China Unicom leverages big data and AI at a massive scale to improve NPS and reduce churn

Who?
Development of a novel customer experience measurement and management platform collecting and analyzing massive data volumes across the entire customer lifecycle and customer base to drive specific, measurable business benefits continuously

What?
Built using TM Forum’s Open APIs, part of the Open Digital Framework, and the Customer Experience Management Lifecycle Model

How?
System costs reduced by US$14.3 million per year
Mobile internet NPS improved by 7 points YoY, broadband NPS improved by 13.8 points YoY
Churn rate reduced by 36%

Results

The Chinese market is extremely competitive and largely saturated with domestic operators. As a result, customer satisfaction and brand reputation are as paramount as efficiency and continuous operating cost reductions. In this setting, China Unicom has made elevating its customer experience a central focus. The company implemented a highly sophisticated, end-to-end customer perception management solution that spans the entire customer lifecycle. The solution makes real-time customer experience evaluations based on NPS, customer satisfaction and other measures like service performance to score every customer interaction and relationship.

China Unicom is second largest mobile operator in China and the world’s sixth largest with more than 317 million subscribers. As the company took on a major transformation initiative, its leadership realized it needed to enhance its ability to monitor customer experiences through big data; characterize customers into manageable subgroups; and create customer portraits based on key characteristics, product features, business features, consumption features, and customer evaluation, such as surveys. As Fan Yunjun, Senior Vice President and Deputy General Manager, explains, China Unicom’s aim is to “promote the transformation of the company’s model, thus realizing digital experience, marketing and products, and promoting the overall improvement of Unicom’s capabilities, so as to continuously improve customer perception.”

The company aimed to enhance its reputation and customer loyalty as a result by addressing clearly identified needs across specific population clusters and delivering differentiated services for different customer groups.
China Unicom Headquarters has many branches. In the past, customer surveys were conducted by branch offices on their own initiative, typically by telephone outreach, but there was no centralized coordination. As a result, many of the evaluation functions and capabilities were repeated across branches and hence were redundant and disconnected.

To unify this effort, reduce costs and improve results, China Unicom developed its user perception analysis and evaluation system. It is a customer experience management solution for digital perception analysis and evaluation based on big data, AI and other cutting-edge technologies. Based on eight scenarios in the customer lifecycle, the platform performs end-to-end analyses of customer experiences with functions, processes, interactions and scenarios. It drives network, business and service through big data to improve customer perception continuously.

China Unicom’s approach to measurement and data collection is robust and diverse. For example, customers are contacted by telephone to conduct a visiting survey. For app users, survey entries are placed at the bottom of the business processing page so that interested customers can click to participate. Customers who follow China Unicom’s official, public WeChat account are invited to participate in surveys through a push link. Other customers are invited via text with a push link that leads to a survey webpage. Customers in Unicom shops are pushed a link within three minutes of transacting business so that a salesperson can encourage participation on the spot. The company has also established a dedicated WeChat public account through which internal users and customers are invited to participate in specific product experience surveys. Participants are granted redeemable loyalty points as a reward.

Customer feedback is categorized and distributed to the appropriate department. Responsibilities are assigned to each professional and post so that each business unit can improve service capability quickly. Concurrently, in accordance with each customer’s evaluation result, the solution projects potential customer needs and depicts a perceptual portrait of the customer in order to drive personalized service.

The customer perception management platform program was launched in 2018 with basic NPS and public opinion modules, but radically expanded in 2019. China Unicom was able to establish a unified, end-to-end customer experience operation and real-time evaluation system including end-to-end customer experience measurement and intelligent, voice quality NPS inspection. This not only unified management and evaluation, but also resulted in substantial cost savings regarding system construction and research costs.

A platform based on large scale measurement, sophisticated data science and AI

China Unicom’s customer perception measurement platform uses the TM Forum Customer Management API and is based on the Forum’s Customer Experience Management Lifecycle Model, which allows us to define customer interactions into the various phases and subphases and model those based on their unique journeys, as well as a three-layer optimization model. This model covers preventive measures based on NPS, customer satisfaction evaluation, and effective management of complaints to prevent and control risks. The model is leveraged to refine user behavior in each stage and to control how the system intervenes or participates in or impacts the user experience.

Customer perception data has been integrated in multiple fields. Automatic speech recognition (ASR) was introduced to achieve intelligent voice quality inspection based on NPS. ASR greatly reduces the workload and cost associated with manual quality inspection of telephone recordings and surveys. ASR transforms voice recordings into text files which improves the efficiency and accuracy of analyses.

The company built 11 public opinion data models to fully retrieve acquired information and analyze public opinion in terms of theme evolution, time trend, topic communication, and more. This enables comprehensive customer experience evaluation with emotional connection scores (ECS). ECS is a comprehensive calculation and includes analysis or various modules including NPS, real-time experience evaluation, public opinion, complaints and other modules to explore the reasons for custom dissatisfaction.

TM Forum leads the way

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China Unicom’s approach has greatly enhanced customer satisfaction and Unicom’s brand reputation. Though customer participation was low initially, it grew over time as brand perception improved. Similarly, customer propensity to cancel or disconnect service was significantly reduced as NPS and ECS scores continuously improved. Both customer retention and revenue retention increased.

The scope of this effort is notable. Layered mathematical models and random sampling methods are used to achieve multi-point control of 490 million user samples as well as complete NPS assessment of more than 1 million users per year.

The platform provides portrait services for each incoming call, matching more than 300 models for each call on average, with more than 10 billion markings per month and more than 1 million business opportunity data outputs shipped to marketing.

Even with this scale, the new platform reduced user assessment costs by RMB 1.48 million (US$212,000); process management costs by RMB 1.1 million (US$160,000); and system construction investment by about RMB 100 million (US$14.3 million) in 2018.

Relatedly, mobile internet NPS increased by 7.0 points year-on-year and broadband NPS increased by 13.8 points year-on-year in 2018.

China Unicom also built end-to-end self-service modeling tools by integrating Word2vec, fastText, K-means, THUCTC and other text analysis and processing algorithms, which helped business units build more than 8,000 text labels. Using natural language processing algorithms, the company performs phonetic transcription for 50 million customer consultation and complaint calls per month and conducts customer portrait analyses for consultation and complaint work orders.

End-to-end satisfaction evaluation has been achieved for 14 key scenarios in the customer life cycle, benchmarked against 46 customer-service indicators, and with customer satisfaction as a measure of service implementation, thus providing a “barometer” of customer perception evaluation in all channels.

ECS perception evaluation is conducted for 4.86 million users per month based on six categories of indicators including service packages, call quality, Internet quality, complaint perception, user value and customer evaluation. More than half a million at-risk customers per month are saved based on this practice, reducing China Unicom’s churn rate by 36% and improving customer satisfaction by 13%.

![China Unicom’s customer perception management platform](image-url)
To create this program, China Unicom had to develop and refine a variety of techniques in customer experience measurement and management and to determine which had the most direct impact on its operating results. The company learned many lessons as a result which helped it to realize specific customer experience, cost and revenue benefits.

The team created a digital customer emotional experience module. It was optimized through multiple iterations to refine how public opinion and perception data is acquired and used. The team also learned to use its NPS-based customer evaluation system to identify the most valuable customer data and to target the correct customer mix for perception surveys. Its satisfaction questionnaire and multi-scenario optimization solution determined ways to improve customer experience perception further.

China Unicom learned to measure and manage customer experience perception with the integration of both business and network domains to improve customer experiences in specific vertical industries. In turn, the company says it will be able to use this approach to improve its 5G network as well as its operational and maintenance efficiencies to reduce costs and continuously improve customer perception in the future.