**PUBLIC TRANSPORT EFFICIENCY ANALYSIS**

**PROJECT DEFINITION:**

The project involves analysing public transportation data to assess service efficiency, on time performance, and passenger feedback. The objective is to provide insights that support transportation improvement initiatives and enhance the overall public transportation experience. This project includes defining analysis objectives, collecting transportation data, designing relevant visualizations in IBM Cognos, and using code for data analysis.

**DETAILED EXPLANTION:**

1. Service Evaluation:

- Analyze the effectiveness of existing routes and schedules by assessing their alignment with demand patterns and population density.

- Identify underutilized routes and overcrowded services.

- Consider factors such as service frequency, reliability, and coverage.

2. Ridership Analysis:

- Study historical ridership data to identify trends and patterns.

- Determine peak travel times and geographical areas with high demand.

- Segment passengers by demographics to tailor services.

3. Cost Analysis:

- Examine operational costs, capital investments, and revenue streams.

- Identify areas where cost reduction is possible without compromising service quality.

- Evaluate fare structures and subsidy programs.

4. Infrastructure and Equipment Assessment:

- Inspect the condition of transit infrastructure (stations, terminals, tracks, bus stops, etc.).

- Assess the maintenance status of vehicles (buses, trains, trams, etc.).

- Prioritize necessary maintenance and upgrades.

5. Accessibility and Inclusivity:

- Evaluate the accessibility of the system for individuals with disabilities and limited mobility.

- Identify and address barriers to access.

- Ensure that public transport services are inclusive and accommodate diverse user groups.

6. Environmental Impact:

- Measure the environmental footprint of the transportation system, including emissions and energy efficiency.

- Explore options for reducing emissions and promoting sustainability, such as transitioning to cleaner fuels or electrification.

7. Safety and Security:

- Assess safety measures and security protocols for passengers and staff.

- Identify areas where improvements are needed to enhance safety and security.

8. Customer Satisfaction:

- Conduct surveys and collect feedback from passengers to gauge their satisfaction with the transportation services.

- Identify areas where customer experience can be improved, such as waiting areas, signage, and digital tools.

9. Financial Sustainability:

- Develop strategies to ensure the long-term financial sustainability of the public transport system.

- Review fare structures, subsidy programs, and explore potential revenue sources.

10. Future Planning:

- Consider the long-term growth and development of the community or region.

- Plan for future transportation needs, emerging technologies, and innovations.

11. Implementation and Monitoring:

- Implement recommended improvements and changes based on the project's findings.

- Continuously monitor performance and adjust strategies as needed to maintain and enhance efficiency.

**DESIGN THINKING:**

1. Empathize: Understand the Stakeholders

- Identify and engage with key stakeholders, including passengers, transportation authorities, drivers, and local government officials.

- Conduct interviews, surveys, and observations to gain deep insights into the experiences, challenges, and needs of users.

2. Define: Problem Statement and User Needs

- Based on the information gathered, create a problem statement that clearly defines the challenges and opportunities within the public transportation system.

- Distil user needs and pain points to inform the analysis process.

3. Ideate: Generate Solutions and Innovations

- Organize collaborative brainstorming sessions with a cross-functional team, including designers, data analysts, and transportation experts.

- Encourage the generation of creative ideas to address the identified challenges and improve efficiency.

- Explore innovative concepts such as new routes, scheduling approaches, or passenger experience enhancements.

4. Prototype: Develop Concepts and Solutions

- Create prototypes or mock-ups of proposed solutions. This could involve redesigning route maps, experimenting with new scheduling algorithms, or designing user-friendly mobile apps for passengers.

- These prototypes serve as tangible representations of ideas and can be used for further testing and refinement.

5. Test: Gather Feedback and Iterate

- Implement pilot programs or small-scale trials of the proposed solutions to gather real-world data and feedback.

- Collect input from passengers and other stakeholders to assess the effectiveness and acceptance of the proposed changes.

- Iterate on the solutions based on feedback, making necessary adjustments.

6. Implement: Scale Solutions

- Once the proposed solutions have been refined and proven effective, implement them on a larger scale.

- Collaborate with transportation authorities and relevant agencies to integrate changes into the public transport system.

7. Evaluate and Monitor: Measure Impact

- Continuously monitor the performance of the system with the implemented changes.

- Evaluate whether the solutions are achieving the desired improvements in efficiency.

8. Iterate and Improve: Continuous Enhancement

- Use the insights gained from monitoring and evaluation to identify areas for further improvement.

- Apply design thinking principles iteratively to address evolving challenges and opportunities in public transport efficiency.

9. Communicate and Engage: Transparency and Collaboration

- Maintain open communication with stakeholders throughout the design thinking process.

- Engage with the public to ensure that their feedback and concerns are heard and addressed.

**Dataset Link:**[**https://www.kaggle.com/datasets/rednivrug/unisys?select=20140711.CSV**](https://www.kaggle.com/datasets/rednivrug/unisys?select=20140711.CSV)

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