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# Project Narrative

The GroupBy project aims to create a machine learning predictive model for customer conversion and optimizing the customer's journey through a personalized shopping experience. The team has identified 0.8+ conversions as the ideal state where the customer journey needs minimal intervention, and <0.2 conversions as a low return-on-investment category with low purchase intent. The team aims to personalize the shopping experience for customers with conversion rates ranging from 0.2 to 0.8, to increase engagement and improve conversion rates.

The target audience for this project is the business stakeholders and the customers. The business stakeholders want to improve their ROI, while the customers want a personalized shopping experience. The initial solution architecture diagram involves collecting customer data through various sources such as website traffic, browsing history, and transaction data. The data is then pre-processed, cleaned, and analysed through exploratory data analysis (EDA) to identify patterns and trends in customer behaviour. The team uses various machine learning models and architectures, such as decision trees, logistic regression, neural networks and Uplift models to predict customer behaviour and personalize their shopping experience.

Uplift modelling, also known as incremental response modelling, is a machine learning technique that can be used to identify the impact of a treatment or intervention on an individual. In the context of this project, an uplift model can be used to predict the incremental impact of a personalized shopping experience on an individual's conversion rate.

Explainability and interpretability of the machine learning models is crucial, as the stakeholders need to understand how the models work and how they are making decisions. The team uses various techniques such as feature importance, SHAP plots, and LIME to explain the models and provide interpretability.

The success of this project will be determined by the improvement in conversion rates and the overall ROI. The team will compare the performance of the machine learning models using metrics such as accuracy, precision, recall, and F1 score. The models with the best performance will be selected for deployment. The business value of this project is significant, as a personalized shopping experience can increase customer engagement, improve conversion rates, and ultimately increase ROI.

In conclusion, this project aims to create a machine learning predictive model for customer conversion and optimize the customer's journey through a personalized shopping experience.