CASE STUDY

Your next 5G site roll out? Let your customers decide: How HKT did it

Published by

MOBILE WORLD LIVE

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Introduction

When a mobile network operator plans a 5G cell site upgrade, it typically makes a technical decision based on questions of infrastructure.

When Hong Kong Telecom started planning its 5G strategy , it wanted to do things differently. It wanted to bring commercial factors into the decision too.

But which sites should it upgrade first? How could HKT know where an improvement in network speed and coverage would have most impact?

To answer these questions, HKT turned to its own insights tool: the Customer Happiness Index (CHI).

CHI, created by Lynx Analytics, is a solution that links operational metrics to business outcomes. For example, it can show how a change of payment method among a selected cohort of users might impact churn rates for the same group – or how a rise in customer care calls might correlate with NPS scores.

HKT realised it could use the CHI to guide its 5G roll-out timeline.

This year, it put that strategy into practice.

In this paper, we will explain more about the CHI and the results of HKT's three-year project.

5G: why MNOs need to start monetising a $800 billion investment now

5G is costing mobile network operators a lot of money. According to GSMA estimates, MNOs will invest $1.1 trillion in network infrastructure between 2020 and 2025 – and 80 per cent of that will go on 5G.

That's just over $800 billion in CAPEX.

In this first phase of the transition MNOs are moving to a 'non-standalone' 5G architecture, which anchors 5G radio to the existing 4G LTE network. The non-standalone approach lets carriers roll out 5G without a massive infrastructure overhaul. It's an interim step before the migration to a fully cloud-native 5G core that will support industrial applications.

Clearly, it will take time for MNOs to monetise next-gen markets such as connected car, smart city and augmented reality that emerge from the high-speed, low latency 5G Core.

But what about today's non-standalone launches? Can carriers monetise these 5G investments better?

As of Q2 2020, 87 MNOs had already launched 5G services across 39 markets. According to Ericsson's Mobility Report, there will be 190 million 5G subscribers by the end of this year.

These non-standalone 5G launches bring faster data speeds and greater mobile coverage. Surely this is an opportunity, since some customers will respond to these service improvements by spending more.

But which customer segments? In which regions? And what packages would deliver the best results?

If MNOs knew the answers to these questions, they could make the most of existing deployments – and target their cell site upgrades more productively.

A number of MNOs are pioneering this commercial approach to 5G roll-outs. One is Hong Kong Telecom. Let's explore HKT's methodology.

Case study: How Hong Kong Telecom's 5G roll-out boosted engagement, satisfaction, ARPU and app usage

When Hong Kong Telecom started its 5G roll-out in April 2020, it knew exactly which sites to target first. Simply, it chose locations where improvements in network speed and coverage would deliver the best returns.

HKT used the Customer Happiness Index (CHI) tool to guide its decisions. The CHI ingests data sets about a customer (or customer segment) such as: number of app downloads; network quality; number of customer service calls and more.

It then links these metrics to business outcomes such as: customer lifetime value (CLTV), NPS score and churn rate. (see box)

In order to achieve the best possible results from the project, HKT brought together colleagues from engineering, technology, and marketing to work on it. According to Dr. Chung Ng, SVP Technology Strategy and Development at HKT, the team followed an eight-step process:

1. Select the group of customers whose network quality was having the biggest impact on NPS, CLTV and predicted churn levels.
2. Discover which variables (complaints, latency etc) were most affected – and could be mitigated by a 5G site upgrade.
3. Find out where the targeted customer group was consuming most of the data and voice traffic.
4. Match these locations to site clusters/towers.
5. Decide which site upgrade could have the biggest impact on groups.
6. Upgrade the site.
7. Follow up with micro-targeted 5G upgrade campaigns offering packages linked to video, gaming, and 5G enabled handsets – and communicating service improvements to customers.
8. Analyze the impact of these campaigns. Repeat the roll-out for lookalike audiences.

The first customer promotions started in June. Thanks to the highly targeted nature of the campaigns and HKT's teams best-in-class use of CHI, the results were impressive: double digit take-ups from all contacted customers.

And the improvement in key metrics followed soon after. By September, HKT's CHI dashboards showed improvements in engagement, satisfaction, ARPU and app usage.

This new data proved the success of the project. What's more, HKT used it to define lookalike audiences for the next batch of site upgrades. In effect, the CHI became a kind of 'recommendation engine'. It could define the ideal sequence for finding a group of target customers, matching them to cell sites, upgrading the sites and finally devising 5G campaigns.

As a result of this activity, HKT will be among the world's first to achieve significant 5G coverage in its territory with a significant number of customers adopting the service with 5G-enabled handsets. Moreover, HKT can now sequence its future investments based on the speed of realizing the returns.

Paul Berriman, Group Chief Technology Officer of PCCW/HKT, says: "We always want to stay true to our promise of delivering the best customer experience in Hong Kong. Being fastest to 5G can obviously help us do that.

"Thanks to the CHI, we've been able to find out exactly which customers would benefit most from a service improvement – and know where those customers are. This insight has guided our 5G site upgrades. And the results have been fantastic."

Customer Happiness Index: how it works

Every MNO is sitting on a vast trove of operational data. These metrics cover all aspects of customer behaviour.

There are hundreds of these diverse data points. Here are some examples:

- Quantity of data consumed
- Quality such as latency, throughput, packet loss, on different site technologies, down to customer level
- Number of calls made, or received from customer service
- Mobility patterns
- Cross ownership of fiber broadband, household product mix
- Dropped calls, reducing in importance, but still important for highest value customers and older customer cohorts
- Bill disputes
- Payment method type, digitally enabled direct debit, etc
- Value-added service subscriptions
- Roaming events
- Customer support queries

The list goes on.

Meanwhile every operator has key business objectives, which can also be measured. The most important of these are:

- Customer lifetime value (CLTV)
- Propensity to churn
- NPS satisfaction score
- Loyalty engagement, campaign take-up, event attendance

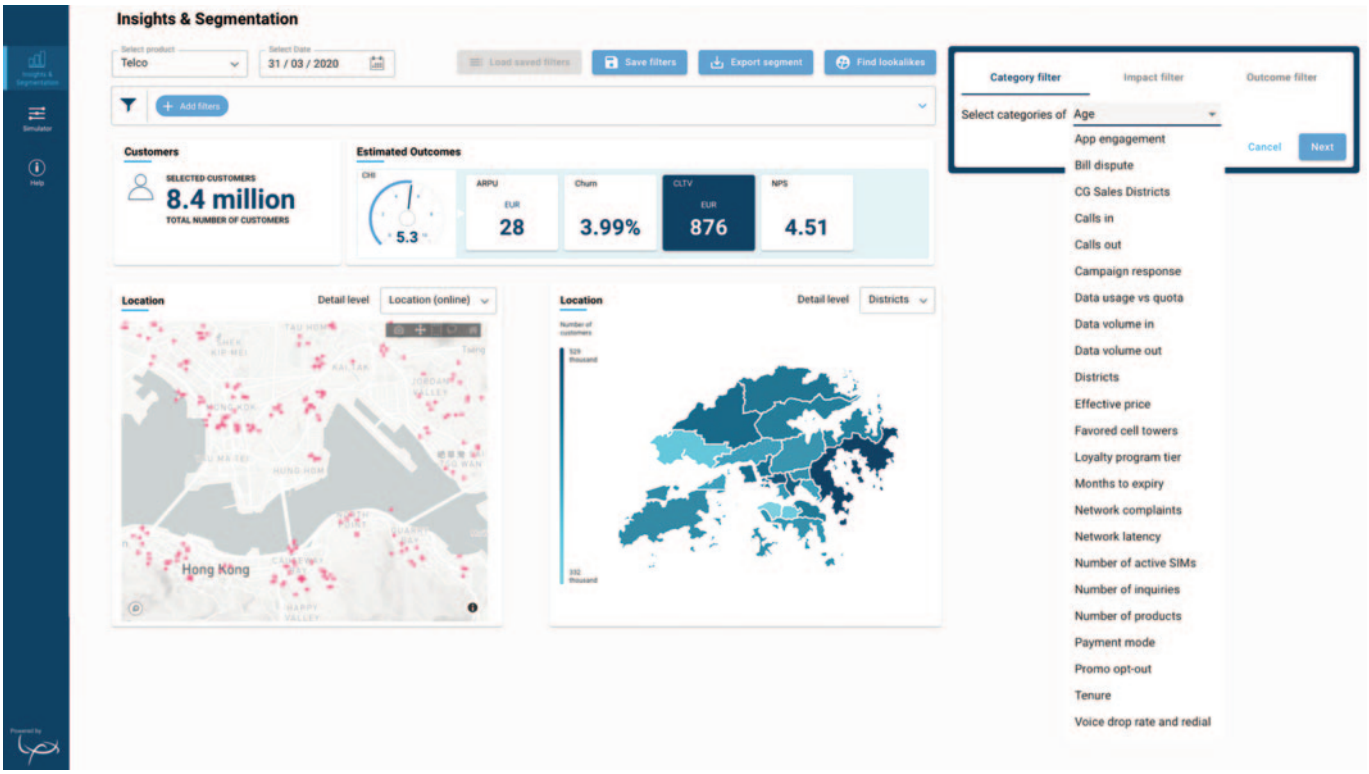
The challenge for every operator is to link the two groups – to see what impact changing a specific operational metric (say, latency linked to specific applications) will have on a given business outcome (say, propensity to churn or recontract).

This is what the Customer Happiness Index does.

The CHI uses machine learning to model outcomes. And it displays the results in easy-to-read graphs and tables on a web dashboard, enabling automated selections of audiences whose behaviours are explained by the diverse data points.

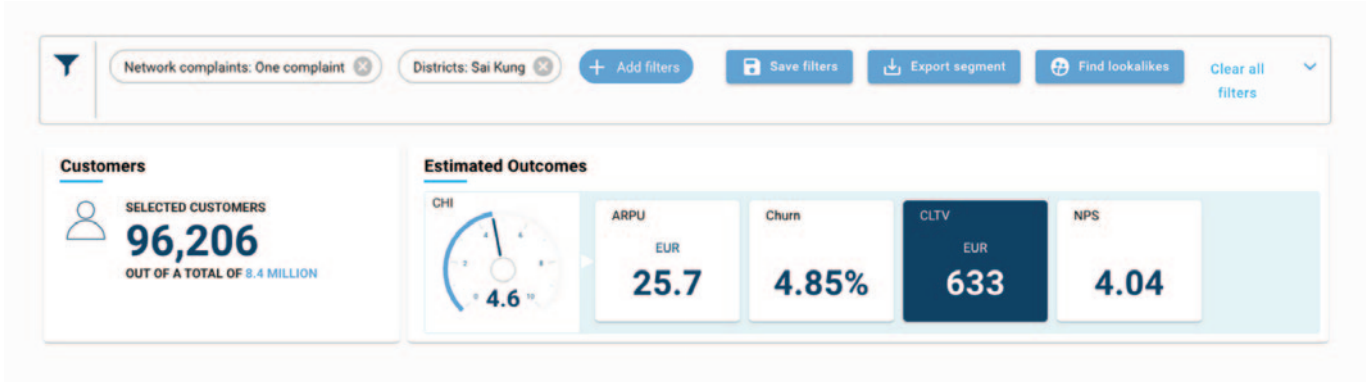
Customer Happiness Index: a walk-through

To understand the CHI better, let's take a hypothetical use case. Let's assume our fictional MNO has 8.4m customers, and that the average CLTV is $876. Now, we want to know what happens to CLTV when we select only the customers who are predicted to have some complaints about network coverage.

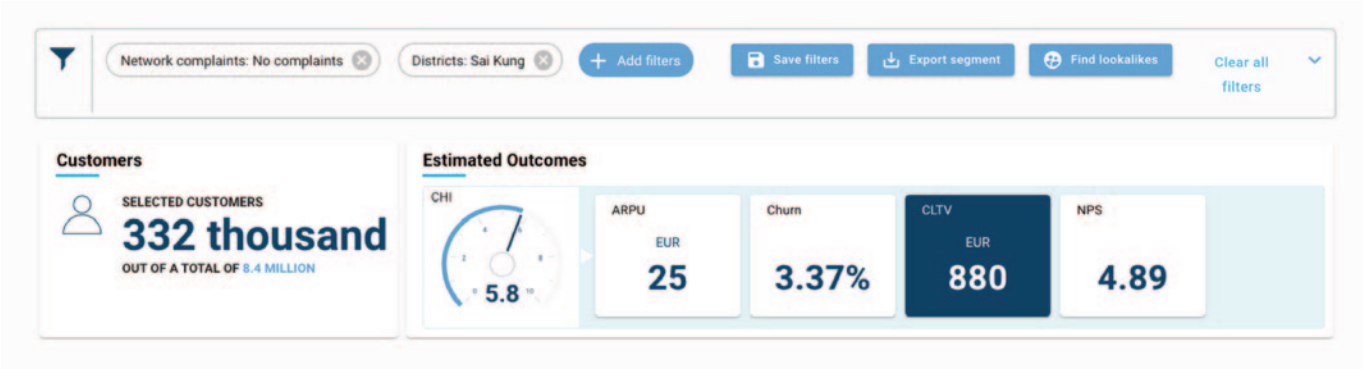


We simply add the 'predicted network complaints' filter, and we see that 350,000 customers are predicted to complain within the next 12 months. The CLTV for this cohort goes down to $784

Let's filter even more precisely – by geography. We can look at a colour-coded map to see which region is home to most predicted complainants. Again, we add the filter. Now we see that there are 96,000 customers in this group. The modelled CLTV falls to $633.



Now, let's model what might happen if we compare this base with customers in the same geography who are not predicted to complain. We can see there are 332,000 customers in this cohort. Their CLTV was $880.



So, now we know that customers in this region who are predicted to complain about some aspect of the network service will spend an estimated $247 less over their lifetime than those that don't.

The arithmetic is compelling. The collective CLTV of the complainers is around $60m. Turn those unhappy customers into non-complainers and the CLTV jumps to almost $84m. That's nearly $24m in gains.

Obviously, this is just one example but a verified one. As the CHI constantly retrains its predicted network complainers and defines CLTV potentials based on real data, 5G upgrades offered with various tiers and handset or price plan vouchers are a great way to turn around customer happiness. During the process past grievances are discovered and resolved, verifying some of the predictions.

Eventually, operators can look at the modelled impact on churn and NPS, and CLTV will also correlate with those.

At the end of the project, operators can give every district and micro-cluster a rank – and organise these districts at cell site or tower level. They can then use this information to inform decisions about 5G roll-out.

Talk to us!

MNOs all over the world are now using the CHI to connect their operational metrics to measurable commercial outcomes.

They are using the insights to make informed decisions – not least about 5G roll-out.

Traditionally, network engineers made most if not all of these decisions. Now, sales, marketing and business development teams can have their say too.

It takes just a few months for an MNO to launch its own CHI, which Lynx will configure to its unique needs. Typically, they see results within weeks of using it.

Learn more about Lynx Analytics data science solutions by visiting their website at **https://www.lynxanalytics.com/**

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