



Business Process Services

White Paper

Forecasting Chargeback Volumes: A Predictive Analytics Framework

About the Author

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Abstract

Effective and timely planning and superior execution determine success in banking. Hence, volume forecasting and capacity planning are critical to the industry. Changing customer spending-patterns and heightening fraud risks have made it even more imperative for banks to relook at their forecasting models. Banks use accurate forecasting as an important parameter in capacity planning and pricing for prospective customers. Capacity estimates are equally important for the banks to monitor and compare team performance across processes and drive improvements.

Depending on the data behavior and business inputs, the bank can choose an appropriate forecasting methodology to improve the accuracy of forecasts. For complex transactions such as chargeback processing, traditional methodologies such as time series may not provide accurate forecasts for chargeback volumes.

This paper introduces a forecasting model that predicts chargeback volumes effectively and is aligned with the operations of a banking unit. The proposed model is simple but meets business requirements, requires minimal investment of resources, and increases the accuracy rate. It also addresses the entire chargeback process. The model adopts a blended approach based on historical patterns (within stages of the process cycle), predictive analytics, and market trends.

This alignment with business patterns helps in monitoring process performance and estimating the price per transaction for new engagements at the bidding stage. It also helps businesses estimate the required capacity or staffing levels.

Contents

1. Introduction	5
2. Understanding the Chargeback Process	5
3. The Need for Robust Forecasting of Chargeback Volumes	6
4. A Customized Causal Model for Accurate Chargeback Forecasting	6
5. Model Functioning: A Step-by-Step Process to Forecast Volumes Accurately	8
6. Accurate Forecasting for Confidence and Control	10
7. Conclusion	10

1. Introduction

Forecasting plays a vital role in every aspect of management, especially for businesses that are fraught with risk and uncertainty. Every function attempts to reduce the degree of uncertainty while forecasting. Most tools make forecasts based on past trends, which can lead to huge variances. On the other hand, while quantitative analysis can be high on precision, it is not always appropriate to every situation or context. Causal or econometric forecasting methods assume that we can ascertain the factors that influence forecasting variables; for instance, factors that impact sales – such as the holiday season, or a salary increase or bonus – follow a linear relationship.

But there are certain processes where a linear relationship is not likely, or each stage has multiple potential outcomes. One such example is the process of issuing chargebacks on credit cards following a disputed transaction. A chargeback occurs on a credit card when the issuing bank withdraws the money paid for a transaction from a merchant's bank account and deposits it back into a customer's account.

In such processes, the accuracy of estimation cannot be ensured using the time series model. Hence, there is a need to study the underlying process behavior in order to arrive at an appropriate model. We recommend using a customized causal method, which helps achieve a better mean absolute percentage error (MAPE) value and meet pre-defined service levels. Delivery teams can use this simple, yet effective model to forecast the optimal effort.

2. Understanding the Chargeback Process

A chargeback is a trigger-based process and does not follow a linear pattern. In each stage of the process, the volume varies depending on the outflow at the previous stage. Other than individual disputes, incoming volumes are also impacted by collective issues faced by cardholders, changes in regulatory requirements by credit card Associations such as Visa or MasterCard, or fraud attacks.

The various stages in chargeback resolution are depicted in Figure 1.

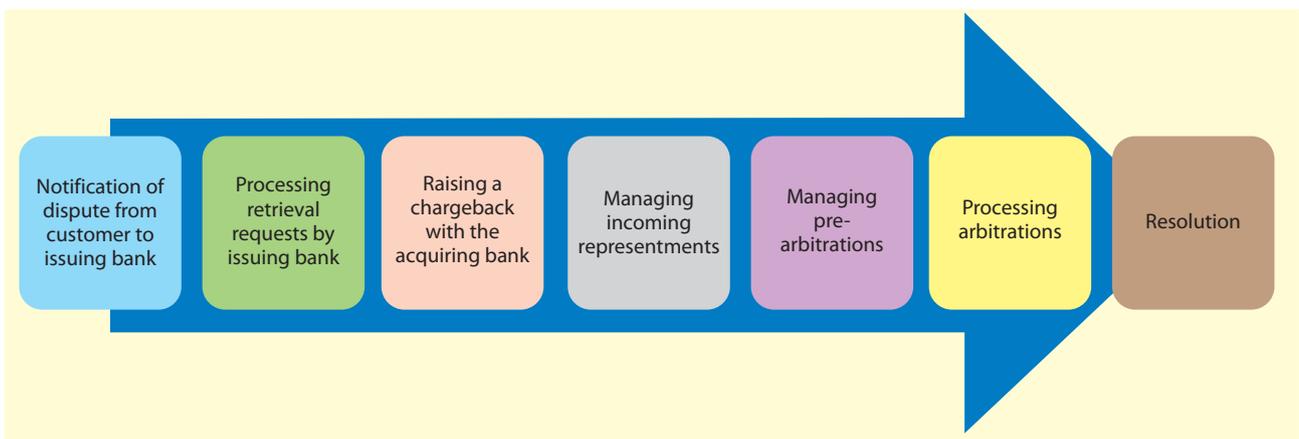


Figure 1: Stages in chargeback resolution

The resolution of a 'case' can take 30 to 120 days (or more). The duration depends on the nature of the dispute and the evidence provided by the issuing and acquiring banks. As the case moves from one stage to next, the complexity in processes increases and the issuing bank can incur a financial loss or lose the trust of its customer if it makes an erroneous judgment.

3. The Need for Robust Forecasting of Chargeback Volumes

Due to the complex nature of the process and the multiple stages involved, the business unit processing chargebacks faces several challenges. The nature of these processes is highly specialized and niche, requiring equally niche skills from the associates involved. Added to this, constant market changes require agents to stay abreast of Association regulations across regions. As the process progresses through different stages, the level of skills and expertise required also increases. It is a challenge to accurately forecast staff requirements across various queues to adequately meet customer requirements at every stage of the process cycle.

If a bank is unable to provide enough skilled resources in a timely manner, the processing of cases is delayed. Such delays make it difficult to meet the timelines required by regulations, leading to financial losses for the issuing bank. This also creates a high workload for the agents and thus increases the scope for errors. In turn, it may further increase the backlog and lead to aging of items in the accounts. Ultimately, it may lead to repeat customer complaints and dissatisfaction, with potentially further financial losses for the bank.

The best way to tackle these challenges is to ensure timely and accurate staffing by deploying an accurate forecasting tool for estimating the volumes at each stage.

4. A Customized Causal Model for Accurate Chargeback Forecasting

In order to improve the accuracy of estimates, we studied the process behavior at one large global bank to understand the variations and patterns of the incoming volumes. We also interviewed subject matter experts (SMEs) to understand the business aspects influencing this variation.

Our study of data across several countries revealed that volumes also vary with the lead-time between stages of the life cycle. We then estimated the proportion of volume that passes through each stage based on our process experience and through data collection. Our findings led us to conclude that a blended forecasting approach – a causal method blended with time series – will work best for forecasting the volume at each stage of the chargeback process.

This approach considers the historical trend of volumes of customer disputes and uses the time series model to forecast the expected volume at the first stage of the chargeback process. The base period is determined based on the lead-time at each stage of the cycle. A step-by-step matrix is used to predict the volumes in subsequent stages. We have elaborated on the matrix for each stage in the following section.

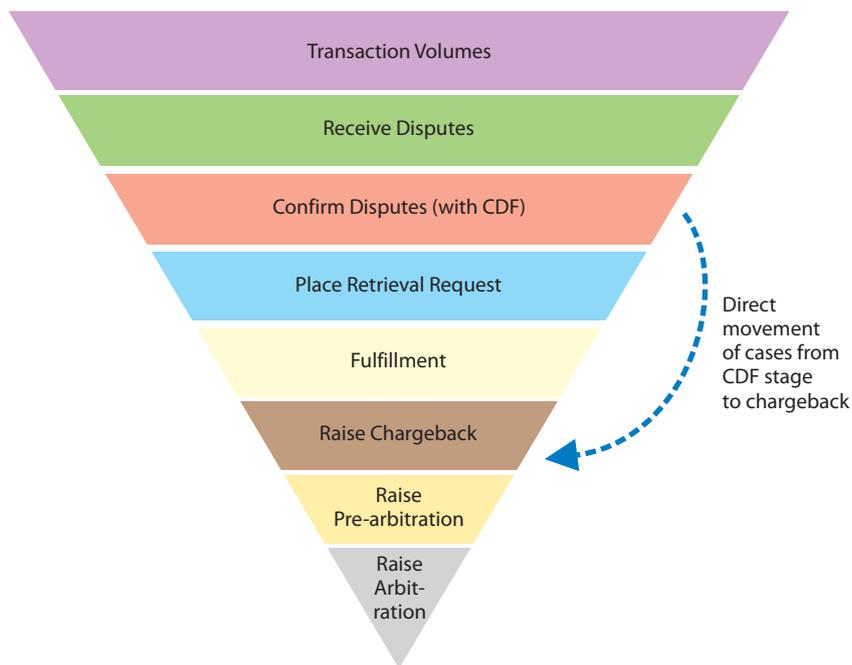


Figure 2: Waterfall representation of the chargeback process

A typical chargeback process is represented in Figure 2. In the traditional approach to forecasting, the calculations are based on the volume of incoming disputes from the customers. However, the volume funnel does not take into account the fact that the increase in volume at each stage is directly proportional not only to the incoming volumes but also to the lead-time between stages. Volumes may also depend upon market dynamics, such as a sudden fraud attack, changes in Association regulations for specific reason codes, or a new region-wise methodology for processing cases.

Based on these factors, the proposed model for forecasting takes into account the dependency at each stage of the chargeback cycle. Figure 3 exemplifies the various dependencies in the cycle.

Instead of simply forecasting the number of customer disputes and then assuming the same volumes across the various queues, the proposed model forecasts the volumes in each queue separately. The volume determination considers the volume at the previous stage and the lead-time at each stage, along with the impact of external conditions such as regulatory changes, in order to enhance accuracy.

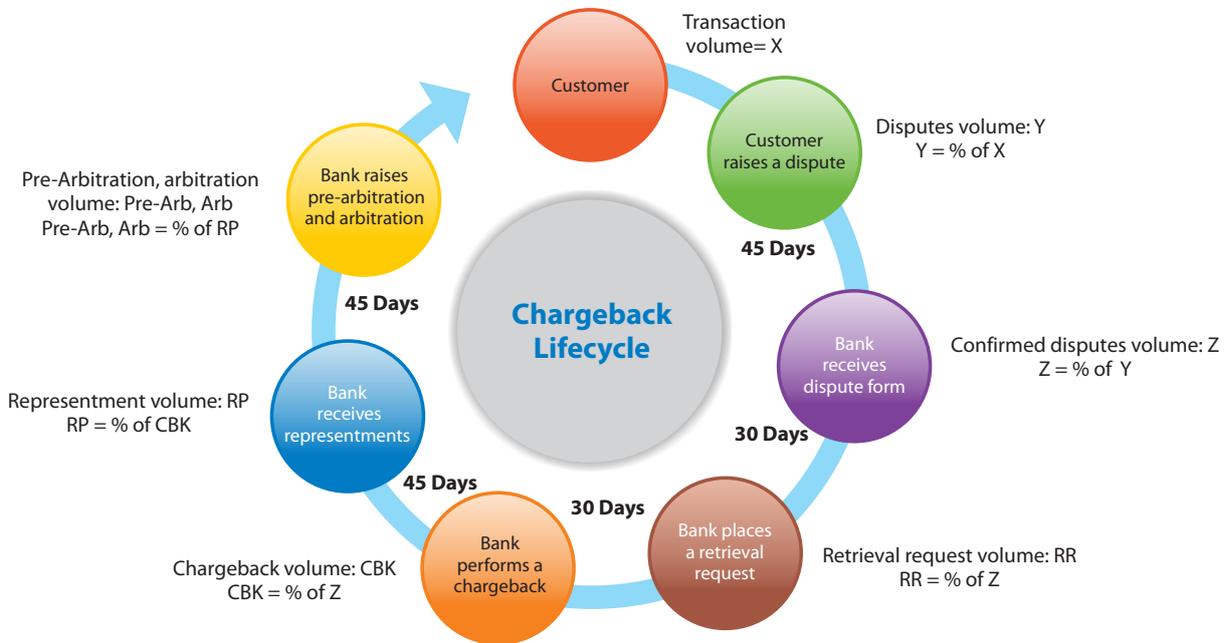


Figure 3: A sample of variations and lead times between the stages

5. Model Functioning: A Step-by-Step Process to Forecast Volumes Accurately

Figure 4 represents the end-to-end process of the proposed model. Each step has a corresponding matrix. The columns shaded in green indicate the forecasted numbers. To begin with, let us assume that X is the number of customer transactions expected.

Step 1: Determining the volume of incoming disputes (Y): These are represented as a percentage of the incoming transactions (X), and a time series model is used for predicting them.

Step 2: Arriving at the percentage of confirmed disputes (Z): Since these are all customer disputes that require chargebacks, they are represented as a percentage of incoming disputes (Y), and take into account the lead-time between the two stages.

Step 3: Determining retrieval request (RR) and chargeback (CBK) volume: The volume of CBK and RR are represented as a percentage of incoming disputes (Z). They take into account the historical data for RR and CBK, and the standard lead-time between the incoming disputes and confirmed disputes.

Step 4: Computing the fulfillment (FF) volume: This is based on the monthly RR.

Step 5: Calculating the re-presentation (RP) volume: This is calculated on the basis of the CBK each month.

Step 6: Arriving at the pre-arbitration (Pre-Arb) volume: This is computed based on the RP received in a month.

Step 7: Determining the arbitration (Arb) volume: This is based on the Pre-Arb response received each month.



Figure 4: Steps for forecasting chargeback volumes using the Customized Causal Model

6. Accurate Forecasting for Confidence and Control

Using this model, managers of chargeback units can effectively estimate staffing requirements and align the structure of their teams along the process cycle by determining the expected volume at each stage.

The suggested model is ideal for small and medium-sized banks that may have limited investments in platforms and systems for effective forecasting. Such institutions can customize and use this model to predict their dispute volumes. This will help them realize benefits such as:

- Effective utilization of resources through skill-set based capacity planning across the chargeback cycle
- Increased end-customer satisfaction through timely resolution of disputes due to availability of sufficient skilled resources
- Effective delivery operations through a flexible capacity estimation model
- Assured adherence to time frame requirements regulated by the Association
- Reduced financial losses on account of delayed action
- Reduced aging in accounts

7. Conclusion

The proposed forecasting method – a combination of time series blended with causal methods – changes the perspective from a process view to a system view. Process experience, when combined with statistical inferences, can help reduce the MAPE value, and also help in achieving better service levels and resource utilization.

In a rapidly changing market environment, organizations require the ability to accurately forecast dispute volumes to control costs and ensure customer satisfaction. An easy-to-use but effective model helps organizations perform regular and accurate forecasts for the entire cycle, based on historical data and the characteristics of the data and the process. Institutions can customize and use this model to predict their dispute volumes effectively in order to control their resourcing and budgetary requirements.

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