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4. **Research Design**
   1. **Primary Data**

For my primary data collection, I conducted a survey to gather insights on customer preferences regarding a unified membership system. I distributed the survey link online, encouraging responses through social media and direct messages. Additionally, I took an active approach by engaging with people on the street, inviting them to fill out the survey on their devices. To increase participation and show appreciation, I offered small incentives such as sweets or a nominal cash reward. This approach helped me reach a diverse set of respondents, ensuring a more representative sample. The combination of online and in-person survey methods allowed for efficient data collection within a limited timeframe. Overall, these strategies enhanced response rates and added depth to the insights gathered for my thesis research.  
  
2.2 Secondary Data

In the secondary data analysis for this thesis, the "Online Retail" dataset from the UC Irvine Machine Learning Repository was selected due to its comprehensive and practical insights into customer purchasing behavior. This dataset consists of transaction records from a UK-based online retailer, covering sales between December 2010 and December 2011. Each transaction entry includes essential information such as the invoice number, product code, product description, quantity purchased, invoice date, unit price, customer ID, and country of the buyer. The level of detail in this dataset makes it particularly valuable for understanding customer purchase patterns, preferences, and behaviors within the retail environment.

The choice of the "Online Retail" dataset aligns closely with the objectives of this research, which focuses on the potential of a unified membership system. By analyzing patterns in purchasing behavior, such as frequency of transactions and popular products, I aim to simulate how a consolidated membership system might improve customer engagement and loyalty. This secondary data allows for the exploration of customer preferences and repeat purchases, both of which are critical for developing insights into how a unified system could better serve both businesses and customers.

Additionally, this dataset offers an opportunity to test the feasibility of using neural networks to predict customer behavior in a real-world retail context. Given that the dataset includes both unique customer identifiers and purchase history, it enables the creation of models that can simulate personalized recommendations and targeted rewards. These insights can demonstrate the potential for a unified membership system to deliver tailored experiences, thus enhancing customer satisfaction and loyalty.

Overall, the "Online Retail" dataset from UC Irvine provides a solid foundation for the secondary data component of this thesis. Its rich and diverse transactional data supports the exploration of neural network applications in developing an effective unified membership integration system. The analysis of this dataset will add both relevance and depth to the findings and recommendations presented in this research.

**2.3 Problem identification and clarification**