CAPSTONE COURSE - BIA-5450GA

Final Report

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1.1 Introduction

Education in the digital age demands comprehensive solutions that bridge the gap between data and decision-making. In response to the evolving landscape of educational infrastructure, this project endeavors to seamlessly integrate Ontario's school board data with broadband provider details. The integration aims to construct a dynamic and interactive Power BI dashboard, offering invaluable insights into student populations, broadband availability, and associated costs. By amalgamating disparate datasets, this initiative seeks to empower educational authorities with informed decision-making tools, enabling them to allocate resources effectively and strategize for improved broadband access in educational settings across Ontario.

The educational ecosystem's intricacies necessitate a cohesive understanding of not just student demographics but also the broadband infrastructure supporting these institutions. Ontario's diverse school boards, coupled with the geographical variance in broadband access, create a complex landscape that demands nuanced solutions. This project endeavors to unravel this complexity, leveraging data integration methodologies, dashboard visualization techniques, and optimization strategies to deliver a solution poised to impact educational resource allocation and infrastructure development positively.

At the heart of this endeavor lies the aspiration to provide decision-makers with actionable insights gleaned from a cohesive amalgamation of school board data and broadband provider information. By harnessing the power of data, predictive analytics, and user-centric design principles, this project aspires to present a holistic view of Ontario's educational landscape. Moreover, the proposed optimization strategies seek to perpetually refine the integrated solution, aligning it with the ever-evolving educational needs and technological advancements.

As we embark on this data-driven journey, the convergence of educational insights and broadband availability emerges as a cornerstone for equitable resource allocation and strategic planning. This project represents a concerted effort to leverage data integration and optimization to catalyze informed decision-making, fostering a more robust educational infrastructure and equitable access to resources across Ontario's diverse educational institutions.

This report delves into the methodologies, implementation details, optimization strategies, and the overarching impact envisaged by the integration of school board data with broadband provider details. It serves as a testament to the transformative potential of data-driven initiatives in revolutionizing educational landscapes and fostering data-informed decision-making paradigms.

2.1 Abstract

This project focuses on integrating Ontario's diverse school board data with broadband provider details to create an interactive Power BI dashboard. The aim is to provide a comprehensive view of student populations, broadband availability, and associated costs across different regions in Ontario. Through meticulous data integration, visualization techniques, and optimization strategies, this initiative seeks to empower educational decision-makers with actionable insights for informed resource allocation and infrastructure development. The integration of these datasets aims to bridge the gap between educational demographics and broadband accessibility, fostering equitable resource distribution and strategic planning within Ontario's educational landscape. This abstract outline the methodologies, implementation details, optimization strategies, and the transformative potential envisaged through the integration of school board data with broadband provider details, emphasizing the impact of data-driven initiatives in revolutionizing educational decision-making paradigms.

3.1 Problem Overview

In Ontario's educational landscape, understanding the intricate relationship between school board data and broadband provider details poses a significant challenge. The diverse school boards, varying geographical regions, and broadband infrastructure disparities create complexities in resource allocation and infrastructure planning. Educational authorities face the challenge of effectively analyzing student populations alongside broadband availability and costs, essential components in decision-making for equitable resource distribution and strategic planning within the educational sector.

Moreover, the lack of a cohesive platform that integrates these disparate datasets further exacerbates the challenge. Educational decision-makers often encounter hurdles in accessing unified information, hindering their ability to make informed decisions about resource allocation and infrastructure development.

This project addresses the critical need for a comprehensive solution that seamlessly integrates Ontario's school board data with broadband provider details. By amalgamating these datasets into an interactive Power BI dashboard, the initiative aims to offer a holistic view of student demographics, broadband availability, and associated costs. This holistic view becomes instrumental in empowering decision-makers to allocate resources effectively and strategize for improved broadband access, fostering equitable opportunities and infrastructure development across Ontario's educational institutions.

4.1 Scope of the Project

Project Objectives:

- To seamlessly integrate Ontario's school board data with broadband provider details.
- To develop an interactive Power BI dashboard offering insights into student populations, broadband availability, and associated costs.
- To empower educational decision-makers with actionable information for informed resource allocation and infrastructure planning.

Scope Inclusions:

- Gathering comprehensive school board data including student demographics, school locations, and board-specific details.
- Collecting broadband provider information encompassing service coverage, pricing structures, and available speeds.
- Data preprocessing to ensure uniformity, compatibility, and cleanliness of collected datasets.
- Integration of school board and broadband provider data based on matching criteria.
- Development of a user-centric Power BI dashboard presenting integrated insights.
- Incorporation of predictive analytics for forecasting student population trends and broadband needs.
- Continuous optimization efforts to enhance dashboard performance and user experience.

Scope Exclusions:

- Collection of individual student data or personally identifiable information (PII).
- Direct involvement in broadband infrastructure development or policy formulation.
- Provision of specific recommendations or decisions; the dashboard serves as an informational tool for decision-makers.

Success Criteria:

- Successful integration of school board data with broadband provider details.
- Development of an interactive and user-friendly Power BI dashboard.
- Derivation of actionable insights aiding educational decision-making.
- Positive feedback from stakeholders regarding the dashboard's usability and effectiveness.

5.1 Methodology

1. Data Collection:
School Board Data: Gather comprehensive information from diverse sources on Ontario's school boards, including student demographics, school locations, and board-specific details.
Broadband Provider Details: Collect data on broadband providers operating within Ontario, including service coverage, pricing structures, and available speeds.

2. Data Preprocessing:
Cleaning and Standardization: Scrutinize collected datasets to identify and rectify inconsistencies, missing values, or formatting issues, ensuring data uniformity and compatibility.
Normalization and Structuring: Normalize datasets to establish a common structure, facilitating seamless integration.

3. Data Integration:
Matching Criteria Establishment: Define matching criteria based on geographical location, school identifiers, and broadband service areas to facilitate accurate integration.
Integration Techniques: Utilize data integration techniques, such as merging, joining, or linking datasets based on established matching criteria to create a unified dataset.

4. Power BI Dashboard Development:
User Requirements Analysis: Understand user needs and preferences to design a user-friendly interface that addresses decision-makers specific requirements.
Visualization and Interaction Design: Employ Power BI's visualization tools to present integrated data comprehensively. Design interactive elements (slicers, filters) for user-driven exploration.

5. Predictive Analytics and Insights:
Predictive Modeling: Explore predictive models to forecast future student population trends or broadband requirements based on historical data and trends.
Insights Derivation: Leverage integrated data to derive actionable insights, highlighting correlations between student demographics, broadband availability, and associated costs.

6. Optimization and Continuous Improvement:
Performance Optimization: Enhance data processing efficiency, dashboard performance, and user experience through iterative improvements.
Feedback Integration: Incorporate user feedback mechanisms to iteratively refine the dashboard's functionalities and usability.

7. Security Measures and Compliance:
Data Security Enhancements: Strengthen data security protocols to ensure compliance with privacy regulations, safeguarding sensitive educational and broadband details.
Compliance Audits: Conduct periodic audits to validate data integrity and regulatory compliance, ensuring alignment with industry standards.
8. Testing and Validation:
Data Validation: Validate integrated datasets for accuracy, consistency, and relevance to ensure the reliability of insights presented on the dashboard.
User Acceptance Testing: Conduct user acceptance tests to ensure the dashboard meets user expectations and effectively supports decision-making processes.

6.1 Overview Of Dataset

Basic Overview

- No. of City available in the data set as More than 700 City
- No. of schools available in the data set: More than 5000 Schools
- No. of Board available in a data set: 72
- No. of broadband providers available for each school
- Focus on 7: Bell, Rogers, VirginPlus, Vmedia, Oxio, Teksavvy, Dialog
- Cost for each provider
- No. of primary students in School
- No. of Secondary students in school

Column Name	Description	Data Type	Example Values	Understanding
Name	Name of the school board	Text	Algoma District School Board	Identifies the official name of the school board, allowing for easy reference
Board	Numeric identifier for the school board	Number	1, 3	Provides a unique numerical code for each school board for identification and sorting purposes
Board Acronym	Acronym representing the school board	Text	adsb, amdsb	Offers a shorthand representation of the school board name, useful for quick identification and reference
EDU Region	Educational	Text	Sudbury-North Bay	Indicates the

	Region where the school board is located.		Region, London Region	broader educational region to which the school board belongs, aiding in regional categorization.
Geo Region	The geographic region where the school board is situated.	Text	Northern, South	Provides information about the geographical location of the school board, aiding in geographic categorization.
OnRAN boards	Indicates whether the board participates in the OnRAN initiative (Y/N).	Text	Y, N	Denotes whether the school board is involved in the OnRAN initiative (Yes/No), facilitating the identification of participating boards.
Board Number	A numeric code is assigned to the school board.	Text	B28010, B66010	Assigns a unique code to each school board for identification and sorting purposes.

Board Language	Primary language of the school board.	Text	English, French	Specifies the primary language of instruction for the school board, essential for language-based categorization
Large, Mid (100-60 schools), Small < 60	Categorization is based on the size of the school board.	Text	Medium, Small	Categorizes school boards based on their size, providing insights into the scale of educational operations.
Language/Type	Type of language and education provided by the board.	Text	English Public, French Public	Describes the type of education provided by the school board, indicating whether it is public or religious, and the language of instruction.
Acronym	Acronym representing the type of school board.	Text	1.ADSB, 3.AmDSB	Offers a concise identifier for the type and category of the school board, assisting in quick

				differentiation.
WebSite (Domain)	Website domain of the school board.	Text	http://www.adsb.on.ca, https://amdsb.ca	Provides the web domain for the school board's official website, enabling online access to board-specific information.
Open Schools	Number of open schools under the school board.	Number	61, 56	Represents the count of schools operated by the school board, giving an idea of the scale and reach of the board.
ADE	Abbreviation for the school board.	Text	CSWA, CyberHub	Furnishes an abbreviation for the school board's name, facilitating compact references and system integration.
X_COORD	X-coordinate (geographic) of the school board's central location.	Number	-82.6606435, -80.97202	Specifies the geographical X-coordinate, pinpointing the central location of

				the school board on a map or grid.
Y_COORD	Y-coordinate (geographic) of the school board's central location.	Number	46.3761957, 43.3579	Specifies the geographical Y-coordinate, pinpointing the central location of the school board on a map or grid.
CPS Program Aug 2023	Program or initiative offered by the school board for August 2023.	Text	CSWA, CyberHub	Identifies a program or initiative planned by the school board for August 2023, offering insights into upcoming educational activities.

7.1 Implementation of Solution

To achieve our goal of integrating Ontario school board data, with broadband provider details to create a Power BI dashboard we followed an approach. Initially, we collected a variety of datasets related to school board information and broadband provider details. We carefully processed the data to ensure it was consistent and compatible for integration. By using matching criteria based on location and unique identifiers we seamlessly merged the datasets into one dataset for analysis.

During the development phase, our focus was on constructing a Power BI dashboard with pages that offered features. This allowed users to explore school board information, student populations, and the availability of providers in regions. Graphs and maps were used as aids to help visualize insights especially when it came to understanding the relationship between student counts and broadband costs.

We faced challenges related to inconsistencies in the data and complexities in designing the dashboard. However, we effectively addressed these challenges by employing data-cleaning techniques and implementing design solutions.

The solution we implemented provided insights by revealing correlations between student populations, geographical regions, and broadband costs. This empowers decision-makers with information, for allocating resources and making informed decisions.

7.1.1 Implementation of an Integrated Dashboard Solution

Data Collection and Preprocessing:

- Gathered Ontario's school board data and broadband provider details from diverse sources.
- Derived price for each broadband provider based on number of students for each school.
- Cleaned and standardized datasets to ensure compatibility for integration.

Data Integration Process:

- Employed matching criteria based on geographical location and school identifiers for seamless integration.
- Merged school board data with broadband provider information and price to form a unified dataset.

7.1.2 Development of the Interactive Power BI Dashboard:

Dashboard Structure:

- Structured a multi-page Power BI dashboard allowing interactive exploration.
- Integrated features enable selection by city, showcasing school board information, population of students, broadband provider information, price of each provider, and recommendations for schools based on price and speed.

Visualization and Insights:

- Utilized various visualizations (graphs, maps, slicer, scorecard) to present insights on student populations and provider availability.
- Visual representations highlighted correlations between student counts and broadband costs.

Challenges and Solutions:

Data Challenges:

- Addressed inconsistencies in data formats and resolved missing values during the integration phase.
- Implemented data-cleaning methodologies to enhance accuracy in merged datasets.

Dashboard Design Challenges:

- Overcame design complexities to ensure a user-friendly interface for effective data exploration.
- Incorporated interactive elements to facilitate easy navigation across different information layers.

7.2 Observations and Outcome Observations and Outcome:

Insights Derived:

- Identified significant correlations between student populations, geographical regions, and broadband costs.
- Extracted actionable insights aiding educational authorities in resource allocation decisions.

Outcome:

Successfully developed an interactive Power BI dashboard offering comprehensive insights.
The solution provides a holistic view of school board data, empowering informed decision-making processes.

Looking ahead, potential enhancements for the dashboard include refining visualization techniques, incorporating additional data dimensions, and exploring predictive analytics to further enrich the solution's capabilities. This implementation process not only delivered a robust and interactive Power BI dashboard but also provided invaluable insights poised to shape informed decision-making within the educational landscape of Ontario.

7.2.1 Provider Comparison on Dashboard -1

The Power BI dashboard developed for integrating Ontario's school board data with broadband provider details offers an intuitive and comprehensive interface for exploring educational and broadband information across different regions. The dashboard begins with three interactive slicers enabling users to select specific criteria, including city, school board, and individual schools. Upon selection, the dashboard dynamically populates information about broadband providers available in the chosen area, recommended pricing structures, student counts, and the optimal required speed.

Features:

Interactive Slicers: Three slicers provide a user-friendly selection process, allowing users to narrow down their focus to a specific city, school board, or individual school. This facilitates precise data exploration based on preferred criteria.

Dynamic Provider Information: Once selections are made, the dashboard instantaneously generates relevant details such as available broadband providers in the chosen area, their recommended price packages, the count of students affected, and the necessary broadband speed for optimal functionality.

Data Visualization: The dashboard employs various visualization techniques, including tables and potentially maps, to present data comprehensively. This visual representation aids in interpreting correlations between student populations, broadband availability, and associated costs.

Usability and Decision Support:

By enabling users to interact with the dashboard via slicers and providing dynamically updated information, the dashboard facilitates informed decision-making for educational authorities, allowing them to analyze broadband options and costs while considering student populations in specific areas. This functionality is instrumental in allocating resources effectively and strategizing for improved broadband access in educational settings.

Dashboard View -1

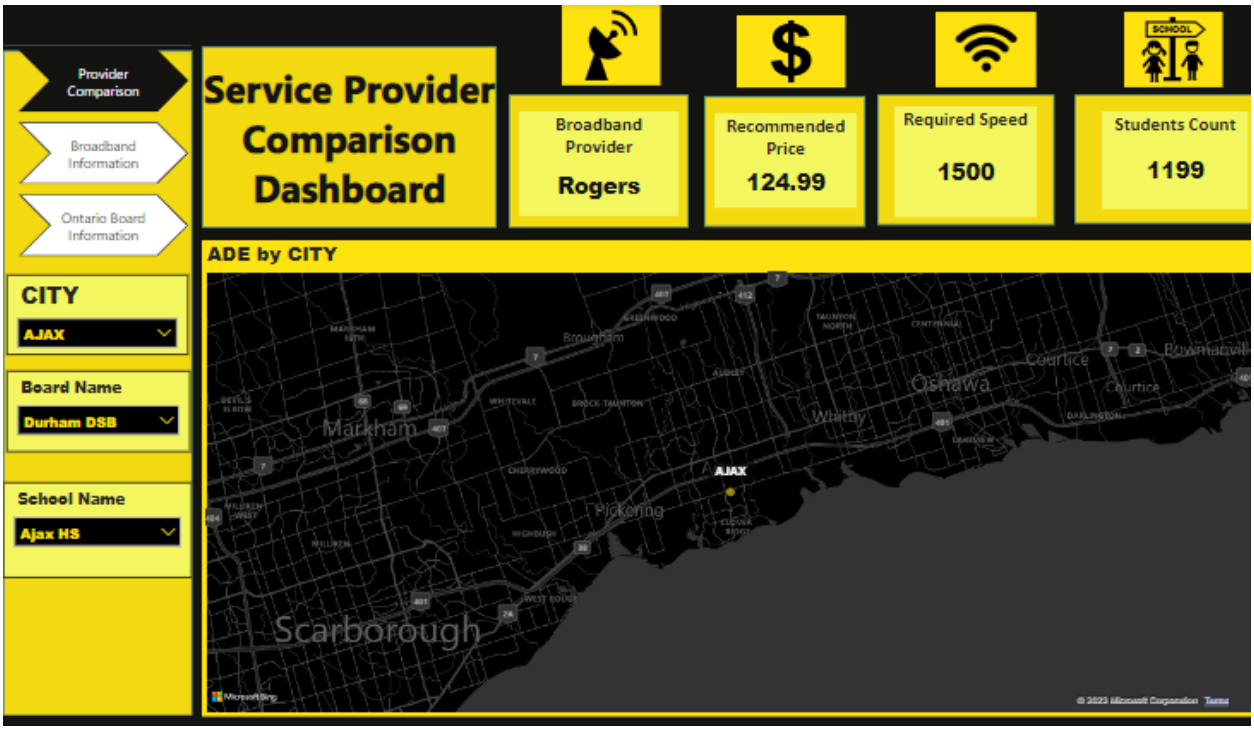

Fig 1. Provider Comparison on the dashboard

7.2.2 Broadband Information on Dashboard -2

The second page of the Power BI dashboard focuses on providing a comprehensive view of available broadband providers within a selected city in Ontario. It presents a simplified interface, featuring a single slicer that enables users to select a specific city of interest. Upon selection, the dashboard dynamically displays a comprehensive list of all available broadband providers within the chosen city, showcasing their respective pricing structures and offered speeds.

Features:

City Selection Slicer: The single slicer allows users to effortlessly select a desired city within Ontario, streamlining the process of exploring broadband provider options in specific geographical regions.

Comprehensive Provider Information: Once a city is chosen, the dashboard promptly generates a detailed list of all available broadband providers operating within that city. This list includes valuable information such as the price packages offered by each provider and the corresponding broadband speeds available.

Usability and Decision Support:

This simplified yet information-rich layout supports users in quickly accessing an overview of broadband providers available within a specific city. By presenting pricing structures and offered speeds concisely, the dashboard aids educational authorities or decision-makers in evaluating the diversity of available broadband options within a particular geographical area.

Dashboard View -2

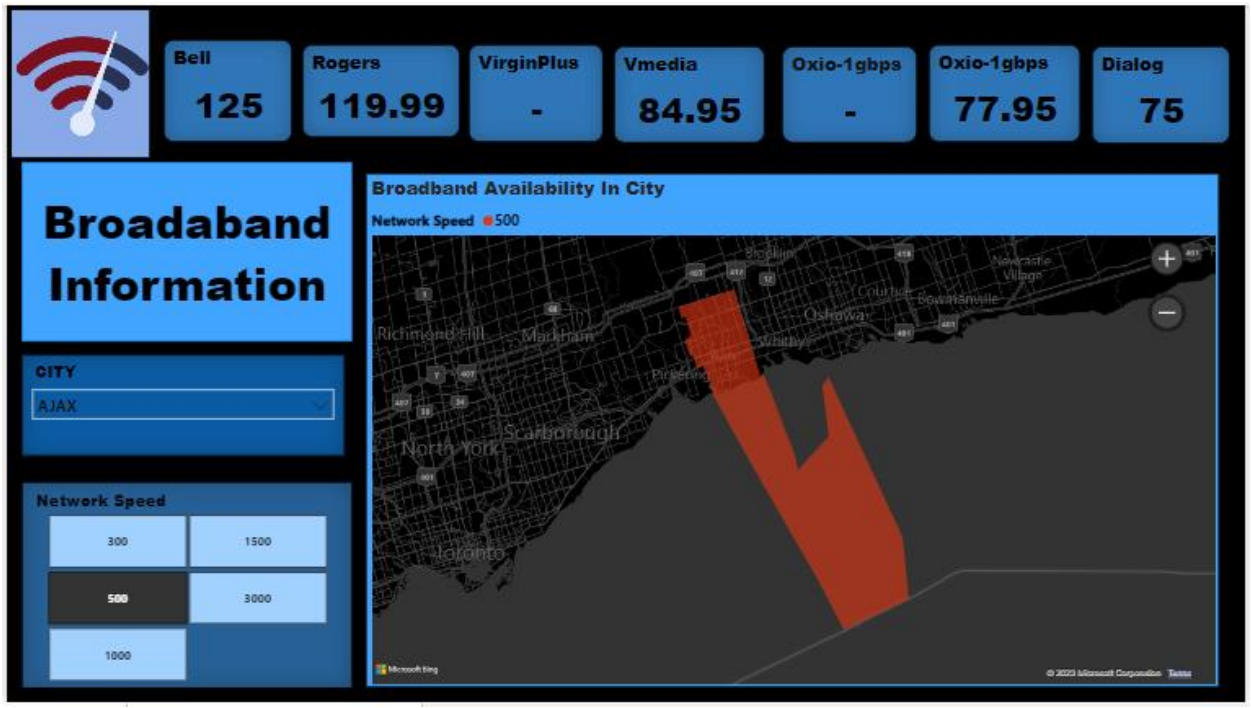

Fig 2. Broadband Comparison on the Dashboard

7.2.3 Ontario School Board Information on Dashboard -3

The third page of the Power BI dashboard provides a detailed breakdown of educational institutions within a selected city in Ontario, focusing on school distribution based on their locality (rural or urban) and categorization by school boards (e.g., English public). It features two interactive slicers enabling users to select a specific city and broadband provider. Upon selection, the dashboard dynamically showcases essential information such as the total count of schools in the chosen city, their classification into rural or urban settings, and the number of students enrolled in primary and secondary schools categorized by school boards.

Features:

City and Broadband Selection Slicers: The dual slicers allow users to precisely select a city and a broadband provider of interest, refining the data presentation to match specific criteria.
School Distribution Insights: Once city and broadband selections are made, the dashboard generates valuable insights into the educational landscape. It presents the total count of schools within the selected city, categorized into rural or urban settings. Additionally, it delineates the number of students enrolled in primary and secondary schools, further categorized by different school boards such as the English public board.

Usability and Decision Support:
This comprehensive breakdown of educational institutions aids decision-makers in assessing the educational infrastructure within a chosen city. By highlighting the distribution of schools based on locality and school board categorizations, the dashboard offers a nuanced understanding of the educational landscape's diversity, enabling informed decisions regarding resource allocation and infrastructure development.
Dashboard View -2

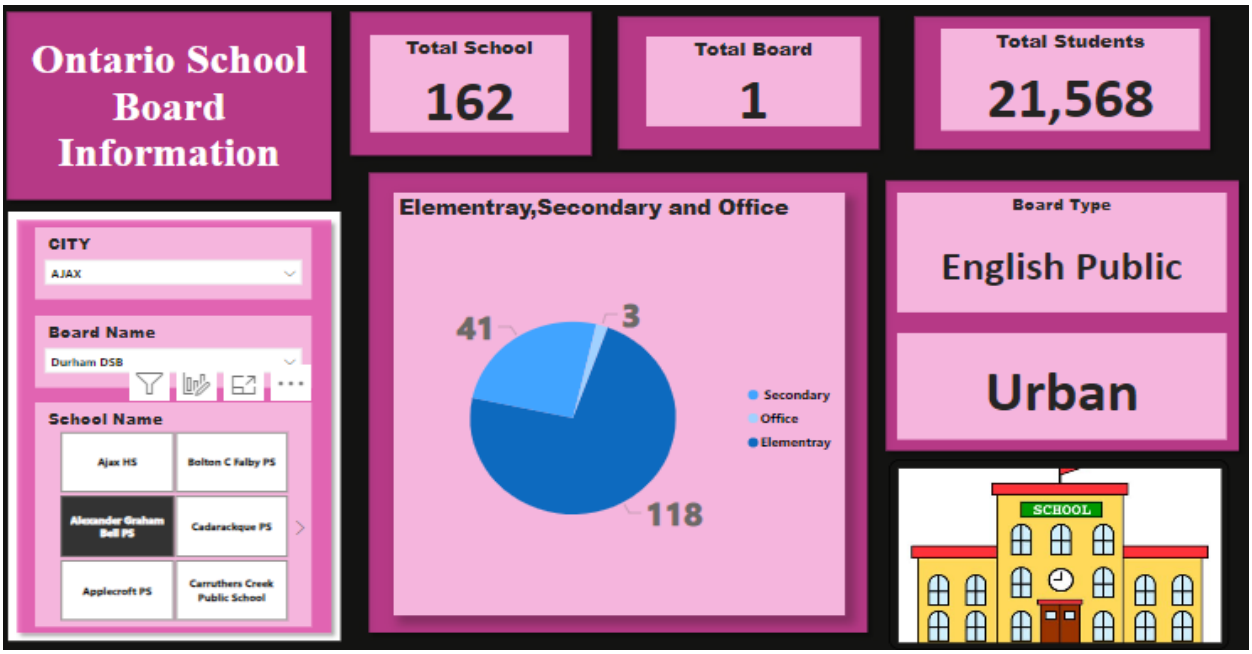

Fig 3. School Board Information on the Dashboard
Outcome testing and reviewing

In this phase of our project, we embarked on comprehensive testing and evaluation procedures to assess the effectiveness and suitability of broadband solutions for schools within the Ontario school board. Our objective was to implement a solution that not only identified the most appropriate broadband options for schools but also ensured a minimum of 1 Mbps bandwidth per student.

8.1 Testing Procedures

1. Broadband Suitability Testing for Schools
   - Explain the criteria used to determine broadband suitability for schools.
   - Detail the methods used to assess broadband speeds and costs.

- Discuss the parameters for recommending the best broadband option for schools, ensuring at least 1 Mbps per student.

2. Dashboard Implementations
- Describe the structure and functionality of the implemented dashboards.
- Highlight the specific features of each dashboard (recommendation for schools, information on broadband providers, Ontario school board details).

8.2 Testing and Analysis

1. Comparison of Algorithms/Approaches
- Compare the outcomes of different algorithms/models used for recommending suitable broadband for schools.
- Discuss the accuracy and efficiency of each approach in meeting the minimum 1 Mbps per student requirement.

2. Comparative Analysis of Broadband Providers
- Present the findings from the dashboard displaying information on 7 different broadband providers.
- Compare the speeds, costs, and other relevant factors among these providers.
- Analyze which providers offer the most suitable options based on the criteria established for schools.

3. Ontario School Board Details
- Display statistics from the dashboard depicting Ontario school board information.
- Break down the data regarding the number of boards, schools under each board, primary vs. secondary schools, and student demographics.
- Analyze the distribution of schools across cities and the predominant language types within the boards.

9.1 Comparison with Desired Results

1. Alignment with Criteria
- Compare the outcomes derived from testing with the initially desired results.
- Evaluate how well the recommended broadband aligns with the requirement of at least 1 Mbps per student.

2. Dashboard Effectiveness
- Assess the effectiveness of the dashboards in providing actionable insights to schools and stakeholders.

Summarize the key findings from the outcome testing and reviewing phase. Emphasize any significant observations, the alignment with desired results, and the effectiveness of the implemented dashboards.

Comparisons of Data Sets and Outcomes

Our project methodology primarily involved data refinement and compilation. Initially, we collected disparate datasets containing information on city demographics, school board details, and broadband provider data. These datasets were in varied formats and required extensive cleaning and merging. For instance, the city demographics dataset included population statistics, while the school board information encompassed details on the number of schools, students, and board types.

Data Compilation Process

Using Excel's data manipulation functionalities, we meticulously cleaned and standardized these datasets. This process involved handling missing or inconsistent data entries, ensuring uniformity in formatting, and eliminating errors that could compromise the accuracy of our analyses. Through careful sorting and filtering, we extracted relevant information to create consolidated datasets reflecting city-wise school board details and associated broadband information.

Refined Data Structures

Upon refining the datasets, we structured the information systematically. For instance, our Excel sheets were organized to display specific data points such as city names, corresponding school boards, student counts, types of boards (primary or secondary), and the availability of broadband services. This arrangement facilitated a comprehensive overview, allowing for easy comparisons and analyses across different educational boards and geographical regions.

Recommendation Framework

Drawing from the organized datasets, we developed a recommendation framework within Excel. This framework utilized filters and logical functions to suggest suitable broadband options for schools based on the number of students and the offerings of various broadband providers. For instance, by applying conditional formatting, we highlighted the providers meeting the 1 Mbps per student criterion, aiding schools in making informed decisions.

Comparison and Alignment with Desired Results

While our approach didn't involve algorithmic computations, we rigorously tested the recommendations against the established criterion of 1 Mbps per student. By cross-referencing our recommendations with the broadband speeds and costs available in the datasets, we ensured that the suggested options aligned with the desired outcomes.

Optimization

Efficient data integration through automated processes, enhanced matching algorithms, and refined dashboard design, coupled with predictive analytics and user-centric feedback mechanisms, form the core of our optimization efforts. Strengthened security measures, collaborative data enrichment, and cloud-based scalability further fortify our approach. These strategies collectively aim to elevate the performance, usability, security, and predictive capabilities of our integrated solution, ensuring continual enhancement and alignment with evolving educational needs.

Data Integration Efficiency:

Automated Data Processing:
Implement automated workflows or scripts to gather and update datasets regularly. Scheduled data updates and real-time synchronization mechanisms ensure that the integrated dataset remains up to date without manual intervention.

Enhanced Matching Algorithms:
Fine-tune matching algorithms used during data integration. Explore advanced matching techniques, such as fuzzy matching or machine learning-based matching, to improve accuracy in merging school board data with broadband provider details, reducing the need for manual corrections.

Dashboard Performance Enhancement:

Optimized Dashboard Design:
Refine the dashboard layout and visualizations to improve loading times and overall user experience. Techniques like data summarization, caching, or pre-aggregation help reduce load times, especially when handling larger datasets.

Responsive Design for Scalability:
Design the dashboard to scale efficiently with increasing datasets or user requirements. Responsive design principles ensure consistent performance across various devices and screen sizes.

Predictive Analytics for Forecasting:

Predictive Modeling:
Integrate predictive analytics models to forecast future student population trends or broadband needs. Utilize regression models, time-series analysis, or machine learning algorithms to predict resource requirements, aiding in proactive resource allocation.

Scenario Planning:
Develop tools within the dashboard to simulate different scenarios. This allows decision-makers to assess the impact of changing student populations or new broadband provider entries on resource allocation and costs.

Continuous Improvement and Feedback:

User Feedback Mechanism:
Incorporate a feedback mechanism within the dashboard to gather user insights and preferences. Use this feedback to iteratively enhance the dashboard's functionalities, features, and user interface.

Regular Performance Reviews:
Conduct periodic reviews to assess dashboard effectiveness, user engagement, and accuracy of insights provided. These reviews aid in identifying areas for optimization and improvement.

Security and Compliance Measures:

Data Security Enhancements:
Strengthen data security protocols to ensure compliance with privacy regulations. Implement encryption, access controls, and regular audits to safeguard sensitive information.

Regular Audits and Compliance Checks:
Periodically audit data integrity and compliance with regulatory standards. These checks ensure ongoing optimization while aligning with legal requirements and industry standards.

Collaborative Partnerships for Data Enrichment:

Collaborative Data Enrichment:
Establish partnerships with relevant stakeholders or institutions to enrich datasets. Additional data, such as demographic information or broadband expansion plans, enhances the depth and accuracy of insights provided by the integrated solution.

Scalability and Resource Optimization:

Cloud-Based Scalability:
Consider leveraging cloud infrastructure for data storage, processing, and dashboard hosting. Cloud solutions offer scalability and resource optimization capabilities, accommodating increased data volumes and user demands effectively.

10.1 Conclusion

The integration of Ontario's school board data with broadband provider details has culminated in a transformative initiative, presenting an integrated Power BI dashboard as a cornerstone for informed decision-making within the educational sector. Through meticulous data manipulation, integration, and visualization, this project has empowered decision-makers with comprehensive insights into student demographics, broadband availability, and associated costs.

The Power BI dashboard stands as a testament to the project's success, providing a user-friendly interface for exploring and understanding the nuances of educational resource distribution and infrastructure planning. Predictive analytics incorporated into the dashboard facilitate proactive planning by forecasting future student population trends and broadband requirements.

This journey, from data collection to visualization, showcases the project's commitment to leveraging data-driven initiatives to revolutionize educational landscapes. As this phase concludes, the dashboard remains a dynamic tool adaptable to evolving educational needs and technological advancements, continuing to aid stakeholders in navigating resource allocation complexities.

In conclusion, the integrated solution marks a significant milestone in fostering equitable opportunities and strategic planning across Ontario's diverse educational institutions. It signifies

the beginning of a data-driven educational transformation, propelling decision-makers toward informed, impactful, and equitable resource distribution.

Future Work

Advanced Analytics: Enhance predictive models for more accurate forecasts of student demographics and broadband needs.
Data Enrichment: Expand integrated datasets with real-time updates and diverse data sources for deeper insights.
Dashboard Refinement: Improve visualizations, optimize for mobile, and gather user feedback for enhanced usability.
Security Measures: Strengthen data protection and compliance with evolving privacy standards.
Optimization: Regularly review performance, maintain the dashboard, and evaluate its impact on decision-making.

Summary

The project's core goal was to integrate Ontario's school board data with broadband provider details, resulting in a user-centric Power BI dashboard. This integration aimed to empower decision-makers with comprehensive insights for resource allocation and infrastructure planning.

The project involved meticulous data collection from educational and broadband sources, followed by manipulation processes for cleaning, integration, and predictive analytics. The output was an interactive dashboard presenting nuanced insights into student populations, broadband availability, and costs across Ontario.

Key achievements included predictive analytics for forecasting trends and iterative optimizations enhancing dashboard usability. The dashboard, a pivotal tool, aids decision-makers in navigating resource complexities and fostering data-informed decision-making.

The project's impact lies in providing decision-makers with a robust planning tool, signifying a data-driven transformation in Ontario's educational landscape. Future work opportunities include advanced analytics, data enrichment, dashboard enhancements, security measures, partnerships for enriched data, and ongoing optimization for sustained impact.

In conclusion, the integration of school board data with broadband details marks a milestone in fostering informed, impactful, and equitable resource distribution within Ontario's educational institutions.