Improving Telecom Customer Experience Through Machine Learning

MINDTITAN

Elisa Estonia AS

In search for a better way to improve the customer experience, Mailiis Ploomann knew that cutting-edge data science would bring new actionable insights to Elisa Estonia AS, a leading telecommunications company in Estonia.

Partnering with MindTitan, Elisa Estonia implemented data science, machine learning models and artificial intelligence powered communication tools throughout parts of the business. As telecommunications is a highly-competitive industry, Elisa Estonia's aim is to use artificial intelligence to automate part of customer service, while identifying and nurturing highly valuable customer interactions with customer service representatives.

Also, the telecom seeks to better understand how customers feel and experience their service by analyzing the mobile network with the help of an AI model, and how customers perceive their experience of the service. They have deployed AI within network analysis to learn about each customer's experience, allowing them to become a proactive telecom.

The telecom industry's challenge of managing high volumes of customers

Telecommunications companies operate on sheer volume, managing billions of customers as a collective industry. The mobile sector alone consists of five billion unique customers, according to GSMA.

Customer service at such high volumes poses several challenges. For instance, the telecommunications industry in the United States employs over 81,000 customer service representatives to field the hundreds of thousands of customer contacts every day. The topics of the customer inquiries range from billing questions to connectivity issues, sales questions and service inquiries.

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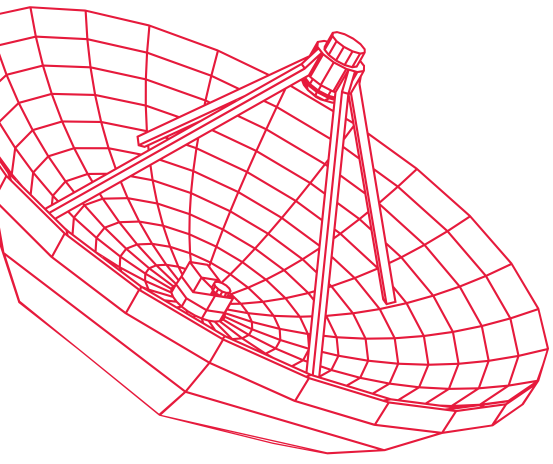
In addition, customers expect prompt responses. Research indicates that about 64% of consumers expect real-time responses at any given moment. 65% of consumers indicated that they are likely to switch brands if they receive inconsistent customer service across all platforms (Applied Artificial Intelligence). Also, perceived waiting time regarding customer service negatively impacts service satisfaction and customer loyalty. Call waiting time is a metric used by Ofcom's latest telecom customer service report. Only a handful of minutes of waiting increases the call abandonment rate to over 20% (customers hang up).



However, handling the volume of customer contacts with headcount alone isn't a feasible solution, as it is costly and does not correlate to a long-term solution. Publishing information and helping customers serve

themselves alleviates some issues, yet customers continue to choose to contact customer service for all questions, as it has proven to be impossible to create self-service user interfaces that every customer knows how to navigate. Also, the development of user interfaces can become very costly as they must be integrated with legacy systems.

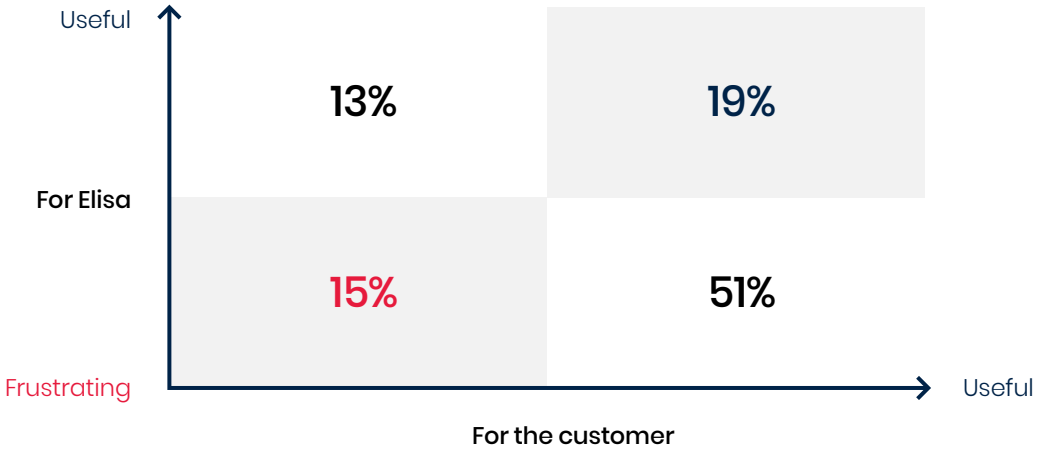
In addition to the challenge of managing the volume of customer contacts, contact centers are confronted with high employee turnover. The average employment length for a customer representative at a contact center is 14 months. The overall turnover rate is 40%.

Valuable customer inquiries

Before deploying any additional technology to tackle customer service challenges, the leaders on the customer service team at Elisa Estonia had to better understand the issues that lead to customer contacts.

Customer issues were categorized and placed in a value-irritant matrix to measure the usefulness of the contact to the customers and Elisa Estonia.

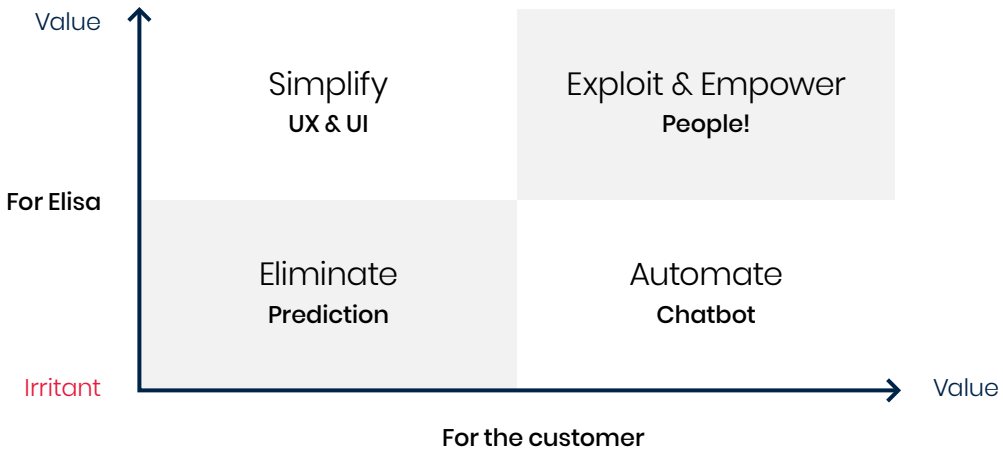
Value-irritant matrix
– B. Price & D. Jaffe



Through the analysis, the team discovered that 51% of customer inquiries should be automated, while another 15% of inquiries should be completely eliminated. The remaining contact reasons required human interaction or improvement in user experience online, but only accounted for 32% of all of the customer inquiries.

Customer contacts that are useful to both the telecom and customers, like potential sales opportunities and complex questions, accounted for 19% of all contacts. The remaining 13% of inquiries could be alleviated by improved user experience on the website and customer portal.

Value-irritant
- Solutions



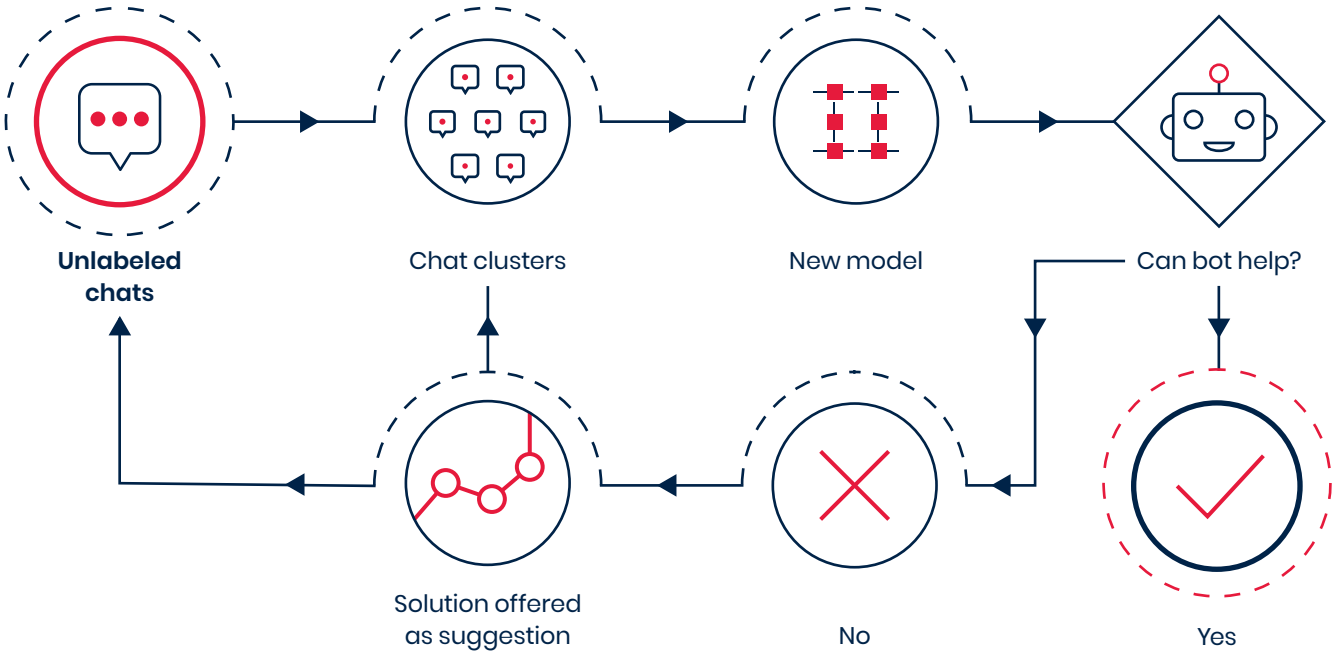
The analysis led to three distinct areas where artificial intelligence had the potential to assist the customer service contact center. First, creating an intelligent, self-learning model to automate simple customer inquiries, like billing questions. Second, help salespeople match the appropriate product for a specific customer, at the right time. And lastly, anticipate and predict frustrating customer contacts, allowing the customer service department to pre-emptively contact customers, before customers contact Elisa, or even resolve customers problems before they intend to make contact.

Intelligent chatbots & learning through conversations

Accounting to more than half of customer contacts are questions that can typically be answered through information readily available on Elisa Estonia's website, including information in the customer account portal. Regardless of the effort put into designing a website or customer dashboard to display pertinent information, customers will resort to asking customer service a question, rather than searching for an answer.

While chat functionality on websites has significantly improved the customer experience, it still requires the work of a customer service representative. At peak times, clients would still need to wait for the representative to see the question, find an answer and then respond.

The same work can be done with an intelligent chatbot. MindTitan's chatbot model analyzes incoming chats, appropriately labels them and decides whether human interaction is needed.



Once the bot engages with the customer, it asks specifying questions, continues to label them, searches for an answer using the data readily available about the client and provides them to the customer.

An incoming chat that cannot be handled by the model gets appropriately labeled and directed to the correct customer service representative the first time, reducing the need to transfer the customer across more than one person.

The model is a “human-in-the-loop” system, allowing humans to check the labels and classifications done by the bot and making corrections. The model learns from the corrections, improving the accuracy in the specifying questions it asks and the answers it provides. Ultimately, as accuracy improves, the less human intervention is needed.

As a result, half of the customers that contact the telecom can get instant responses to their questions, while the rest get to the customer service rep that can handle the issue best without needing to navigate the customer service department.

Next best offer

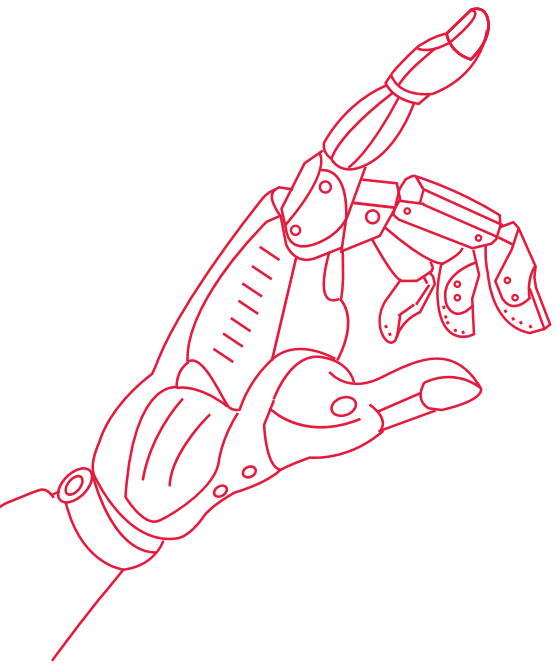
Beneficial to both the client and Elisa Estonia are sales opportunities - when client has a specific need or problem that is best satisfied through an upsell or cross-sell. The key, though, is identifying the opportunity and then matching the right product or service to that customer’s need at the moment.

As the intelligent chatbot classifies chats, it identifies sales opportunities based on the inquiry and the customer data, as the customer is logged into the customer portal while chatting with the bot. Once the

opportunity is identified, the chatbot routes the conversation to a sales representative.

Due to the volume of calls that salespeople must handle, it is difficult for salespeople to conduct the necessary research about a customer to understand the optimal contract and device package the customer may be interested in. Furthermore, making the appropriate offer to solve a customer's problem can become a guessing game. Lastly, a salesperson simply does not have the insight into every transaction Elisa has made with its clients. Thus, salespeople can't possibly have the necessary market knowledge to provide offers while giving the customer a great experience.

> *MindTitan's next best offer (NBO) model analyzes customer information and sales data from Elisa Estonia's database to give salespeople suggestions regarding products and services to offer that client.*



To assist sales representatives, MindTitan's next best offer (NBO) model analyzes customer information and sales data from Elisa Estonia's database to give salespeople suggestions regarding products and services to offer that client. The suggestions are designed to improve Elisa Estonia's customer experience, so they are meaningful upsells or cross-sells, like a better device to handle the usage needs of the customer. Or a suggestion for a larger data plan, as the customer exceeds the current package regularly and loses a strong data connection towards the end of the billing cycle.

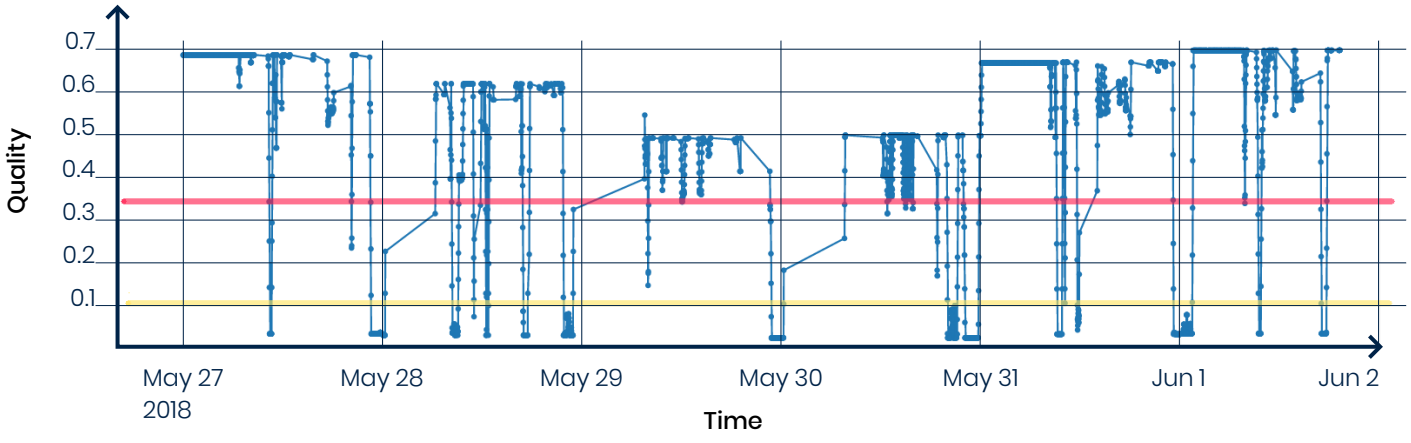
The recommendation model goes beyond recommending products and services successfully sold to other customers. It understands the features and

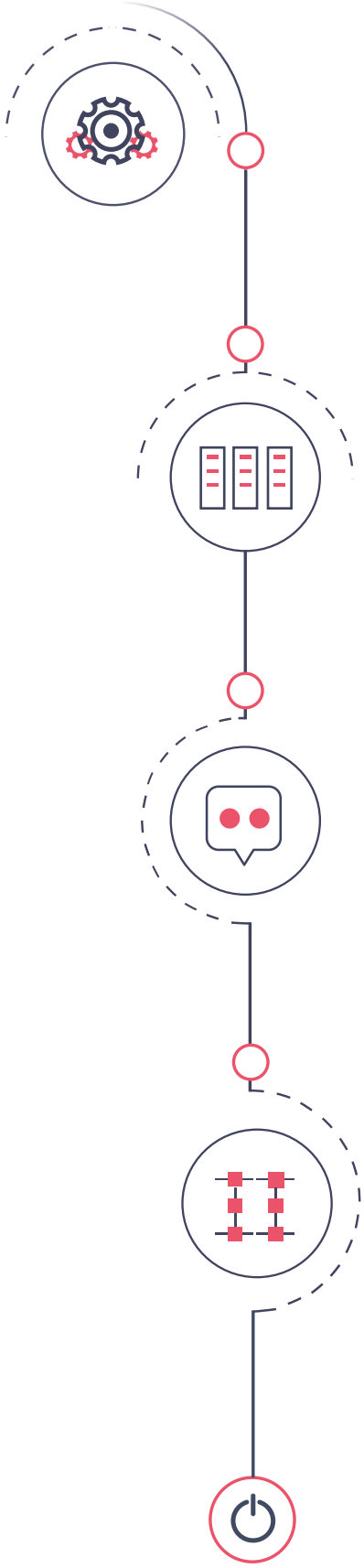
benefits of the products or services and aligns them with a complex customer profile, which takes into account network activity, consumption and usage patterns. Ultimately, the accuracy of the recommendations increases successful sales.

The next best offer model continuously learns and improves as the salesperson indicates whether or not offers are accepted - again, a "human-in-the-loop" model.

Machine learning & network analysis

Elisa Estonia found that most critical and complex customer contacts, while the smaller portion of all inquiries, are related to how customers perceive the service they are receiving at any given time. More importantly, the team at Elisa is more interested in understanding when customers are having bad experiences but not contacting them. With such information, the customer service team can be more proactive, ultimately providing better service and improving their net promoter score (NPS.) And the service is correlated to network performance, device performance, and the performance of the website or application being used at the time.





The primary indicators that Elisa Estonia and MindTitan are measuring with AI-powered network analysis are network events, internet experience, like page load times, type of internet traffic, and device type. By overlaying a performance index over the aforementioned indicators, MindTitan's mobile network analysis model learns and predicts how customers feel about the service they are receiving - the customer service team at Elisa has come to refer to this model as the "customer happiness index."

The index helps Elisa Estonia understand which customers actually had a bad experience and provides insights on how customers feel about the experience. This allows the customer service department to anticipate customer contacts and gives Elisa Estonia the opportunity to be proactive regarding issues it has control over and can alleviate before customers reach out.

Business impacts

As Elisa Estonia teamed up with MindTitan to deploy end-to-end customer service artificial intelligence models, business impacts became immediately clear.

At the first milestone, the AI-powered chatbot handled over two-thirds of billing inquiries without the assistance of a human. As the model learns, it's expected to be able to automate and answer 60% of all customer questions. It correctly labels the critical & complex issues, asks specifying questions and forwards them to the right person (20% of inquiries.) And it successfully identifies mutually beneficial sales opportunities and directs them to a sales representative (the other 20% of inquiries.)

Using the network analysis model, Elisa Estonia is improving the customer experience. While this model has a broader impact, customer service representatives have better insights into a customer's emotional state as

About MindTitan

MindTitan believes that data science isn't just a "nice-to-have" innovation. We believe that it is a must-have for any company looking to stay competitive within the next ten years. MindTitan exists to help companies extract actionable business insights from their data, as well as help them understand and apply artificial intelligence to their businesses. In other words, every fool can build a machine - MindTitan solves business problems.

Headquartered in the "Silicon Valley of Europe," the Estonian company has deployed machine learning and artificial intelligence models for enterprises across Europe and North America. With proven experience and a growing data science team, MindTitan established a North American presence in Portland, Oregon, USA.

an issue occurs and they receive a question or complaint. In addition, the company gets a better understanding of network needs, what infrastructure should be reconfigured and where more infrastructure should be built. As the model learns, it will provide more meaningful, yet fewer alerts regarding network issues and customer experience.

> *Customers forgo the need to search for information when they can simply ask an intelligent bot.*

An indirect impacts includes the cost of front-end development. Rather than continuing to research and develop new ways of displaying information that customers may need to access at any given moment, AI models communicate with customers to give them the information they need in real-time. Customers forgo the need to search for information when they can simply ask an intelligent bot, which continues to learn through interacting with customers.

After all, there has been an evolution in customer expectations. Customers that were once willing to pay more for better customer service are now willing to pay more if there is no need to go to customer service. Rather that the service and the information needed at any given time work seamlessly, including situations that can be urgent.