### **Evaluation of International Transaction Volumes for Regulatory Purposes**

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Wise, as a rapidly expanding international financial services company, is increasingly subject to regulatory oversight in various jurisdictions. To ensure compliance with these regulations and support internal decision-making, we need to provide accurate and timely data to regulators and internal stakeholders.

**Data Requirements**

This analysis focuses on two key regulatory reporting requirements:

* R1: Total cross-currency volume in GBP under the UK Entity between 01/04/2022 and 01/08/2023.
* R2: Total cross-currency volume in GBP under the US Entity between 01/04/2022 and 01/08/2023.

Total same-currency volume in GBP under the US Entity between 01/04/2022 and 01/08/2023.

**Data Sources**

To address these requirements, we will leverage the following data tables:

Customers: Contains information about individual and business customers, including customer type, country of residence, and account creation date.

Transactions: Records details of all transactions processed through the Wise platform, including transaction ID, customer ID, amount, currency, and transaction date.

**Analysis Approach**

By combining and analyzing data from these tables, we will be able to calculate the required cross-currency and same-currency volumes for both the UK and US entities within the specified timeframe.

**Key Findings from the transactions Data Set**

**Basic Statistics**

* 90 transactions were completed by 67 unique customers.
* The average transaction amount is 491 GBP.
* The minimum transaction amount is -584 GBP, and the maximum is 1000 GBP.
* There are transactions with negative amounts, which could indicate errors, returns or other events. These transactions need further investigation.
* The transaction pattern shows a large variation in amounts. It would be useful to investigate whether certain customers generate more high transactions or returns.
* The transactions in the dataset cover almost two years. It could be reviewed if there were notable changes in volume or amounts during this time.

**Duplicate Transactions**

Upon running a detailed query to analyze potential duplication of Transaction\_Id combined with Customer\_Id, we found no cases where the same Transaction\_Id was associated with the same Customer\_Id more than once. This indicates that while there are duplicated Transaction\_Id values within the dataset, these duplicates correspond to different customers.

This situation suggests that the same transaction identifier might have been used across multiple customers, which could occur due to system design, such as different customer segments or entities reusing similar identifiers, or it could be a result of data entry or processing inconsistencies.

**Negative Transactions**

During the review of the financial data, two transactions with negative values were detected in the Amount\_GBP column of the transactions table. This unusual situation requires detailed investigation to determine whether it is due to recording errors, returns, accounting adjustments, or some other valid reason. Since this information will be presented to a regulatory body, it is essential to thoroughly document this finding, explore all possible causes, and support our conclusions with solid evidence. The goal is to ensure transparency and accuracy of reported data, as well as comply with regulatory requirements.

**Key Findings from the customers Data Set**

**Basic Statistics**

* There are 100 customers in the dataset.
* 42 out of the 100 customers have a null Customer\_Type, which indicates a data quality issue or lack of information for these customers.
* The total number of business customers is 29, and the total number of personal customers is 67.

**Customer Segmentation**

* Individual customers represent the majority (67%) of our user base. However, businesses (29%) constitute a significant and potentially high-value segment.
* The United Kingdom stands out as our largest market, accounting for 34% of our total customers. This strong presence in the UK suggests a successful market penetration and potential for further growth.
* Iceland, despite its smaller population, ranks among our top five markets. This indicates a unique market opportunity that requires further investigation.

**Geographic Breakdown**

The concentration of customers in the UK, France, and Germany suggests a focus on Western European markets. The presence of customers in Australia, Norway, and Portugal indicates potential for expansion in other developed markets. The inclusion of Iceland and Liechtenstein might indicate a strategy to target smaller, affluent markets.

**Quintile Distribution of Transaction Amounts**

The quintile distribution of transaction amounts shows that the higher quintiles have a higher average transaction amount. This is expected, as the higher quintiles contain the highest transaction amounts.

**Quintile Distribution by Customer Type**

* Business customers have the highest average transaction amount in the 5th quintile.
* Personal customers have the highest average transaction amount in the 1st and 4th quintiles.
* Unknown customers have the highest average transaction amount in the 2nd and 3rd quintiles.

**Transaction Volume Over Time**

The transaction volume over time shows some seasonality, with a peak in the second quarter of 2022.

**Transaction Trends by Customer Type**

* The transaction volume for business customers has been steadily increasing over time.
* The transaction volume for personal customers has been fluctuating, but overall has remained relatively stable.
* The transaction volume for unknown customers has been increasing in the second half of 2022.

**Handling "Unknown" Cases in the Customers Table**

During the analysis, it was observed that a significant portion of the Customer\_Type field in the customers table contains null values. This lack of information prevents definitive classification of these customers as either "Personal" or "Business." For the purpose of this initial report, transactions associated with these customers have been categorized as "Unknown."

While including these "Unknown" transactions ensures completeness of the data presented to regulators R1 and R2, it is crucial to address this data quality issue. Further investigation will be conducted to determine the root cause of the missing customer type information and to implement corrective actions. Potential avenues for resolving this issue include:

* Data Enrichment: Exploring other data sources or internal systems that may contain the missing customer type information.
* Algorithmic Classification: Developing a classification model based on transaction patterns and other available customer attributes to predict the likely customer type.
* Data Quality Processes: Implementing stricter data validation rules and processes to prevent future instances of missing customer type data.

**Addressing Negative Transaction Amounts**

The analysis revealed the presence of transactions with negative amounts in the Amount\_GBP field. While negative transactions can occur legitimately (e.g., refunds, reversals), they require careful scrutiny to ensure accuracy and compliance with reporting requirements.

For this initial report, negative transactions have been included in the overall volume calculations. However, a detailed investigation will be undertaken to understand the nature and validity of these negative transactions before submitting the final report to regulators R1 and R2. This investigation will involve:

* Transaction Review: Examining the specific circumstances surrounding each negative transaction, including transaction history, associated customer details, and any supporting documentation.
* Data Validation: Cross-referencing transaction data with other internal systems and records to verify the accuracy of the negative amounts.
* Compliance Assessment: Ensuring that the treatment of negative transactions aligns with regulatory guidelines and reporting standards.

By proactively addressing these data quality concerns and outlining the steps being taken to resolve them, Wise demonstrates its commitment to data integrity and regulatory compliance.

**Recommendations**

* Tailored Customer Experiences: To maximize customer value, Wise should develop more personalized experiences for both individual and business customers. This could involve customized product offerings, targeted marketing campaigns, and tailored support services.
* Regional Focus: Given the UK's dominance, Wise should continue to invest in this market while exploring opportunities to replicate its success in other European countries, particularly France, Germany, and Spain.
* Emerging Markets: Iceland's strong performance suggests that there is potential for growth in smaller, less-penetrated markets. Wise should conduct deeper dives into these markets to identify the factors driving their success and to explore similar opportunities elsewhere.
* Business Customer Acquisition: The business segment presents a significant growth opportunity. Wise should prioritize initiatives to attract and retain more business customers, such as developing specialized products and services, and strengthening partnerships with relevant industry players.
* Customer Behavior: Conduct a deeper dive into customer behavior to identify specific patterns and trends, including transaction volumes, payment types, and customer journey touchpoints.
* Market Penetration: Analyze the competitive landscape in our top markets to identify areas for differentiation and growth.
* Product Usage: Assess how different customer segments utilize our products and services to identify opportunities for product enhancements and cross-selling.
* Geographic Expansion: Develop a framework for evaluating potential new markets based on factors such as market size, economic conditions, and regulatory environment.

By focusing on these areas, Wise can refine its growth strategy and better position itself to capitalize on emerging market opportunities.