management** | FR-08 | The system shall provide the functionality to add or remove beneficiaries for transfers. | H | Core Banking Function | Beneficiary management |

*Note*. From Conestoga, n.d.

**Feature 3:** **Transaction Services**

**Purpose:** To enable users to conduct diverse banking transactions.

**Table 3**

*Transaction Services*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Section** | **Requirement Identifying Number** | **Requirement Description** | **Requirement prioritization (H, M, L)** | **Traceability** | **Requirement Notes** |
| **Transaction** | FR-09 | The users shall be able to deposit cheques via an integrated scanner. | H | Core Banking Function | Cheque deposit capability |
| **Transaction** | FR-10 | The system shall allow cash deposits with immediate account reflection. | H | Core Banking Function | Cash deposit functionality |
| **Transaction** | FR-11 | The system shall allow cash withdrawal with immediate account reflection. | H | Core Banking Function | Cash withdrawal functionality |
| **Transaction** | FR-12 | The system shall offer bill payment services for various utilities and services. | H | Core Banking Function | Bill Payment functionality |
| **Transaction** | FR-13 | The system shall support e-transactions with proper authentication. | H | Core Banking Function | E-transaction capability |

*Note*. From Conestoga, n.d.

**Feature 4:** **Onboarding Services**

**Purpose:** To allow users to open a new bank account.

**Table 4**

*Onboarding Services*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Section** | **Requirement Identifying Number** | **Requirement Description** | **Requirement prioritization (H, M, L)** | **Traceability** | **Requirement Notes** |
| **Onboarding Services** | FR-14 | The users can open new savings and current bank accounts via the kiosk. | M | Banking Service Expansion | Account opening feature |
| **Onboarding Services** | FR-15 | The users can scan and upload necessary documents for account opening. | M | Banking Service Expansion | Account documents gathering feature |
| **Onboarding Services** | FR-16 | The system shall facilitate real-time verification of uploaded documents. | M | Banking Service Expansion | Account documents verification feature |
| **Onboarding Services** | FR-17 | The system shall allow users to register their biometric details for the first time. | H | User Security | First-time user setup |
| **Onboarding Services** | FR-18 | Upon successful verification, the system shall dispense a new account kit. | H | Banking Service Expansion | The new account kit feature |
| **Onboarding Services** | FR-19 | The users shall be able to activate their debit card using an integrated card reader. | H | Banking Service Expansion | Debit card activation feature |

*Note*. From Conestoga, n.d.

**Feature 5: Customer Assistance**

**Purpose:** To offer users assistance and guidance.

**Table 5**

*Customer Assistance*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Section** | **Requirement Identifying Number** | **Requirement Description** | **Requirement prioritization (H, M, L)** | **Traceability** | **Requirement Notes** |
| **Customer Assistance** | FR-20 | The system shall provide a live video call option with a Banker for user queries during operating hours. | L | Customer Support | Customer service option |
| **Customer Assistance** | FR-21 | The system shall allow users to request a callback from the bank's customer service. | M | Customer Support | Callback support |
| **Customer Support** | FR-22 | The users can lodge complaints or provide feedback directly through the kiosk system. | L | Customer Support | Feedback and complaints feature |

*Note*. From Conestoga, n.d.

**Feature 6: Web Banking**

**Purpose:** To enable users to access online banking features.

**Table 6**

*Web Banking*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Web Banking | FR-23 | The users can navigate and use web banking services. | H | Core Banking Function | Web banking integration |
| Web Banking | FR-24 | The users can view and manage credit card details. | H | Core Banking Function | Web banking functionality |
| Web Banking | FR-25 | The users can pay their credit card bills. | H | Core Banking Function | Credit card payment |
| Web Banking | FR-26 | The users can view their account transaction summary. | H | Core Banking Function | Account transparency |
| Web Banking | FR-27 | The users can initiate loan applications through the kiosk interface. | M | Banking Service Expansion | Loan application feature |
| Web Banking | FR-28 | The users can apply for credit cards through the kiosk interface. | M | Banking Service Expansion | Credit card application feature |

*Note*. From Conestoga, n.d.

**Feature 7: Security**

**Purpose:** To enable security during user sessions.

**Table 7**

*Security*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Security | FR-29 | The system shall have an inactivity timeout after 5 minutes of no action, requiring re-authentication. | H | User Security | Timeout for security |
| Security | FR-30 | The system shall allow users to set transaction limits, both daily and monthly, to ensure account security. | L | User Security | User-defined transaction limit feature |
| Security | FR-31 | The system shall generate and send OTPs for certain high-value or suspicious transactions. | H | User Security | OTP generation for security |
| Security | FR-32 | The system shall maintain a log of all transactions and user activities, which only authorized personnel can access. | H | Compliance and Security | Transaction log feature |

*Note*. From Conestoga, n.d.

**Feature 8: User Experience**

**Purpose:** To ensure an intuitive and seamless interaction with the kiosk, enhancing user satisfaction as well as trust in the digital banking solution.

**Table 8**

*User Experience*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| User Experience | FR-33 | The system shall provide tutorials and walkthroughs for first-time users. | M | Enhanced User Experience | Onboarding assistance |
| User Experience | FR-34 | The system shall provide product recommendations based on the user's transaction history. | L | Personalized User Experience | Personalization feature |
| User Experience | FR-35 | The system shall integrate AI virtual assistants for user inquiries. | H | Customer Support | AI support |
| User Experience | FR-36 | The system shall allow users to take printouts of information like transaction summary, transaction receipt, or any other information. | H | Enhanced User Experience | Printout option |

*Note*. From Conestoga, n.d.

**Feature 9:** **Administrative Features**

**Purpose:** For bank officials, technicians, and management executives to maintain, manage, as well as monitor the kiosk.

**Table 9**

*Administrative Features*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Administrative Features | FR-37 | Authorized personnel can remotely access the kiosk's system 24/7 for diagnostics and maintenance. | H | Compliance, Maintenance | Secure remote access through advanced encryption. |
| Administrative Features | FR-38 | Technicians can calibrate hardware components like the fingerprint scanner and facial recognition camera. | H | Maintenance | Calibration ensures accuracy and reliability. |
| Administrative Features | FR-39 | Bank officials can update kiosk software and security protocols. | H | Maintenance, Security | Regular updates ensure system integrity and user security. |
| Administrative Features | FR-40 | The kiosk provides real-time notifications to bank officials for any hardware or software malfunction. | M | Maintenance, Notification | Prompt alerts help in the timely resolution of issues. |
| Administrative Features | FR-41 | Technicians can manually refill cash, new account kits, or other consumables. | M | Maintenance | Secure compartments should exist for each consumable type. |
| Administrative Features | FR-42 | A backup and recovery feature to restore data in case of failures. | L | Maintenance, Security | Data restoration ensures the continuity of banking operations. |
| Administrative Features | FR-43 | The kiosk performs self-diagnostics and alerts bank officials of potential maintenance needs. | L | Maintenance | Proactive measures can prevent major malfunctions. |
| Administrative Features | FR-44 | The administrative dashboard should be able to compute and display the yearly revenue generated by a customer using the kiosk. | M | Revenue Tracking | This requirement is based on the data that the yearly average revenue generated by a customer is $912. |
| Administrative Features | FR-45 | The kiosk system should record and analyze the percentage of customers using specific services like cash or cheque deposits. | H | Service Optimization | Currently, 80% of customers use kiosks with existing technology for services like cash or cheque deposits. |
| Administrative Features | FR-46 | The kiosk system should record and analyze the percentage of customers using the kiosk for ATMs. | H | Customer Information | As per the information, the cost of operating an ATM for Scotiabank is $10,000 to buy and $100/month for operating expenses. |
| Administrative Features | FR-47 | The administrative dashboard should allow bank officials to see the number of customers and requests each kiosk handles. | M | Staff Management | Two kiosks can handle the workload of 3 full-time and 15 part-time employees needed to run a branch effectively.  This feature also provides insight into the cost savings with kiosk-based banking compared to opening a traditional Scotiabank branch in remote locations or cities, which is $5m. |

*Note*. From Conestoga, n.d.

## Non-Functional Requirements

**Table 10**

*Non-Functional Requirements*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Uptime | NFR-01 | The system shall have an uptime of 99.9%. | H | System Reliability | High system availability |
| Speed | NFR-02 | The user authentication via biometrics shall not exceed 5 seconds. | H | User Experience | Quick user authentication |
| Security | NFR-03 | The kiosk shall maintain data confidentiality by encrypting user data. | H | Data Security | Ensure user data protection |
| Performance | NFR-04 | The system response time for any user action should not exceed 2 seconds. | H | User Experience | This requirement is to improve upon Scotiabank's existing complaints regarding waiting times. |
| Scalability | NFR-05 | The system should handle up to 10,000 concurrent users without performance degradation. | H | System Reliability | The exact customer flow number varies, thus requiring a scalable solution. |
| Usability | NFR-06 | The kiosk interface shall be designed considering accessibility norms, aiding visually impaired or differently abled users. | M | Inclusivity | Accessibility features |
| Reliability | NFR-07 | The system shall perform automatic data backups every 24 hours. | H | Data Security | Regular data backups |
| Reliability | NFR-08 | The system should provide consistent service, especially in financial transactions, to maintain or improve the yearly average revenue per customer. | H | Transactional Integrity | With a yearly average revenue of $912 per customer, the transactions must be processed reliably. |
| Maintainability | NFR-09 | Software updates should be possible remotely without needing physical access to the kiosk. | M | System Upgradation | Easy updates and patches |
| Interoperability | NFR-09 | The kiosk system shall be interoperable with major banking platforms and databases, adhering to standard protocols. | H | Integration | Seamless integration with other platforms |
| Compliance | NFR-10 | The system shall comply with all relevant banking and data protection regulations in Canada. | H | Regulatory Adherence | Ensure legal compliance |

*Note*. From Conestoga, n.d.

## Transition Requirements

1. **Training and Development:** Implement training for 500+ Scotiabank staff, focusing on kiosk functionality, customer interaction protocols, and troubleshooting. Launch a customer education campaign with interactive tutorials accessible via Scotiabank’s website and in-branch workshops.
2. **Data Migration and Integration:** Migrate customer data to the kiosk system, ensuring compliance with GDPR and local data protection laws. Coordinate with IT teams to integrate kiosks with Scotiabank's existing database systems, aiming for less than 0.5% downtime.
3. **System Testing and Validation:** Perform a series of tests including functional, security, and user acceptance testing (UAT) involving select Scotiabank staff and a customer group, targeting a minimum 98% success rate in transaction processing.
4. **Marketing and Communication Strategy:** Develop a multi-channel marketing campaign, including social media, email newsletters, and in-branch displays, aiming to reach at least 70% of existing customers within the first three months post-launch.
5. **Pilot Testing:** Roll out pilot testing in 20 urban and 80 remote locations over 1 year, targeting a customer satisfaction rate of 85% and identifying key areas for system improvements.
6. **Customer Support Framework:** Establish a 24/7 customer support hotline and an online query system, aiming for an average resolution time of under 24 hours.
7. **Technology and Infrastructure Upgrades:** Upgrade network infrastructure to support the high data load, targeting a system uptime of 99.9%.
8. **Feedback and Continuous Improvement Mechanism:** Implement a feedback system, including digital surveys and feedback kiosks in branches, to gather customer and staff feedback for ongoing system improvements.
9. **Regulatory Compliance and Legal Checks:** Conduct regular compliance audits in coordination with the legal team to ensure ongoing adherence to banking regulations and standards.
10. **Backout Strategy and Contingency Planning:** Develop a backout plan for system rollback in case of critical failure or major compliance issues, to be initiated within 24 hours of the decision.

## Assumptions and Constraints

**Assumptions**

1. **User Base Knowledge:** It is assumed that users in remote Canadian locations have basic digital literacy to operate the kiosk with the help of training sessions or tutorials.
2. **Network Connectivity:** For the kiosk to operate seamlessly, consistent and reliable internet connectivity is assumed in these remote locations.
3. **Maintenance Availability:** It is assumed that bank officials will be readily available for virtual support through video calls during business hours.
4. **Kiosk Security:** The physical locations of the kiosks will be secure from theft, vandalism, and other potential security risks.
5. **Power Supply:** A consistent power supply through direct connection or backup solutions will ensure the kiosk is operational 24/7.
6. **Integration with Existing Systems:** The digital banking kiosk is assumed to be seamlessly integrated with Scotiabank's IT infrastructure without major overhauls.
7. **User Acceptance:** The remote community will be receptive to introducing digital kiosks and prefer them over traditional banking methods.
8. **Regulatory Compliance:** All features and functionalities of the kiosk will comply with Canada's banking and financial regulations.
9. **Supplier Consistency:** Vendors or suppliers for kiosk hardware and software components will provide consistent quality and timely delivery.

**Constraints**

1. **Budget:** The overall cost of implementing and maintaining the kiosk should not exceed the allocated budget.
2. **Geographic Limitations:** Some very remote locations might have limitations regarding timely maintenance visits, internet connectivity, or power supply.
3. **Language and Accessibility:** The kiosk interface and functionalities must be available in both English as well as French. It must also be accessible to users with disabilities.
4. **Technological:** The kiosk hardware and software must be compatible with Scotiabank's current technological infrastructure.
5. **Time:** The kiosks need to be deployed within the stipulated timeframe of 12 months across all intended locations
6. **Training:** Due to the remoteness of some locations, there might be constraints on providing regular in-person training sessions for users.
7. **Environmental Factors:** The kiosk's hardware should be robust enough to withstand Canada's diverse climatic conditions, especially in remote areas.
8. **Customer Transition:** There might be resistance from some customers who are used to traditional banking methods, and this transition period must be considered in the rollout plan.

# Potential Solution Options

## Possible Solution #1 – Digital Banking Kiosk

This solution involves deploying advanced self-service kiosks designed to provide a comprehensive suite of banking services. The kiosks will function as standalone banking portals, allowing customers to perform transactions typically available at physical bank branches.

### Summary of Existing Functionality

Scotiabank's current operational model encompasses an array of services provided through various channels:

* **In-Branch Services:** Traditional brick-and-mortar branches offer full-service banking, yet geographical and operational constraints bind them.
* **Automated Teller Machines (ATMs):** While ATMs provide convenient cash services, their limited capabilities do not cover all banking needs.
* **Online and Mobile Banking:** Digital platforms offer flexible banking solutions but rely on customers having personal internet access, which may be challenging in remote regions.

Despite these robust channels, opportunities exist to further harmonize digital convenience with the personal touch of in-branch services, particularly in locations where access to banking is limited by physical distance or branch availability.

### Requirement Details

The kiosk solution incorporates a spectrum of functionalities to meet comprehensive banking needs:

* **Account Access:** Secure and immediate access to account information, leveraging biometric technology for user authentication.
* **Transaction Processing:** Real-time processing of deposits, withdrawals, transfers, and payments with instant updates to customer accounts.
* **Customer Service:** Interactive interfaces for customer inquiries, with remote assistance capabilities.

Non-functional requirements emphasize:

* **System Availability:** Ensuring kiosk uptime aligns with the 24/7 service promise.
* **Security Protocols:** Maintaining integrity and confidentiality through advanced security measures.
* **User Interface Design:** Delivering an accessible and intuitive customer experience.

### Assumptions and Prerequisites

Assumptions underpinning this project include:

* **Digital Literacy:** Customers possess the requisite digital skills to navigate the kiosk interface.
* **Infrastructure:** Remote locations are equipped with reliable power and internet services necessary for kiosk functionality.
* **Maintenance Capability:** Scotiabank can ensure regular maintenance and support for the kiosks.

Prerequisites involve:

* **Site Surveys:** Evaluating locations for kiosk installation.
* **Network Security:** Establishing secure connections for data transmission.
* **Quality Hardware:** Sourcing kiosks resilient to the Canadian climate and usage conditions.

### High-Level Design

The high-level design of the Digital Banking Kiosk project encompasses a multi-faceted approach to banking:

* **Strategic Placement:** The kiosks will be placed within high-traffic areas in cities and accessible public spaces in remote locations, ensuring maximum accessibility.
* **Networked System:** Each kiosk will be connected to Scotiabank's central banking system, allowing for real-time customer data and transaction synchronization.
* **User-Centric Interface:** The kiosk interface will be designed with a focus on simplicity, ease of use, clear instructions, and responsive design adaptable to various user inputs.
* **Services Offered:** The kiosks will provide services such as cash withdrawals and deposits, account inquiries, bill payments, fund transfers, loan applications, and new account setups.
* **Customization and Branding:** Each unit will be branded with Scotiabank's colours and logos, with customizable features to cater to local languages and specific regional banking products.

### Low-Level Design

Detailing the components and operational aspects:

* **Hardware Components:** The kiosk will be equipped with industrial-grade hardware, including a durable touch screen, card readers, cash recyclers, document scanners for check deposit, printers for bank documents, maintenance hardware like USB and SD memory input, facial recognition capable video cameras as well as fingerprint scanner.
* **Software Configuration:** It will run on secure, proprietary software developed to integrate seamlessly with Scotiabank's digital banking systems, with features for transaction processing, customer relationship management, and analytics.
* **Security Features:** Advanced security measures, such as SSL encryption for data transmission and biometric authentication, will be incorporated to protect against fraud as well as hacking attempts.
* **Accessibility Compliance:** The kiosk design will adhere to accessibility standards, ensuring that it is usable by customers with disabilities, featuring audio assistance, braille keypads, and wheelchair-friendly configurations.

### Impact Analysis

The expected impacts are multi-dimensional:

* **Customer Experience:** The kiosks are anticipated to significantly improve customer experience by reducing wait times and providing a 24/7 banking option.
* **Operational Cost:** The kiosks are expected to lower operational costs by reducing the need for staffing and physical branch maintenance, particularly in remote areas.
* **Business Continuity:** In cases of unexpected events affecting branch accessibility, the kiosks will offer continued banking service availability.

### Out Of Scope

Activities and features not covered include:

* **Extended Customer Service:** Complex customer service issues requiring face-to-face interaction will remain outside the kiosk's capabilities.
* **High-Value Transactions:** Transactions over a specific value, which require additional verification or approval, will not be processed by the kiosk.

### Risk and Mitigation

Key risks and their mitigation strategies:

* **Vandalism and Physical Damage:** Kiosks will be built with tamper-resistant materials, and their locations will be chosen considering security. Surveillance and alarm systems will be considered for added security.
* **System Downtime:** Redundant systems and regular maintenance schedules will be established to minimize the risk of downtime.
* **Technological Obsolescence:** A modular design approach will ensure that kiosk components can be upgraded as needed without replacing the entire unit.
* **Customer Adoption:** Marketing campaigns, user education initiatives, and incentive programs will be launched to encourage customer adoption and familiarization with the kiosk functionality.

## Possible Solution #2 – Corporate Banking Expansion for Mid-Sized Businesses in The PAC

### High-Level Design

**Objective:** To enhance Scotiabank's visibility and market dominance in the Pacific Alliance nations by developing a tailored range of corporate banking solutions exclusively catered to medium-sized enterprises.

**Components**

**Specialized Financial Solutions:**The bank will provide custom solutions catering to specialized financial needs, including Working Capital Financing, Foreign Exchange Services, and Treasury Management.

**Corporate Digital Banking Platform:**

Install a digital banking platform designed specifically for mid-sized businesses that provide seamless online transactions, financial information, and connectivity to business software.

**Relationship Management:**

Dedicated relationship managers will offer focused customer service, providing personalized assistance through Relationship Management.

**Financial Seminars and Workshops:**

Plan workshops that provide knowledge, effective practices, and networking opportunities about the financial challenges the Pacific Alliance's mid-sized companies face.

### Low-Level Design

**Specialized Financial Solutions**

* **Working Capital Financing:** Develop and offer immediate financial solutions to assist enterprises in efficiently managing operational expenses, guaranteeing sufficient funds and seamless operations. (Kagan, 2020)
* **Foreign Exchange Services:** Provide expert guidance on currency management and offer highly competitive exchange rates to enhance the efficiency of international trade.
* **Treasury Management:** The services encompass a wide range of solutions that effectively address the management of a company's finances, liquidity, and risk.

**Corporate Digital Banking Platform**

* Create a reliable and user-friendly digital platform that addresses medium-sized enterprises' transactional and financial management requirements, guaranteeing smooth online transactions and seamless integration with business software.

**Relationship Management**

* Specialized relationship managers will be assigned to each business to guarantee personalized service and gain a comprehensive understanding of the distinct financial requirements and obstacles encountered by every enterprise.

**Financial Seminars and Workshops**

* Conduct workshops and seminars that offer valuable perspectives on financial management, practical methodologies, and avenues for fostering connections within the Pacific Alliance economic bloc.

### Impact Analysis

**Positive Impacts**

* **Revenue Growth:** The customized offerings are anticipated to result in enhanced profits derived from loan interests, foreign exchange services, and service fees.
* **Customer Loyalty:** Long-term customer loyalty can be achieved by providing personalized services that foster stronger relationships.
* **Market Positioning:** Scotiabank has the potential to establish itself as a reliable financial ally in the Pacific Alliance region. (Scotiabank, n.d.)

**Challenges**

* **Operational Complexity:** Introducing various services and effectively overseeing their operations can pose a challenge. The functional aspects of integrating technology into handling customer relationships can be intricate and demanding.
* **Regulatory Compliances and Legal Hurdles:** It can be challenging to navigate and comply with the diverse regulatory frameworks and legal requirements for financial services in each country of the Pacific Alliance.
* **Economic Instability and Currency Volatility:** The emerging markets of the Pacific Alliance countries may encounter economic instability and currency volatility, potentially affecting the inclination of businesses to participate in fresh financial endeavours.

### Out of Scope

In this phase, the consideration does not extend to expanding businesses beyond the mid-sized category. The primary focus is digital services and partnerships rather than physical branch expansion.

### Risk and Mitigation

1. **Risk: Currency Volatility -** Mid-sized businesses engaged in global trade may face challenges due to currency fluctuations that could impact the Pacific Alliance nations.

**Mitigation:** Providing hedging solutions and imparting knowledge to businesses regarding the management of currency risks can aid in the reduction of this particular risk.

1. **Risk: Regulatory Compliance and Legal Hurdle -** It can be challenging to navigate and comply with the diverse regulatory frameworks as well as legal requirements for financial services in each country of the Pacific Alliance.

**Mitigation:** Engaging the assistance of legal professionals within the local jurisdiction can effectively mitigate potential compliance risks by ensuring strict adherence to applicable laws and regulations.

1. **Risk: Economic Instability:** Business confidence and investment can be influenced by the economic instability in the countries of the Pacific Alliance.

**Mitigation:** Mitigating this risk can be achieved by developing financial products that are designed to be flexible and adaptable to changes in the economy.

## Possible Solution #3 – Do Nothing Method

### High-Level Design

**Description**: The "Do Nothing" solution choice includes maintaining the current workflow and operational structure without making significant adjustments or improvements. Scotiabank continues its business methods and operations without investing in new technology or infrastructure.

**Rationale**: This solution option was chosen to avoid any significant changes to Scotiabank's present operations and workflows. The bank chooses to maintain its current operations rather than incorporating new solutions or technologies.

### Low-Level Design

**Business Processes**: Use existing business processes and workflows without adding new operational approaches.

**Technology Infrastructure**: Maintain existing technology infrastructure and systems without updates or modifications.

### Impact Analysis

* **Cost Savings**: By adopting this "Do Nothing" option, Scotiabank avoids the upfront expenditure as well as the continuing costs involved with installing new technology or operational improvements.
* **Continuity of Operations**: The bank's ongoing activities can continue without interrupting its employees or customers.
* **System Maintenance**: Scotiabank maintains its technology infrastructure and operational procedures without change.
* **No Integration Challenges**: No integration problems related to deploying new technologies or workflow adjustments exist.

### Out of Scope

Any new technology, software, or operational improvements that further maintain the status system.

### Risk and Mitigation

**Competitive Disadvantage**: By not adopting new technology or operational enhancements, Scotiabank might fall behind competitors who are incorporating innovative solutions. The bank should regularly assess market trends to address this risk.

**Customer Expectations**: In a dynamic banking industry, customer expectations may evolve, and the "Do Nothing" option may not meet their changing needs. Scotiabank should continuously gather customer feedback and monitor industry developments.

**Operational Efficiency**: Scotiabank may face challenges maintaining optimal operational efficiency without process enhancements or technological updates. Regular process assessments and periodic operational audits can help mitigate this risk.

The "Do Nothing" solution option enables Scotiabank to keep its current operations and workflow while avoiding the possible benefits of new technology or process advancements. The decision would be based on the bank's strategic goals, competitiveness in the market, risk assessment, and growing customer expectations.

# Database Design

## Customer table

**Purpose:** Central repository of customer demographic and contact information.

**Primary Key:** CustomerID

**Range of Values:** Varied; unique customer identifiers and personal information.

**Normalization:** Use of 3NF to eliminate data redundancy.

**Data Elements:** CustomerID, FirstName, LastName, DateOfBirth, Address, Email, PhoneNumber

**Definition of data elements**

**CustomerID:** A unique identifier for each customer.

**FirstName:** Customer's first name.

**LastName:** Customer's last name.

**DateOfBirth:** Customer's date of birth.

**Address:** Customer's residential address.

**Email:** Customer's email address.

**PhoneNumber:** Customer's contact phone number.

## Account table

**Purpose:** Records details of all customer bank accounts.

**Primary Key:** AccountID

**Range of Values:** Unique account identifiers, account types, and balance information.

**Normalization:** 3NF; attributes depend only on AccountID.

**Data Elements:** AccountID, CustomerID (FK), AccountType, Balance, DateOpened

**Definition of data elements**

**AccountID:** A unique identifier for each bank account.

**CustomerID:** Foreign key linking to the Customer Table.

**AccountType:** Type of bank account (e.g., savings, checking).

**Balance:** Current balance in the account.

**DateOpened:** Date when the account was opened.

## Transaction Table

**Purpose:** Tracks all financial transactions conducted by customers.

**Primary Key:** TransactionID

**Range of Values:** Unique transaction identifiers, types, and amounts.

**Normalization:** 3NF to ensure transaction-specific information.

**Data Elements:** TransactionID, AccountID (FK), TransactionType, Amount, Timestamp

**Definition of data elements**

**TransactionID:** A unique identifier for each transaction.

**AccountID:** Foreign key linking to the Account Table.

**TransactionType:** Type of transaction (e.g., deposit, withdrawal).

**Amount:** Monetary value of the transaction.

**Timestamp:** Date and time when the transaction occurred.

## Login table

**Purpose:** Log each customer login attempt for security and tracking.

**Primary Key:** LoginID

**Range of Values:** Unique login instances and timestamps.

**Normalization**: 3NF; each login detail is tied to a single entry.

**Data Elements:** LoginID, CustomerID (FK), Timestamp, LoginMethod

**Definition of data elements**

**LoginID:** A unique identifier for each login instance.

**CustomerID:** Foreign key linking to the Customer Table.

**Timestamp:** Date and time of the login.

**LoginMethod:** Method used for login (e.g., password, biometric).

## Biometric Data Table

**Purpose:** Stores biometric data used for customer authentication.

**Primary Key:** BiometricID

**Range of Values:** Unique identifiers, biometric data sets.

**Normalization:** 3NF; biometric data is specific to each customer.

**Data Elements:** BiometricID, CustomerID (FK), FingerprintData, FacialRecognitionData

**Definition of data elements**

**BiometricID:** A unique identifier for each set of biometric data.

**CustomerID:** Foreign key linking to the Customer Table.

**FingerprintData:** Data from the customer's fingerprint scan.

**FacialRecognitionData:** Data from the customer's facial recognition scan.

## Service Interaction Table

**Purpose:** Details interactions between customers and various kiosk services.

**Primary Key:** InteractionID

**Range of Values:** Unique interaction identifiers, types of services accessed.

**Normalization:** 3NF; each interaction is distinct and fully described.

**Data Elements:** InteractionID, CustomerID (FK), KioskID (FK), ServiceType, InteractionTimestamp

**Definition of data elements**

**InteractionID:** A unique identifier for each service interaction.

**CustomerID:** Foreign key linking to the Customer Table.

**KioskID:** Foreign key linking to the Kiosk Information Table.

**ServiceType:** The type of service the customer interacted with.

**InteractionTimestamp:** Date and time of the interaction.

## Kiosk Maintenance Table

**Purpose:** Manages and records maintenance activities for each kiosk.

**Primary Key:** MaintenanceID

**Range of Values:** Unique maintenance activity identifies types of maintenance.

**Normalization:** 3NF; each maintenance record is distinct.

**Data Elements:** MaintenanceID, KioskID (FK), MaintenanceDate, MaintenanceType, TechnicianID

**Definition of data elements**

**MaintenanceID:** A unique identifier for each maintenance activity.

**KioskID:** Foreign key linking to the Kiosk Information Table.

**MaintenanceDate:** Date of the maintenance activity.

**MaintenanceType:** Type of maintenance performed (e.g., software update, hardware repair).

**TechnicianID:** Identifier for the technician who performed the maintenance.

## Employee Table

**Purpose:** Contains information about Scotiabank employees, including those servicing kiosks.

**Primary Key:** EmployeeID

**Range of Values:** Unique employee identifiers, roles, and contact information.

**Normalization:** 3NF; employee details are unique and independent.

**Data Elements:** EmployeeID, Name, Role, BranchID (FK), ContactInfo

**Definition of data elements**

**EmployeeID:** A unique identifier for each employee.

**Name:** Employee's full name.

**Role:** Employee's job role or title.

**BranchID:** Foreign key linking to the Branch Table.

**ContactInfo:** Contact details of the employee.

## Branch Table

**Purpose:** Detailed information about each Scotiabank branch location.

**Primary Key:** BranchID

**Range of Values:** Unique branch identifiers location details.

**Normalization:** Use of 3NF for specific information about each branch.

**Data Elements:** BranchID, BranchName, Location, ManagerID (FK), ContactInfo

**Definition of data elements**

**BranchID:** A unique identifier for each bank branch.

**BranchName:** Name of the bank branch.

**Location:** Geographic location of the branch.

**ManagerID:** Identifier for the branch manager.

**ContactInfo:** Contact details of the branch.

## Feedback Table

**Purpose:** Captures customer feedback specific to their kiosk experience.

**Primary Key:** FeedbackID

**Range of Values:** Unique identifiers for each feedback instance.

**Normalization:** 3NF; feedback tied to specific customers and kiosks.

**Data Elements:** FeedbackID, CustomerID (FK), KioskID (FK), FeedbackText, FeedbackDate

**Definition of data elements**

**FeedbackID:** A unique identifier for each piece of feedback.

**CustomerID:** Foreign key linking to the Customer Table.

**KioskID:** Foreign key linking to the Kiosk Information Table.

**FeedbackText:** Text of the customer's feedback.

**FeedbackDate:** Date when the feedback was given.

## Cheque Deposit Table

**Purpose:** Tracks cheques deposited by customers at kiosks.

**Primary Key:** DepositID

**Range of Values:** Unique identifiers for each cheque deposit.

**Normalization:** 3NF; each deposit is unique and linked to a specific account.

**Data Elements:** DepositID, AccountID (FK), ChequeNumber, Amount, DateDeposited, ChequeImage

**Definition of data elements**

**DepositID:** A unique identifier for each cheque deposit.

**AccountID:** Foreign key linking to the Account Table.

**ChequeNumber:** Number of the cheque deposited.

**Amount:** Amount of money on the cheque.

**DateDeposited:** Date when the cheque was deposited.

**ChequeImage:** An image or digital representation of the deposited cheque.

## Web banking activity table

**Purpose:** Records all customer activities conducted via web banking through the kiosk.

**Primary Key:** ActivityID

**Range of Values:** Unique activity identifiers for various web banking actions.

**Normalization:** Use of 3NF for specific details per web banking activity.

**Data Elements:** ActivityID, CustomerID (FK), ActivityType, Timestamp, Details

**Definition of data elements**

**ActivityID:** A unique identifier for each web banking activity.

**CustomerID:** Foreign key linking to the Customer Table.

**ActivityType:** Type of web banking activity (e.g., balance inquiry, fund transfer).

**Timestamp:** Date and time when the activity occurred.

**Details:** Additional details about the activity.

## Cash Transaction Table

**Purpose:** Manages details of cash-based transactions (deposits and withdrawals) at kiosks.

**Primary Key:** CashTransactionID

**Range of Values:** Unique identifiers for each cash transaction.

**Normalization:** Use of 3NF and distinct records for each cash transaction.

**Data Elements:** CashTransactionID, AccountID (FK), Type, Amount, Date, Time

**Definition of data elements**

**CashTransactionID:** A unique identifier for each cash transaction.

**AccountID:** Foreign key linking to the Account Table.

**Type:** Type of cash transaction (deposit or withdrawal).

**Amount:** Amount of cash transacted.

**Date:** Date of the transaction.

**Time:** Time of the transaction.

## Cash Storage Table

**Purpose:** Keeps track of cash inventory within each kiosk.

**Primary Key:** CashStorageID

**Range of Values:** Distinct entries for each currency denomination and quantity.

**Normalization:** Use of 3NF and specific to each kiosk's cash storage.

**Data Elements:** CashStorageID, KioskID (FK), CurrencyDenomination, Quantity

**Definition of data elements**

**CashStorageID:** A unique identifier for each cash storage record.

**KioskID:** Foreign key linking to the Kiosk Information Table.

**CurrencyDenomination:** Type of currency and its denomination stored.

**Quantity:** The quantity of each denomination stored.

## New Account Kit Table

**Purpose:** Manages inventory and deployment of new account opening kits in kiosks.

**Primary Key:** KitID

**Range of Values:** Unique identifiers for account kits, types, and contents.

**Normalization:** 3NF; each kit is uniquely identified and linked to kiosk locations.

**Data Elements:** KitID, KioskID (FK), AccountType, KitContents, AvailabilityStatus

**Definition of data elements**

**KitID:** A unique identifier for each new account kit.

**KioskID:** Foreign key linking to the Kiosk Information Table.

**AccountType:** The type of account the kit is for (e.g., savings, checking).

**KitContents:** Contents of the new account kit.

**AvailabilityStatus:** Current availability status of the kit (e.g., in stock, out of stock).

## Video call log table

**Purpose:** Records details of video calls made by customers to live bankers for assistance.

**Primary Key:** CallID

**Range of Values:** Unique call identifiers, duration, and notes.

**Normalization:** 3NF; each call log is distinct and linked to specific employees and customers.

**Data Elements:** CallID, CustomerID (FK), EmployeeID (FK), CallStartTime, CallEndTime, CallNotes

**Definition of data elements**

**CallID:** A unique identifier for each video call.

**CustomerID:** Foreign key linking to the Customer Table.

**EmployeeID:** Identifier for the employee involved in the call.

**CallStartTime:** Start time of the video call.

**CallEndTime:** End time of the video call.

**CallNotes:** Notes or details about the call.

## Card reader log table

**Purpose:** Logs each instance of card usage at the kiosk for accessing accounts or ATM services.

**Primary Key:** CardReaderLogID

**Range of Values:** Unique log entries for card-based transactions.

**Normalization:** 3NF; each log entry is distinct and related to specific customer transactions.

**Data Elements:** CardReaderLogID, CustomerID (FK), CardType, Timestamp, TransactionID (FK)

**Definition of data elements**

**CardReaderLogID:** A unique identifier for each card reader log entry.

**CustomerID:** Foreign key linking to the Customer Table.

**CardType:** Type of card used (debit or credit).

**Timestamp:** Date and time when the card was used.

**TransactionID:** Foreign key linking to the Transaction Table.

## Web transfer table

**Purpose:** Records details of web-based fund transfers initiated at kiosks.

**Primary Key:** WebTransferID

**Range of Values:** Unique identifiers for each transfer, with details on amounts and involved accounts.

**Normalization:** 3NF; each transfer record is specific and complete.

**Data Elements:** WebTransferID, AccountIDFrom (FK), AccountIDTo (FK), Amount, TransferDate

**Definition of data elements**

**WebTransferID:** A unique identifier for each web-based fund transfer.

**AccountIDFrom:** Account ID from which funds are transferred.

**AccountIDTo:** Account ID to which funds are transferred.

**Amount:** Amount of funds transferred.

**TransferDate:** Date when the transfer occurred.

## Bill payment table

**Purpose:** Manages bill payments executed through the kiosk.

**Primary Key:** BillPaymentID

**Range of Values:** Unique identifiers for each bill payment transaction.

**Normalization:** 3NF; each bill payment is specifically tied to a customer account and biller.

**Data Elements:** BillPaymentID, CustomerID (FK), BillerID, Amount, PaymentDate

**Definition of data elements**

**BillPaymentID:** A unique identifier for each bill payment.

**CustomerID:** Foreign key linking to the Customer Table.

**BillerID:** Identifier for the biller receiving the payment.

**Amount:** Amount paid.

**PaymentDate:** Date when the payment was made.

## Card Information Table

**Purpose:** Stores details of customers' debit and credit cards.

**Primary Key:** CardID

**Range of Values:** Unique card identifiers, card numbers, types, and expiration details.

**Normalization:** 3NF; sensitive card information is specifically tied to customer accounts for security.

**Data Elements:** CardID, CustomerID (FK), AccountID (FK), CardNumber, CardType, IssueDate, ExpiryDate, SecurityCode, Status

**Definition of data elements**

**CardID:** A unique identifier for each debit/credit card.

**CustomerID:** Foreign key linking to the Customer Table.

**AccountID:** Foreign key linking to the Account Table.

**CardNumber:** Number on the debit/credit card.

**CardType:** Specifies if the card is debit or credit.

**IssueDate:** Date when the card was issued.

**ExpiryDate:** The expiration date of the card.

**SecurityCode:** CVV/CVC security code of the card.

**Status:** Current status of the card (e.g., active, blocked, expired).

## Kiosk Information Table

**Purpose:** Contains detailed information about each kiosk unit.

**Primary Key:** KioskID

**Range of Values:** Unique identifiers for each kiosk, including location and model details.

**Normalization:** 3NF; each entry is distinct and fully describes a single kiosk.

**Data Elements:** KioskID, Location, InstallationDate, ModelType, Status

**Definition of data elements**

**KioskID:** A unique identifier for each kiosk.

**Location:** Physical location of the kiosk.

**InstallationDate:** Date when the kiosk was installed.

**ModelType:** Model or type of the kiosk.

**Status:** Operational status of the kiosk (e.g., Active, Under Maintenance).

# 16.22 Entity Relationship Diagram (ERD)

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

**Link to the VISIO File-:** [Entity Relationship Diagram (ERD)](https://stuconestogacon-my.sharepoint.com/:u:/g/personal/bjain6175_conestogac_on_ca/EQnSF75zdolGpV3Yrhc2-oIB8kzAlrBKIqKxyvE3MdxQHw?e=EnnLgE)

# Implementation/Deployment Strategy

This part presents a comprehensive implementation and deployment strategy for the Digital Banking Kiosk project undertaken by RevolEdge in partnership with Scotiabank. The plan adheres to ITIL best practices, focusing on a phased approach to ensure effective integration, risk mitigation, and optimal utilization of resources.

## Strategy Overview

**Approach:** A structured, phased implementation strategy tailored to ensure effective integration and operational success across varied Scotiabank locations.

**Focus:** Ensuring effective integration of digital kiosks within Scotiabank's existing operational framework while prioritizing customer experience and service efficiency.

**Phases:** The deployment includes the pilot phase, urban expansion, and a final nationwide rollout, each with specific objectives and timelines.

## Detailed Phases of Deployment

### Pilot Phase (Year 1)

**Scope:** Deployment in 80 remote locations and 20 urban branches.

**Objectives:** Validate operational efficiency, gauge user acceptance, and gather critical data on system performance.

**Key Activities:**

* Infrastructure setup and kiosk installation.
* Initial staff training on kiosk operations and customer support.
* System testing and initial customer feedback collection.

**Success Metrics:** System uptime, transaction throughput, and user satisfaction ratings.

### Urban Expansion Phase (Year 2)

**Scope:** Broadening the rollout to additional urban branches, covering various demographic areas.

**Objectives:** Establish a solid urban footprint, refine the user experience, and integrate kiosk functionalities with existing urban services.

**Key Activities:**

* Implementing incremental deployment based on geographic and demographic considerations.
* Holding advanced training sessions based on pilot phase learnings.
* Promoting enhanced marketing and customer education campaigns.

**Success Metrics:** Increased transaction volumes, reduced service times, and positive customer feedback.

### Nationwide Rollout Phase (Year 3)

**Scope:** Full-scale implementation across all remaining Scotiabank branches nationally.

**Objectives:** Achieve comprehensive integration of kiosks, ensuring uniform service accessibility.

**Key Activities:**

* Systematic rollout in remaining branches, monitoring scalability.
* Continuous improvement based on ongoing feedback.
* Full-scale customer engagement and promotional activities.

**Success Metrics:** Nationwide coverage achievement, system reliability, customer adoption rate.

## Client Involvement and Training

**Collaborative Efforts:** Regular coordination meetings are held with Scotiabank stakeholders to ensure alignment with business objectives and seamless integration into existing workflows.

**Employee Training Programs:** A blend of online and in-person training modules, including hands-on sessions, FAQs, and troubleshooting guides.

## Backout Strategy

**Criteria:** Based on pre-defined performance benchmarks (e.g., system downtimes, customer service issues).

**Procedure:** Roll back to the previous operational model in affected branches with a thorough investigation and remediation plan.

## Migration Strategy

**Data Management:** Secure migration protocols adhering to data protection standards, ensuring minimal service interruption.

**Service Transition:** Gradual migration of banking services to the kiosks, initially focusing on high-demand, straightforward services.

## Contingency Planning

**Risk Identification:** Regular risk assessments focusing on operational, technical, and security aspects.

**Mitigation Measures:** Pre-established response plans for identified risks, including alternative operational arrangements and rapid response teams.

## Monitoring, Evaluation, and Reporting

**Ongoing Monitoring:** Utilization of real-time monitoring tools for system performance and transaction handling.

**Regular Reporting:** Monthly reporting to stakeholders on implementation progress, challenges, and customer feedback.

This strategy ensures the successful and efficient rollout of the Digital Banking Kiosk project, aligning with Scotiabank's commitment to innovation and customer service excellence. The phased approach, combined with rigorous planning and evaluation, positions this project to significantly enhance the banking experience for Scotiabank's customers.

# Risk Log

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RISK ID | RANK | RISK DESCRIPTION | CATEGORY | CAUSES | RISK EVENT | EFFECTS | RISK OWNER | PROBABILITY | IMPACT | STATUS |
| 1 | High | Technology Integration Challenges | Technical | Lack of compatibility with existing systems | System integration issues | Operational disruptions, delays | IT Department | Moderate | High | Open |
| 2 | Medium | Customer Acceptance | Market/Consumer | Insufficient marketing efforts, lack of awareness | Low customer adoption | Decreased utilization, lower revenue | Marketing Team | Low | Medium | Open |
| 3 | High | Regulatory Compliance | Legal/Regulatory | Changes in regulations, failure to comply | Regulatory non-compliance | Penalties, legal issues | Legal Team | Moderate | High | Open |
| 4 | High | Cybersecurity Threats | Technical | Insufficient cybersecurity measures | Cybersecurity breach | Data breaches, reputation damage | IT Security Team | High | High | Open |
| 5 | High | Operational Downtime | Operational | Technical issues, lack of staff training | Kiosk downtime | Service disruptions, customer dissatisfaction | Operations Team | Low | High | Open |
| 6 | Medium | Vendor Reliability | Vendor Management | Unreliable vendors, supply chain disruptions | Vendor failures | Project delays, increased costs | Procurement Team | Moderate | Medium | Open |
| 7 | High | Budget Overruns | Financial | Inaccurate budget estimates, unforeseen expenses | Exceeding allocated budget | Financial strain, potential project halt | Finance Team | Moderate | High | Open |
| 8 | Medium | User Resistance to Biometric Technology | Market/Consumer | Privacy concerns, lack of user education | User rejection of biometric tech | Reduced usage, negative public perception | Customer Support | Low | Medium | Open |
| 9 | Medium | Technical Obsolescence | Technical | Rapid technological advancements | Technology becoming obsolete | Increased costs for upgrades, inefficiencies | IT Strategy Team | Low | Medium | Open |
| 10 | High | Natural Disasters affecting Kiosk Infrastructure | Environmental | Unforeseen natural disasters affecting kiosk locations | Damage to kiosk infrastructure | Service disruptions, potential financial losses | Risk Management | Low | High | Open |

# Test strategy

## Scope

**Testing Objective**

RevolEdge Solutions has developed a comprehensive test strategy to ensure that the digital banking kiosk solution meets all the requirements while guaranteeing a quality product. The testing aims to identify and fix defects before the project deployment.

The testing team will conduct different testing types to ensure product accuracy, completeness, and high quality.

## Test Approach

### Testing Process

The testing process for the digital banking kiosk solution includes the following stages:

1. **Requirements Analysis**

Analyzing and reviewing the requirements before testing is essential to ensure all the specifications are met. Both functional and non-functional requirements are evaluated for completeness and testability.

1. **Test Planning**

Once the requirements are analyzed and studied, the test planning commences. The test planning involves various steps, each documented in a test plan. The test plan encapsulates the following:

* The scope and objectives of testing the digital banking kiosk solution.
* The Testing Strategy that is followed.
* Testing Approach.
* Identifying the test environment and resources used for testing.
* The pass or fail criteria for the testing.
* Time and cost estimation.
* The change management procedure.
* The reviews and approvals of the test plan.

1. **Test Case Development**

With a proper test plan, the testing team will start testing the digital banking kiosk solution. In alignment with the solution requirements, the team will develop the test cases in the following test scenarios:

* **User Authentication:** This section includes testing fingerprint scanning, facial recognition, credential-based login, and debit card authentication with PIN.
* **Account Management:** The test cases for account management will verify if users can view account balance, access transaction history, do fund transfers and set up recurring payments.
* **Transaction Services:** The test cases for transaction services will validate the users’ ability to make cheque deposits, cash deposits, cash withdrawals, bill payments and online transactions.
* **Onboarding Services:** The users must be able to open a new bank account through the kiosk. The testing will ensure that the users can scan and upload the required documents, after which the system will verify them.
* **Customer Assistance:** This section includes testing the video call feature, callback requests and complaint lodging through the kiosk.
* **Web Banking:** The Web Banking test scenario will include use cases for web navigation, managing credit cards, paying bills, viewing account summaries, loan initiation, and credit card application.
* **Security:** The security features include inactivity timeout, transaction limits, OTP generation, and restricted access to user logs.
* **User Experience:** This test scenario aims to test the users’ access to tutorials, product recommendations, AI virtual assistants, and printing transaction summaries and receipts.
* **Administrative Features:** These features allow the management, bank officials and technicians to maintain and manage the kiosks. The testing for these features includes authorized personnel access, hardware component calibration, software updation, malfunction notification, backup, and recovery.
* **Non-Functional Aspects:** This section includes testing for speed, security, performance, scalability, usability, reliability, and compliance.

1. **Environment Setup**

Once the test cases are completed, the test environment is prepared to execute the testing. This step includes preparing the test data required to run the tests, such as login details for user authentication testing. The test data is then loaded into the system. The hardware, software, and network are configured to execute the test cases.

1. **Test Execution**

In the test execution phase, the testing team runs the developed test cases. They document the results as well as any defects found. The defects found are delegated back to the development team to get them fixed. The tests are re-run once the fixing is done until no more defects occur.

1. **Test Cycle Closure**

After completing the testing, the team creates a test report that includes details of the process, including the test cases, the results, the number of defects, and how many test cases passed or failed. The testing is closed with a sign-off from the stakeholders.

### Testing levels

The testing process is done at various levels to ensure high quality (Devaraj, K, 2023). They are:

* **Unit Testing**

The unit testing is done by the developer team at RevolEdge Solutions. The team will test individual components to evaluate their functioning. For example, the testing for user login, debit card authentication, fingerprint scanning, and facial recognition will all be done individually instead of testing the user authentication module as a whole.

* **Integration Testing**

Once the units are tested, the testing team will group them and test how well they integrate into the system (Devaraj, K, 2023). For instance, in the biometric login feature, fingerprint scanning, and facial recognition will be grouped to test the biometric login capability of the kiosk.

* **System Testing**

The system testing is done to test the digital banking kiosk solution, integrating the hardware and the software components.

* **Acceptance Testing**

The acceptance testing ensures that the digital banking kiosk system meets all the business requirements.

* **User Acceptance Testing (UAT)**

User Acceptance Testing is a type of Acceptance Testing where users of the digital banking kiosk solution will test the essential features of the kiosk. This testing is done in the UAT environment. This activity is quite critical as it ensures that all the business requirements are met, and the solution is ready for use.

### Types of Testing

The testing team will carry out various types of testing, including functional and non-functional testing.

1. **Functional Testing:** Testing is done to verify if each feature of the developed solution meets the requirements and works as expected (Devaraj, K, 2023).
2. **Load Testing:** Load testing involves verifying whether the kiosk can handle the expected number of daily interactions and transactions.
3. **Performance Testing:** The performance of the kiosk in every real-world scenario is monitored. Performance testing considers scalability, stability and response time (Devaraj, K, 2023).
4. **Security Testing:** The security features of the kiosk, such as data encryption, authorized access, and user inactivity, will be tested.
5. **Usability Testing:** The kiosk interface will be tested for ease of use, accessibility, and aiding visually impaired or differently abled users.

### Defect Management

The QA team records and documents the details of defects found during testing in a defect log. The defect log includes various components:

1. Defect ID.
2. Name of the tester who found the defect.
3. Type of Testing.
4. Defect Summary.
5. Detailed description of the defect.
6. Steps to reproduce the defect.
7. Expected Result.
8. Actual Result.
9. Severity.
10. Priority.
11. The subsystem/component where the defect was introduced.
12. The project activity where the defect was introduced.
13. Defect Status.

The defect is logged with the appropriate severity and priority.

The defects found during the testing will be directed to the developer team at RevolEdge Solutions. Once the developers work on and fix the defect, the QA team does the re-testing. If the defect persists, it will be redirected back to the developers for fixing it. Once the issue is finally resolved, the defect is closed.

### Sign Off

The QA team will provide the sign-off at the end of each testing phase. The UAT testing also requires sign-off from the stakeholders of the digital banking kiosk solution.

## Review and Approvals

The test strategy is reviewed and validated to ensure its completeness, correctness, and comprehension (LinkedIn, n.d.). The document is reviewed and approved by the test team lead, the development manager, the QA manager, and the project manager. Any changes to the document are recorded, and the stakeholders review the updated version.

# Evaluation Criteria

## Solution 1 – Digital Banking Kiosk

**Link-:** [Feasibility Study - Solution 1](https://stuconestogacon-my.sharepoint.com/:x:/g/personal/bjain6175_conestogac_on_ca/EdhRRvQoSjBKjRPD-inY8xgBrSF8yHYei-xVVTVk-rbnfA?e=R5NfvC)

The description of the Feasibility Study is mentioned below-:

**Customers Added**

RevolEdge Solutions' strategy for Scotiabank's digital kiosk project is set to expand the customer base significantly. Each new digital branch is expected to attract an average of 250 new customers annually, while efforts to modernize existing branches are forecasted to add another 50 customers per branch each year. Similarly, branches that have already been upgraded will continue to contribute an additional 50 customers annually. Despite these increases, there's an anticipated loss of 15 customers per branch each year due to potential decreases in customer support satisfaction. The project is poised to acquire approximately 1.48 million new customers, significantly bolstering Scotiabank's market presence.

**Revenue Generated**  
The financial strategy underpinning RevolEdge Solutions' deployment of digital kiosks for Scotiabank involves a multi-faceted revenue model. For every new customer added in the first year, a revenue of approximately $450 is anticipated, with expectations of a 3% increase each subsequent year. This growth accounts for the likely incremental value each new customer will bring as they utilize more services and the bank capitalizes on customer familiarity and loyalty.

Concurrently, the model projects a conservative decrease in revenue from existing customers, mitigating the risk of overestimation and reflecting the natural attrition of client engagement over time. This decrement strategy ensures that the revenue projections remain realistic and grounded.

Moreover, the model incorporates a significant cost-saving measure by reducing personnel expenses. Each new branch that will be digitalized is expected to save an average salary of $100,000 by laying off two employees, which directly contributes to the income stream. These savings are not merely a byproduct of digitization but a strategic financial pillar supporting the viability of investing in digital kiosks. This approach aligns with the ongoing digital transformation trends within the banking industry and reflects a forward-thinking approach to cost management and operational efficiency.

**Expenses**

**Breakdown of Expenses**

1. **Maintenance:** $8500 per kiosk per year- Average Costs of maintaining the digital infrastructure and services, assuming an approximate rise of 7% yearly, due to inflation and other external factors affecting the costs.
2. **Operations Expense:** $1200 per kiosk per year- Day-to-day operational costs of running the digital branches and services, assuming an approximate rise of 7% every year, due to inflation as well as other external factors affecting the costs.
3. **Branch Setup Miscellaneous:** $5000 per branch for new locations and $4000 per branch for current branch customization - Expenses related to setting up new branches and customizing existing ones, assuming an approximate rise of 7% every year, due to inflation and other external factors affecting the costs. So, for 1st year we are installing 80 branches at the new location and 20 current branches customized, we incur a total cost of $480,000 for the 1st year.
4. **Severance Pay:** $134,000 in the first year - Costs associated with employee severance ($3350 per employee, taking an average of 3 and a half weeks pay).
5. **Marketing and Promotion:** $15,000 per branch - Expenses incurred for marketing and promoting the digital services. This amount will be given to RevolEdge Solutions as we will give our marketing and promotion team for Scotiabank's marketing campaigns and will take care of all the expenses throughout the project period.

Our suggested strategy is to go in phases:

Phase 1: Year 1–10 Increment: Front-loaded funding for strong launch promotion.

Phase 2: Ages 11 to 20: A strategic reduction of 5% that maintains efficiency while keeping pace with market maturity.

1. **Training Expense:** $200,000 - Training staff and users on the new digital infrastructure costs. This cost will also be given to RevolEdge Solutions as we will give our training team to Scotiabank employees for training. To address changing needs for training and new standards for education, we suggest a 7% planned annual increase.
2. **Risk Management Expenses:** $350 per branch- Costs associated with managing and mitigating risks in the project, assuming a roughly 7% annual increase because of inflation and other outside factors that have an impact on the prices.
3. **Kiosk Location Rent (Remote Location):** $1,500 per month for every branch installed at the new location - Rent expenses for kiosk branches at the new locations. We assume an increase of 10% every year in the rent according to the current rent market trends.
4. **Replacement and Upgradation Cost:** $5,000 per branch - Costs incurred for replacing and upgrading existing digital infrastructure. This amount will be given to RevolEdge Solution as our company will look for all the services and replacements throughout. Considering that costs are impacted by inflation and other external variables, an annual increase of roughly 7% is assumed.
5. **Cost of Funds:** $70,000 - The cost associated with obtaining funds for the project. This cost comes from the amount to be held in the ATMs (each ATM should have about $10,000), which could be used to generate additional income.
6. **Consultancy Fee (In Phases):** $5,000,000 – This fee will be paid to RevolEdge Solutions in the 1st year.
7. **Capital Cost Allowance (CCA):**
   * **Furniture and Fixtures:** $102,000 represents the capital cost allowance for furniture and fixtures.
   * **Kiosk Expense:** $560,000 - This represents the capital cost allowance for the kiosk.

**CCA Application**

* **Definition:** CCA, also known as Capital Cost Allowance, is a tax regulation that permits enterprises to subtract the expenses associated with specific capital assets over a particular duration. This duration is determined based on the depreciation or obsolescence of said assets.
* **Application in the Scenario:**
  + For furniture and fixtures, a CCA of $102,000 is applied, meaning that a portion of the initial cost is deducted for tax purposes.
  + For the kiosk, a CCA of $560,000 is applied similarly.

**Total Capital Cost Allowance (CCA)**

* The total CCA is the sum of the CCA applied to Furniture and Fixtures and the Kiosk, which equals $662,000.

**Total Expenses**

* The total expenses, including CCA, sum up to $10,991,000.

**Investment Breakdown used for CCA**

* + Kiosk Cost: $2,800,000 per branch ($14,000 per kiosk).
  + Branch Setup Infrastructure Cost: $510,000 in the first year.

**Profit and ROI Calculation**

* **Gross Profit:** It is calculated as Total Revenue minus Total Expenses, resulting in $459,000.
* **Average tax (21.73%):** This amount is the tax applied to the Gross Profit, resulting in $99,741.
* **Net Profit:** Subtracting the Average Tax from Gross Profit gives the Net Profit of $359,259.

**Return on Investment (ROI) Explanation**

* **Total Investment:** The sum of all these costs gives the total investment.
* **ROI Calculation Formula:** ROI= (Net Profit/Total Investment)×100
* **ROI Calculation:** Plug in the values to get the ROI percentage.

**Interpretation of ROI (3.27%)**

* An ROI of 3.27% means that the project generated a return of 3.27 cents for every dollar invested. It is a measure of the profitability and efficiency of the investment.

### ROI in relation to Total Customers

The Return on Investment over 20 years shows an upward trend in the first four years. There is then a decline in the ROI till year 7, owing to the removal of staff cost savings after year 6. However, implementing the digital kiosk solution will gradually increase the ROI every subsequent year. Year 20 will yield the maximum ROI at 52.50%, indicating a substantial financial performance.

### Customers

Implementing the digital kiosk solution will significantly increase Scotiabank's number of customers. With this innovative solution, we will witness many new customers every year, starting from a customer base of 21,000 in year one up to 14,82,360 in year twenty.

### Revenue And Expenses

The revenue for Scotiabank from the digital kiosks exhibits an upward growth over the twenty years, except in years 6 and 7. The slight decline in revenue is because there will not be any staff cost savings after year 6. From year 7, the revenue will significantly increase to $70,72,77,645 in year 20. The yearly revenue is higher than the yearly expense, which becomes increasingly evident by the end of the twenty years.

### Revenue distribution:

The graph shows an overview of the revenue generated from the digital kiosk solution in year 5. 33% of the revenue is from the new customers, 33% from the existing customers, and 34% from the staff cost savings.

### Expenses Distribution for 4th Year

The graph above details the various expenses of the digital kiosk solution in 4th year after our project initiation. We have taken the 4th year as the benchmark for providing the details of expense distribution the plan formulated is for20 years and any kind of long-term plan starts to reap the benefits or show its effectiveness like in our case there has been a significant rise in the revenue generation in the 5th year with a YOY change of 43% which is higher than previous years. The highest expense will be marketing and promoting the innovative banking solution at 35%, followed by maintenance costs at 20%. Renting the building at remote locations will make up 15% of the expenses, followed by replacement and upgrade at 11%. Other costs like kiosk expenses, severance pay, operation, and branch setup are quite low. Risk management, cost of funds, furniture, and training costs are minimal, contributing the least to the expenses.

## Solution 2 - PAC Alliance Expansion

**Link-:** [Feasibility Study - Solution 2](https://stuconestogacon-my.sharepoint.com/:x:/g/personal/bjain6175_conestogac_on_ca/EdhRRvQoSjBKjRPD-inY8xgBrSF8yHYei-xVVTVk-rbnfA?e=R5NfvC)

The description of the Feasibility Study is mentioned below-:

The solution aims to increase Scotiabank's standing and earnings in the Pacific Alliance countries by providing distinctive banking solutions to medium-sized enterprises.

**New Customer Acquisition**

The strategy foresees a gradual increase in clients throughout the years, commencing with 500 in the initial year and eventually reaching 15,848 by the twentieth year. This expansion is in line with the anticipated economic progress of the Pacific Alliance nations, signifying a promising market for Scotiabank's banking offerings.

**Revenue Projections**

The annual estimation of revenue per customer for the new customer base indicates a consistent increase, highlighting the expanding worth of the customer base. The calculation involves determining the revenue per customer for the existing customer base as well as the overall revenue per customer. The revenue projections for both new and existing customers exhibit a favourable upward trajectory.

* The revenue from new customers has steadily increased, commencing at $1.75 million in the initial year and escalating to $18,77 million in the twentieth year.
* On the other hand, the revenue from existing customers commences at $1.25 million and surges to $60.35 million in the twentieth year.
* When combining the revenues from both new and existing customers, the total revenue begins at $1.75 million and experiences growth, reaching $79.12 million by the twentieth year.

**Expenses Analysis**

Different expenses are considered, such as upkeep, functioning, promotion, education, risk control, funding costs, and advisory charges (in stages). The overall expenditures are specified for each year, providing a comprehensive overview of the financial obligation necessary for the expansion.

### ROI

Implementing the solution will yield a negative ROI in the first few years, starting at -67.22%. Though the ROI will become positive in year 5, ROI in the subsequent years will be at a steady decline, reaching as low as 9.42% in year 20.

### Revenue and Expenses

The revenue earned by Scotiabank is forecast to increase each year, from $17,50,000 in year 1 to $7,91,17,692 in year 20. However, in the first four years, the expense exceeds the revenue, following which the revenue increases significantly compared to the expense each year.

### Revenue Distribution

The project of the company shows a strong growth trajectory in the revenue distribution graph. A strong customer acquisition strategy is demonstrated by the New Customer Base Revenue, which rises consistently from $9.45 million in Year 1 to $35.45 million in Year 5. Simultaneously, revenue from the old customer base increases from $5.25 million to $35.10 million, demonstrating successful client retention and revenue growth. During the same period, Staff Cost Savings increased significantly from $2 million to $36.47 million, demonstrating the project's cost-effectiveness and operational efficiency. Overall, over the five years, the graph shows a steady revenue increase from both new and existing clients along with notable staff cost savings.

### Expense distribution of 5th year

The above graph provides an overview of Scotiabank's expenses in year 5. A significant portion of the expenses, at 31%, is from operations. Training costs are also significant at 21%, followed by marketing and maintenance at 18% each. The cost of funds makes up the least expense in year 5.

## Solution 3 - Do Nothing

Considering the actual ROIs, we've looked at the bank's performance in their report for five years. We have estimated the ROI for the next 20 years using this historical data. The return on investment (ROI) was 15.60% in the 5th year (2022). Based on our prediction, this percentage will rise to 23.45% in the 25th year (20th year of Projection). This upward trend bolsters the Do-Nothing strategy by indicating that the existing structure for operations has historically produced good results and is expected to continue for some time. Routinely reviewing the progress is essential to ensure that these estimates align with the bank's long-term goals and the changing dynamics of the financial environment.

# Return on Investment (ROI)

## Digital Banking Kiosk (Solution 1)

**ROI Analysis Table**

|  |  |
| --- | --- |
| Year | ROI-Solution1 |
| 1 | **3.27%** |
| 2 | 10.70% |
| 3 | **21.07%** |
| 4 | 37.71% |
| 5 | **31.43%** |
| 6 | 21.18% |
| 7 | **-4.20%** |
| 8 | 3.98% |
| 9 | 9.15% |
| 10 | **13.25%** |
| 11 | 20.47% |
| 12 | 26.94% |
| 13 | 32.64% |
| 14 | 37.58% |
| 15 | 41.77% |
| 16 | 45.21% |
| 17 | 47.97% |
| 18 | 50.07% |
| 19 | 51.57% |
| 20 | **52.50%** |

**Year 1 (3.27%)**

**Factors Affecting ROI:**

The project's first year marks its inception, resulting in a moderate return on investment mainly influenced by the revenue gained from acquiring new customers.

**Year 3 (21.07%)**

**Factors Affecting ROI:**

1. The growth of the customer base results in a significant increase in revenue from new customers, contributing significantly to the rise in ROI.
2. As the project progresses, enhanced operational efficiencies result in better cost management, ultimately positively impacting ROI.

**Year 5 (31.43%)**

**Factors Affecting ROI:**

* **Scaling Digital Branches:** The addition and customization of digital branches continuously lead to a rise in revenue streams, thereby enhancing the return on investment (ROI).
* **Enhanced Staff Cost Savings:** As the project scales, staff cost savings become more pronounced, further elevating ROI.

**Year 7 ( -4.20%)**

**Factors Affecting ROI:**

* + **A decline in Staff Cost Savings:** The strategic changes negatively affect the ROI, leading to the discontinuation of staff cost savings in the 7th year.
  + **Investment Dynamics:** The absence of this significant cost-saving element affects the project's overall profitability.

**Year 10 (13.25%)**

**Factors Affecting ROI:**

* + **Continuous Growth:** The project experienced a temporary decline in Year 7; however, it quickly recovered as new revenue streams and operational efficiencies regained momentum.
  + **Long-term Strategy Execution:** The successful implementation of long-term strategies, such as enhancing technology and maintaining customer loyalty, has a favourable impact on return on investment (ROI).

**Year 20 (52.50%)**

**Factors Affecting ROI:**

* + **Maturity and Optimization:** The project reaches maturity with optimized operations, a well-established customer base, and a diversified revenue model, resulting in a substantial ROI.
  + **Strategic Decision-making**: Consistently adjusting to market changes and making strategic choices are crucial to achieving long-term financial prosperity.

## Increasing Market Share in the PAC Region (Solution 2)

**ROI Analysis**

|  |  |
| --- | --- |
| Year | ROI-Solution2 |
| 1 | **-67.22%** |
| 2 | -42.06% |
| 3 | **-28.11%** |
| 4 | -51.38% |
| 5 | **99.93%** |
| 6 | 88.55% |
| 7 | 78.96% |
| 8 | 70.60% |
| 9 | 63.16% |
| 10 | **56.41%** |
| 11 | 50.23% |
| 12 | 44.51% |
| 13 | 39.18% |
| 14 | 34.18% |
| 15 | 29.48% |
| 16 | 25.04% |
| 17 | 20.83% |
| 18 | 16.84% |
| 19 | 13.04% |
| 20 | **9.42%** |

**Net Profit and Return on Investment (ROI)**

The net profit is determined by deducting the overall expenses from the total revenue. The ROI is computed by considering the net profit and the total investment made throughout the years.

* Net Profit: The net profit shows a positive trend from the 5th year onwards, reaching $3.05 million in the 20th year.
* Return on Investment (ROI): The ROI is negative in the initial years due to significant consultancy fees. However, it turned positive in the 5th year, gradually increasing and reaching 9.42% in the 20th year.

**Detailed explanation of ROI**

* Year 1: -67.22%: Initial investment and consultancy fees result in a negative ROI.
* Year 3: -28.11%: The ROI improves as the consultancy fees decrease and revenues from new customers increase.
* Year 5: 99.93%: Significant positive ROI due to reduced consultancy fees and substantial revenue growth.
* Year 10: 50.23%: The ROI stabilizes at 50.23%, indicating a steady and profitable expansion.
* Year 20: 9.42%: Despite continued growth, the ROI decreases due to increased expenses associated with maintaining the expanded operations.

## Do Nothing Solution

The "Do-Nothing Solution" for Scotiabank entails preserving current affairs and abstaining from undertaking any initiatives. Instead, the strategy involves projecting the Return on Investment (ROI) for the upcoming two decades by analyzing the bank's historical performance over the past five years. Presented below is a comprehensive overview that concentrates on the specified timeframe.

1. **Forecast year 1: Forecasted ROI – 15.62% -** The initial 5-year trend indicates a slight rise in the projected ROI during the first year. This positive trajectory can be attributed to the ongoing strategies implemented by the bank and the prevailing market conditions.
2. **Forecast year 3: Forecasted ROI -16.44% -** The projected return on investment (ROI) maintains a positive trajectory by the third year, signifying the possibility of stability and growth. This implies that the bank's current strategies and market conditions are generating gradual profits, even without the introduction of new projects.
3. **Forecast year 5: Forecasted ROI – 17.27% -** The fifth year witnessed a significant rise in the projected ROI. This consistent expansion might be attributed to the bank's ability to adjust to evolving market conditions or leverage existing prospects, even without actively pursuing fresh ventures.
4. **Forecast year 10: Forecasted ROI – 19.33% -** The forecasted ROI shows a significant increase in the tenth year, indicating the long-term advantages of the bank's existing practices and market position. The bank appears to be performing strongly without requiring any further strategic initiatives.
5. **Forecast year 20: Forecasted ROI – 23.45% -** There is a significant rise in the projected ROI in the twentieth year. This indicates that the bank's cautious strategy of avoiding new ventures has not impeded its overall performance, leading to sustained growth and profitability.

|  |  |  |
| --- | --- | --- |
| Year | ROI | Forecasted ROI |
| 1(2018) | 14.90% |  |
| 2(2019) | 13.90% |  |
| 3(2020) | 10.40% |  |
| 4(2021) | 15.00% |  |
| 5(2022) | 15.60% | 15.60% |
| 6 |  | 15.62% |
| 7 |  | 16.03% |
| 8 |  | 16.44% |
| 9 |  | 16.85% |
| 10 |  | 17.27% |
| 11 |  | 17.68% |
| 12 |  | 18.09% |
| 13 |  | 18.50% |
| 14 |  | 18.92% |
| 15 |  | 19.33% |
| 16 |  | 19.74% |
| 17 |  | 20.15% |
| 18 |  | 20.57% |
| 19 |  | 20.98% |
| 20 |  | 21.39% |
| 21 |  | 21.80% |
| 22 |  | 22.22% |
| 23 |  | 22.63% |
| 24 |  | 23.04% |
| 25 |  | 23.45% |

## ROI Comparison

**Comparison of Solution 1, Solution 2, and Do-Nothing Solution**

|  |  |  |  |
| --- | --- | --- | --- |
| Year | ROI-Solution1 | ROI-Solution2 | Forecasted ROI-Do Nothing |
| 1 | **3.27%** | **-67.22%** | **15.62%** |
| 2 | 10.70% | -42.06% | 16.03% |
| 3 | **21.07%** | **-28.11%** | **16.44%** |
| 4 | 37.71% | -51.38% | 16.85% |
| 5 | **31.43%** | **99.93%** | **17.27%** |
| 6 | 21.18% | 88.55% | 17.68% |
| 7 | -4.20% | 78.96% | 18.09% |
| 8 | 3.98% | 70.60% | 18.50% |
| 9 | 9.15% | 63.16% | 18.92% |
| 10 | **13.25%** | **56.41%** | **19.33%** |
| 11 | 20.47% | 50.23% | 19.74% |
| 12 | 26.94% | 44.51% | 20.15% |
| 13 | 32.64% | 39.18% | 20.57% |
| 14 | 37.58% | 34.18% | 20.98% |
| 15 | 41.77% | 29.48% | 21.39% |
| 16 | 45.21% | 25.04% | 21.80% |
| 17 | 47.97% | 20.83% | 22.22% |
| 18 | 50.07% | 16.84% | 22.63% |
| 19 | 51.57% | 13.04% | 23.04% |
| 20 | **52.50%** | **9.42%** | **23.45%** |

**ROI Comparison Analysis of all three Solutions**

**Year 1**

* Solution 1: 3.27%
* Solution 2: -67.22%
* Do Nothing: 15.62%

Solution 1, in its first year, showcases a favourable Return on Investment (ROI) of 3.27%, which starkly contrasts the negative ROI of Solution 2 (-67.22%). Although Solution 1's ROI is lower than the Do-Nothing option's, its positive performance signifies a promising beginning.

**Year 3**

* Solution 1: 21.07%
* Solution 2: -28.11%
* Do Nothing: 16.44%

Solution 1 demonstrates a significant Return on Investment (ROI) of 21.07% by the third year, surpassing Solution 2 and the Do-Nothing alternative. This high value indicates a promising path for Solution 1, highlighting its potential for long-term expansion.

**Year 5**

* Solution 1: 31.43%
* Solution 2: 99.93%
* Do Nothing: 17.27%

In the fifth year, Solution 1 maintained its upward trajectory, achieving an impressive ROI of 31.43%. Despite Solution 2's notable surge, it is vital to acknowledge Solution 1's competitive performance, solidifying its position as a formidable competitor.

**Year 10**

* Solution1: 13.25%
* Solution2: 56.41%
* Do Nothing: 19.33%

Solution 1 continues to demonstrate resilience and consistency with a positive ROI of 13.25% after ten years. Despite Solution 2's higher ROI, the consistent performance of Solution 1 highlights its balanced and dependable financial strategy.

**Year 20**

* Solution1: 52.50%
* Solution2: 9.42%
* Do Nothing: 23.45%

In the last year, Solution 1 has established itself as the leading contender, boasting an impressive ROI of 52.50%. This increased ROI value highlights the enduring sustainability and profitability of Solution 1, surpassing both Solution 2 as well as the Do-Nothing approach.

# News

1. **Scotiabank closure in Nackawic 'going to hurt a lot,' says mayor**

**Date -: 11th November 2023**

1. **Notice of Branch Closure**

* The bank has announced that the Nackawic branch of Scotiabank in New Brunswick is closing.
* The September closure will impact customers and the neighbourhood.

1. **Effect on Nackawic**

* Nackawic locals and companies dependent on the branch's services are anticipated to be significantly impacted by the closure.
* Mayor Scott Ferguson voiced his concerns concerning the shutdown and its negative impact on the town and its citizens.

1. **Reasons for Discontinuation**

* Although the story may not specifically address the reasons for the closure, branch closures are often caused by changes in customer behaviour toward digital banking, cost-cutting initiatives, and branch network optimization.

1. **Community Reactions and Issues**

* The article focuses on the worries expressed by locals and companies over how the closure will affect the town's financial services accessibility and economy.
* Mayor Ferguson stated that local companies and residents will suffer because of the shutdown.

1. **Additional Options for Banking**

* Residents and businesses in Nackawic will need to investigate other banking choices considering the branch's closure. Some of these options include using internet banking services or visiting nearby towns for banking services.

1. **Significant trends in the industry**

* The Nackawic branch's closure indicates larger banking sector patterns, wherein organizations are reassessing their physical branch presence, considering shifting consumer preferences and the proliferation of digital banking platforms.

In conclusion, the closure of Scotiabank's branch in Nackawic, New Brunswick, is anticipated to affect the neighbourhood significantly, raising questions over the town's ability to receive banking services and the financial implications for locals and businesses.

**Link-:** <https://www.cbc.ca/news/canada/new-brunswick/scotiabank-closure-nackawic-1.7024605>

1. **Scotiabank to close 20 branches in Nova Scotia**

**Date-: 4th November 2023**

1. **Announcement of Branch Closure**

* The closure of twenty Scotiabank branches throughout the province has been announced.
* About 150 employees in the area are anticipated to be impacted by this decision.

1. **Reasons for Discontinuation**

* The article fails to specify the causes of the branch closures.
* Issues like shifting customer behaviour, a greater reliance on digital banking, or cost-cutting initiatives might cause branch closures in the banking sector.

1. **Impact on employees**

* It is anticipated that around 150 people in Nova Scotia may lose their jobs due to these branches closing.
* The local areas where the branches are located and the impacted employees may be affected by this.

1. **Impact on Customers**

* Clients utilizing these branches must adjust to other banking choices, like Internet banking or opening neighbouring branches.

1. **The Reaction of the Community**

* The article might show how the affected local companies, communities, and consumers responded to the branch closures.

1. **Trends in Banking**

* The decision to close physical branches is consistent with larger patterns in the banking sector, wherein companies are modifying their physical presence in response to shifting consumer demands and technological developments.

In conclusion, Scotiabank's decision to eliminate 20 branches in Nova Scotia is anticipated to impact about 150 employees. This move indicates a continuing trend in the banking industry as institutions adjust to changing customer demands and technological advancements.

**Link-:** <https://www.cbc.ca/news/canada/nova-scotia/scotiabank-branch-closures-1.7018865>

1. **Scotiabank is closing its Bonavista branch this summer**

**Date-: 24th October 2023**

1. **Announcement of Branch Closure**

* The Bonavista, Newfoundland branch of Scotiabank, has announced that it will close this summer.
* This choice fits Scotiabank's more extensive strategy to streamline its branch network and reorganize its business.

1. **Effects on the Community**

* The closing of the Bonavista branch likely impacts the people who live nearby and depend on the bank's services.
* It will be necessary for customers who have been utilizing this branch to adjust to other banking options, like online banking or visiting neighbouring branches.

1. **Employee and Customer Perspectives**

* The report may draw attention to prospective layoffs for staff members at the Bonavista location.
* It might also address any difficulties or annoyances that patrons may experience in terms of accessibility to banking.

1. **Factors of Closure**

* Although the article may not specifically address the reasons for the closure, changes in customer behaviour, cost-cutting initiatives, and branch network optimization are common causes of branch closures.

1. **The Reaction of the Community**

* The effects of the closure on the town and its citizens may be discussed in the article, along with responses from local companies, authorities, and citizens.

1. **Significant trends in the industry**

* The Bonavista branch's closure indicates a more significant trend in the banking sector, wherein organizations are reevaluating their physical branch presence considering evolving consumer preferences and developments in digital banking.

In conclusion, Scotiabank's strategic restructuring plan includes closing the Bonavista branch in Newfoundland. This move may affect the local Community and clients who depend on the branch for banking services.

**Link-:** <https://www.cbc.ca/news/canada/newfoundland-labrador/bonavista-scotiabank-closing-1.7006015>

**RevolEdge Solution's Digital Kiosks as a Strategic Response**

RevolEdge Solutions suggests the implementation of digital banking kiosks in the areas mentioned above, considering these closures. Our kiosks offer services from basic transactions to intricate banking operations, ensuring round-the-clock accessibility and incorporating state-of-the-art security measures. This groundbreaking solution has the potential to:

* **Maintain Banking Access:** Offer continuous banking services to the communities affected by the closures, ensuring that residents and businesses still have access to essential financial services.
* **Adapt to Customer Behavior**: In line with the increasing inclination towards digital banking, Scotiabank is adapting to the evolving preferences of its customer base.
* **Enhance Customer Experience:** Provide a modern, efficient, secure banking experience, potentially attracting new customers and retaining existing ones in these regions.

The deployment of RevolEdge Solutions' digital kiosks will be a strategic decision for Scotiabank, presenting a practical solution to uphold customer service and contentment in regions impacted by branch shutdowns. This approach not only confirms the prevailing digitalization trends in the industry but also showcases Scotiabank's dedication to meeting the changing requirements of its clientele.

1. **Scotiabank's Strategic Restructuring: Workforce Reduction and $432 Million Charge**

**Date-: 18th October 2023**

1. **Reduction of Workforce**

* Scotiabank intends to make a 3% reduction in staff.
* The bank has made a calculated decision to reduce workers to streamline operations and boost productivity.

1. **The financial consequences**

* The bank is anticipated to incur $432 million in costs due to the employment decrease.
* This financial modification is a component of Scotiabank's larger restructuring plan.

1. **Restructuring Strategically**

* Scotiabank's decision to lay off staff members is part of a bigger plan to adjust to changing market conditions.
* The bank will be better positioned for increased performance and resilience in a changing financial environment because of the restructuring.

1. **Increasing Efficiency**

* To increase productivity, the bank is concentrating on simplifying its processes.
* This action is consistent with market trends, which call for financial institutions to review their organizational designs to stay competitive.

1. **Market Reaction**

* The news demonstrates Scotiabank's proactive approach to addressing technology improvements and economic challenges in the financial sector.
* The market will probably closely monitor Scotiabank's restructuring initiatives and how they affect its overall results.

1. **Broader trends in the industry**

* The move by Scotiabank to lay off employees is in line with broader developments in the financial sector, where organizations are rethinking their operations and business strategies.

In conclusion, Scotiabank's employment reduction and related financial charges are components of a strategic restructuring exercise meant to boost productivity and set the bank up for long-term success in an economic environment that is changing quickly.

**Link-:** <https://www.bnnbloomberg.ca/scotiabank-to-lay-off-3-of-workforce-take-432-million-charge-1.1986281>

There is no substantial impact. Hence, no change is required in the formulated plan.

1. **Scotiabank, J.P. Morgan Chase explore the sale of Scotia's metals business**

**Date-: 12th September 2023**

1. **Examining the Prospects for Selling Metals**

* According to reports, J.P. Morgan Chase and Scotiabank are considering selling Scotia's metals division.
* This investigation suggests that the banks are taking a calculated risk by perhaps selling off this specific area of Scotiabank's business.

1. **Motives behind the exploration**

* Although this investigation's purpose isn't clear, it might be a component of a larger plan to optimize or rebalance their portfolios.
* A focus on key business sectors, profitability, or market conditions are some examples of the variables that may motivate the evaluation.

1. **Absent Official Verification**

* Neither Scotiabank nor J.P. Morgan Chase had formally confirmed the possible sale as of the article's reporting.
* The investigation may still be in its early phases, or a decision may not yet have been made.

1. **The Impact on the Market**

* The deal may affect Scotiabank's standing in the metals industry and the larger financial sector if it proceeds.
* Once confirmed, the decision may affect Scotiabank's reputation in the metals industry and its portfolio diversification approach.

1. **Possible Results**

* According to the article, the banks' proactive approach to assessing their business sectors and perhaps making strategic changes is demonstrated by their consideration of a sale.

1. **Industry Views**

* This investigation follows industry practices whereby financial institutions evaluate their business sectors regularly to ensure they align with their long-term objectives.

To summarize, there are reports that J.P. Morgan Chase and Scotiabank are considering selling their metals division, indicating a strategic review of their holdings and possible division reorganization.

**Link-:** <https://ca.finance.yahoo.com/news/scotiabank-j-p-morgan-chase-130000499.html>

This news has a positive impact, as the partnership aims to extend its services to small businesses, providing them with efficient end-to-end solutions to small business owners which will further increase the business it gets from them and potentially increase the customer base which will help increase revenue.

1. **Scotiabank Named Bank of the Year in Canada for Fifth Consecutive Year**

**Date: 1st December 2023**

Scotiabank is a business leader and has proudly announced that it has been named "Bank of the Year in Canada" by The Banker for the fifth time. The esteemed accolade recognizes financial institutions for their exceptional performance in yielding profits, attaining a competitive edge, and catering to their respective markets.

Scotiabank's president and CEO, Scott Thomson, took delight in the bank's ongoing accolades and emphasized its dedication to helping customers reach their financial objectives. The honour also demonstrates Scotiabank's commitment to enhancing local communities. The following are some of this year's notable highlights:

1. **Program Extension for Scene+**

* Scotiabank has welcomed Empire Company Ltd as a co-owner, further expanding the Scene+ program. With this expansion, participants in the program can now accrue and use points for various everyday expenses, such as grocery, travel, prescription drugs, banking, dining out, and entertainment.

1. **ScotiaRED Trade Electronic Instruments**

* Scotiabank Equities, Fixed Income, and Foreign Exchange clients may now access top-notch execution by introducing ScotiaRED, a suite of cutting-edge electronic trading tools. With advanced algorithms explicitly designed for the Canadian equities market, the next-generation algorithmic trading platform improves traders' skills.

1. **Advice+ Presents Scotia Smart Investor**

* Through Advice+, Scotiabank unveiled Scotia Smart Investor, a brand-new platform that allows users to manage their investments. Through mobile and web platforms, the platform streamlines and integrates the investing journey for customers by combining individualized guidance with digital recommendations.

1. **ESG Projects**

* Scotiabank is America's top provider of sustainable financial banks in social, environmental, and governance initiatives. The goal of the $500 million, ten-year ScotiaRISE program from the bank is to increase the economic resilience of underprivileged populations.

Scotiabank has also won Bank of the Year awards in the Bahamas, Barbados, Cayman Islands, and Turks & Caicos outside Canada.

With assets of almost $1.4 trillion and a focus on sustainability, Scotiabank is a prominent financial institution consistently demonstrating excellence in financial services and a commitment to client success.

**Link-:** <https://finance.yahoo.com/news/scotiabank-awarded-bank-canada-fifth-140000084.html>

1. **Bank of Canada Maintains Policy Rate and Continues Quantitative Tightening:**

**Date: 6th December 2023**

1. **Policy Resolution**

* The Bank of Canada has kept the 5% overnight, 5% bank, and 5% deposit rates as its targets.
* The quantitative tightening program of the central bank is still in place.

1. **Overview of the World Economy**

* The world economy is contracting, and there is less inflation now.
* The US economy has grown faster than predicted because of solid consumer spending, but previous policy rate rises are expected to cause the GDP to contract.
* Weakening GDP and falling energy prices have helped to lessen inflationary pressures in the euro area.
* The October Monetary Policy Report assumed oil prices would be $10 per barrel higher than now.

1. **The state of the Canadian economy**

* Canada's economy stagnated in the middle quarters of 2023, and the country's real GDP shrank by 1.1% in the third quarter.
* The nearly negative growth in consumption and almost flat business investment are clear signs that higher borrowing rates are stifling spending.
* The unemployment rate has slightly increased, job vacancies have decreased, and job creation has slowed.
* Although there is still a 4-5% wage increase, there is no longer an excess demand in the economy.

1. **Dynamics of Inflation**

* The economic downturn is reducing the pressure on pricing for goods and services to rise.
* October's CPI inflation decreased to 3.1% due to lower gas costs.
* The inflation of shelter prices has risen due to the acceleration of rent and housing costs and the ongoing contributions from high mortgage interest rates.

The following actions are:

* The overnight rate goal will be announced again on January 24, 2024.
* The Bank will simultaneously release the Monetary Policy Report (MPR), including its overall view on inflation and the economy and risk assessments.

**Link-:** <https://www.bankofcanada.ca/2023/12/fad-press-release-2023-12-06/>

1. **Bank of Canada's 2024 Schedule for Policy Announcements and Publications**

**Date-: 27th July 2023**

1. **Release of the 2024 Schedule**

* The Bank of Canada has published the schedule for its major publications and policy interest rate announcements for 2024.
* The dates of the interest rate announcements for the balance of this year were also reaffirmed in the statement.

1. **Announcements Regarding Interest Rates**

* The dates of the interest rate announcements for 2024 are as follows: January 24, March 6, April 10, June 5, July 24, September 4, October 23, and December 11.
* Reaffirmed is the interest rate announcement scheduled for September through December 2023 and the days the Monetary Policy Report will be released concurrently.

1. **The Monetary Policy Report**

* The Monetary Policy Report will be released with the interest rate announcements in January, April, July, and October. All interest rate announcements will take place at 10:00 (ET).

1. **Consumer Expectations and the Business Outlook Survey**

* The following dates for releasing the Business Outlook Survey and Canadian Survey of Consumer Expectations in 2024 are January 15, April 1, July 22, and October 11.
* Every survey release has an ET time slot of 10:30.

1. **Examining the Financial System**

* On Thursday, May 9, at 10:00 (ET), the Financial System Review is scheduled to be made public.

**Significance:**

* Businesses, investors, and the public may anticipate and prepare for future announcements and reports from the Bank of Canada thanks to the calendar, which offers openness and clarity on essential events.
* The simultaneous dissemination of interest rate announcements and the Monetary Policy Report improves market players' and stakeholders' access to vital information.

In conclusion, the release of the Bank of Canada's 2024 timetable highlights the institution's dedication to openness and disclosure in both its economic evaluations and policy decisions. Stakeholders will find this information beneficial in navigating the changing economic landscape and making wise decisions based on the central bank's activities and assessments.

**Link-:** <https://www.bankofcanada.ca/2023/07/2024-schedule-policy-interest-rate-announcements-major-publications/>

1. **Revised Requirements to Enhance Protection for International Students in Canada:**

**Date-: 7th December 2023**

The Honourable Marc Miller, Minister of Immigration, Refugees, and Citizenship has announced updated standards aimed at better preserving the well-being of international students beginning January 1, 2024, in recognition of the significance of international students to Canada.

**Principal Modifications**

1. **Cost-of-living Modification**

* The cost-of-living financial criterion will be increased to guarantee that candidates for study permits are financially equipped for life in Canada.
* Every year, the barrier will be modified following Statistics Canada's low-income cut-off (LICO), representing the bare minimum required to maintain a respectable quality of living.
* For 2024, in addition to the first-year tuition and travel expenses, a single applicant must show $20,635, or 75% of LICO.

1. **Accountability of Learning Institutions and Housing Support**

* Academic institutions must offer sufficient housing alternatives and other support in proportion to the number of students they admit.
* Actions such as possible visa restrictions will be taken to guarantee that colleges provide enough assistance by the September 2024 academic year.

1. **Temporary Extensions of Policy**

* For overseas students, the 20-hour work-per-week cap on off-campus employment is extended until April 30, 2024, offering more freedom.
* For students enrolling in programs before September 1, 2024, the online study period will continue to count toward post-graduation work permits.
* The temporary rule that gives holders of work permits an extra 18 months of work permit after graduation will not be renewed.

**Upcoming projects**

* Targeted pilot programs will be initiated to promote diversity and assistance for underrepresented cohorts of international students.

**Summary of the Statement from the Minister**

* The long-overdue adjustments will shield overseas students from exploitation and financially precarious circumstances. We aim to ensure that new students entering Canada can start their studies with a better financial foundation.

**Brief Information**

* Canada's economy benefits from about $22 billion in annual contributions from international education, which sustains over 200,000 jobs.
* For overseas students, Quebec has a cost-of-living criterion that is frequently changed.
* The revised regulations streamline the application process for study permits for citizens of 14 countries and apply to the Student Direct Stream.

**Link-:** [https://www.canada.ca/en/immigration-refugees-citizenship/news/2023/12/revised-requirements-to-better-protect-international-students.html](https://www.canada.ca/en/immigration-refugees-citizenship/news/2023/12/revised-requirements-to-better-protect-international-students.html%20)

# Conclusion

1. **Pioneering Change with Digital Banking Kiosks**

RevolEdge Solutions, in partnership with Scotiabank, embarked on a pioneering venture to redefine the banking landscape. This collaboration aims to install, maintain, and operate state-of-the-art digital banking kiosks, particularly in remote Canadian regions and select city locations. This initiative, anchored in our proposal​​, signifies a leap towards a future where banking is not just a transaction but an experience – accessible, secure, and customer-centric.

1. **RevolEdge: A Beacon of Innovation and Strategic Excellence**

At RevolEdge, we pride ourselves on being at the forefront of technological and strategic innovation. Our comprehensive approach spans strategic planning, market analysis, and the integration of advanced technologies​​. Our dedication to fostering sustainable growth and optimizing operational efficiency for our clients like Scotiabank is unwavering. Our ethos revolves around not just technological advancement but revolutionizing the perception and interaction with banking services​​.

1. **Scotiabank: A Financial Institution with a Vision**

Scotiabank, one of Canada's leading banks, has always been a step ahead in embracing digital transformation. With accolades such as the Digital Transformation Award 2023, Scotiabank has demonstrated its commitment to innovation and customer-focused services. This collaboration with RevolEdge is a testament to its continuing journey towards digital excellence​​​​.

1. **Comprehensive Analysis: Laying a Strong Foundation**

Our competitive and PESTEL analyses have offered deep insights into the banking sector, highlighting Scotiabank’s strengths and potential areas of growth through digital innovation​​​​. This robust groundwork has facilitated a targeted approach to meet specific customer needs and market demands.

1. **The Digital Banking Kiosk Solution: A Game-Changer**

Our digital banking kiosk solution is designed to offer unparalleled convenience and security. From multi-functional transactional capabilities to advanced security features like biometric authentication, these kiosks are set to revolutionize customer experiences​​. This innovation aligns with our vision of integrating technology seamlessly into everyday banking, making it an intuitive, secure, and efficient process.

# Call to Action

1. **Embrace the Digital Transformation:** We invite Scotiabank to take a bold step forward with us. This is more than a technological upgrade; it's a journey towards reimagining the future of banking. By adopting the Digital Banking Kiosk solution, Scotiabank has the opportunity to set a new standard in the industry – one that prioritizes innovation, efficiency, and unmatched customer service.
2. **Leverage the Power of Advanced Technology:** The introduction of our state-of-the-art digital kiosks is not just an enhancement of banking services; it's a transformation of the customer experience. By integrating these kiosks into your network, Scotiabank can offer its customers unparalleled convenience and security, reinforcing its position as a leader in the digital banking revolution.
3. **Capitalize on Strategic Insights:** Our comprehensive analysis presents a unique opportunity for Scotiabank to capitalize on market trends and customer behaviours. Implementing these insights will not only enhance service delivery but also open new avenues for growth and innovation.
4. **Pioneer a New Era of Customer Engagement:** The deployment of digital banking kiosks is a chance for Scotiabank to redefine what banking means to customers. This project is an invitation to lead the charge in creating a banking experience that resonates with the modern consumer – convenient, secure, and personalized.
5. **Join Hands in a Partnership for Progress:** We stand at the threshold of a new era in banking. Together, RevolEdge and Scotiabank can forge a path of technological advancement and customer-centric service. Let's collaborate to make this vision a reality, enhancing the value we bring to our customers and setting new benchmarks in the banking industry.

We eagerly await taking this transformative step with Scotiabank, turning bold visions into tangible realities, and jointly pioneering a future where banking is synonymous with innovation and excellence.

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