rapidminer

Improving Customer Service with Text Mining and Auto-classification

LIAT Responds More Quickly to Customer Issues with RapidMiner

Customer Profile

LIAT (Leeward Islands Air Transport)

Location

Caribbean

Industry

Airlines

The Customer

Headquartered in Antigua, LIAT operates high-frequency inter-island scheduled services serving 15 destinations in the Caribbean.

Executive Summary

- LIAT, the leading Caribbean airline needed to improve its customer service in the face of criticism and complaints about its lack of responsiveness

- Text mining and predictive classification models built in RapidMiner now route customer messages to the relevant departments

- The customer service department is now freed from manually triaging these messages, and can instead focus on responding to customer issues and needs

- LIAT's negative social media sentiment has dropped from almost 90% to the low 40s

- This early success has made LIAT leaders and staff open to the many opportunities for data science to improve operations and results

About LIAT and the RapidMiner user group

LIAT (formally Leeward Islands Air Transport) is a Caribbean airline headquartered in Antigua. The airline operates high-frequency inter-island scheduled services serving 15 destinations in the Caribbean. Its main base is VC Bird International Airport, Antigua and Barbuda, with other bases in Barbados and Trinidad and Tobago.

The airline has operated for over 60 years. While most of its unique travellers are tourists from outside the Caribbean, most of its traffic is made up of price-sensitive repeat travellers who live locally but need to travel between the islands regularly. Its flights tend to be short, generally 30 minutes or less, in small planes with few opportunities to vary prices based on cabin class. All these factors create challenging economics for the airline. And yet, in recent years, during a period of austerity, the government owners of LIAT have leaned on the airline harder than ever to become more financially self-sufficient.

This has resulted in an operating environment in which a strong and clear business case is needed for the adoption of any new technology or business practice. Bert Riley, a long-time data mining expert and consultant, was convinced by LIAT to become head of sales and marketing after a successful consulting project with the airline. Bert is the primary RapidMiner user, and in his role has been winning other LIAT staff over to the power that data science can bring to improving the airline's operations.

LIAT's need: improve customer relations with faster response to inquiries and complaints

Resources at the airline are tight, and nowhere is this more true than in the customer service department. LIAT's customer service team consists of only two people. This team was continuously bombarded with customer messages, delivered via email, website submissions and social media - almost 500 messages per day, on average.

Not all of these messages actually needed the customer service team's attention. Many of them were about matters that other departments would handle, such as inquiries about routes and fares (handled by the reservations department) or lost baggage (handled by the operations team). And some messages were unclear in what was actually being requested by the customer. But the customer service team had no way to distinguish between messages, and had to sort through them one by one, answering some directly, routing others to different departments, and in some cases asking the message sender for more information.

"Customers perceived LIAT as being slow and unresponsive to their inquiries and messages," said Bert Riley. "Our customer service team was working hard all the time to help customers, but they were simply overwhelmed by the volume of messages and couldn't keep up."

This perception of unresponsiveness manifested itself most painfully in critical social media posts and even coverage in the press portraying LIAT in a negative light. The social media posts were particularly acute. In a typical period, social media sentiment towards LIAT was calculated to be around 90% negative, based largely on lack of responsiveness to inquiries and issues.

RapidMiner enables auto-routing of customer messages, so LIAT's customer team can focus on the right priorities

LIAT knew it needed a way to reduce the volume of messages that the customer service team had to route to other departments, rather than answer themselves. The key would be to get these other customer messages to the appropriate departments without the customer service team needing to manually triage them. This would allow the customer service team to focus on the messages they could address themselves, thereby improving the customer experience.

RapidMiner has made this possible. LIAT set up a process that uses RapidMiner's text mining capabilities to parse every customer message received into key words and phrases. They also use RapidMiner to build a predictive model that classifies which department should be handling each message based on its content as analyzed via text mining. In cases where the model indicates the content of the message is not enough to classify it, an automatic

response is sent back to the customer asking for additional information in specific terms - such as "are you asking about our fares?" These models are fed by data imported using processes in RapidMiner, ranging from the platform's built-in Twitter plug-in to other custom data import mechanisms built by LIAT.

"Now, when a customer message comes in, it is automatically routed to the right department," said Riley. "Our customer service team starts each day knowing the messages waiting for them are the right ones for them to prioritize to improve the customer experience. Meanwhile, our other departments have the appropriate customer messages waiting for them, too. Our teams are more efficient and our customers are happier with the improved service."

RapidMiner has helped LIAT demonstrably improve customer sentiment

The impact on customer sentiment has been dramatic. Negative social media sentiment, a key metric for LIAT, has decreased from its high of almost 90% to the low 40s - cutting it by more than half. Significantly, this means that sentiment towards LIAT is now mostly positive (or neutral).

This is partly due to faster response to customer messages by the customer service team. But it's also because the customer service team has more time to work on other, long-neglected aspects of making customers happier. RapidMiner is now handling the hardest and lowest value-add part of the customer service team's job, freeing them to do more.

The customer service team is also happier. Not only are they spending less time on the grunt work of routing messages, but they can see how their role is becoming more strategic and impactful to LIAT's brand and standing in the marketplace.

RapidMiner represents a whole new way of thinking about business problems

Riley had a long history with a variety of data science platforms and tools, ranging from Minitab to Statistica to R, before he started working with RapidMiner. He admits that it took some time to adjust to building models and data processes in RapidMiner. But once he made the effort to understand the RapidMiner way, it had a huge positive impact on his productivity and effectiveness.

"RapidMiner has a learning curve, for sure," said Riley. "You have to adjust to the user interface and terminology, which is different than legacy tools. But now that I've done it, I use RapidMiner more than other other tool. I'm able to build models and analyze results much faster than with what I was using before. Once you learn RapidMiner, everything is a breeze."

In fact, Riley says that as he has become more comfortable with the power that RapidMiner puts at his fingertips, it has opened his eyes to additional projects with significant business impact that LIAT will benefit from.

Future plans: RapidMiner will help LIAT with demand forecasting and revenue management

Among the prospective new initiatives that Riley had identified is a project to improve LIAT's demand forecasting process. Many airlines follow the traditional process of setting a flight price, and then raising prices as the flight date approaches. But LIAT feels a more refined approach to pricing may instead be optimal. With RapidMiner, LIAT expects to better understand its likely demand for each flight, so that it can set prices appropriately.

More generally, the early success with the customer service team is helping Riley to win over others within LIAT to the value that data science can bring to the airline. As with many companies, some people at LIAT were initially incredulous that data science could deliver the kind of benefits Riley has been describing. But now this skepticism is starting to yield to a sense of the great opportunity that lies ahead.