Monetizing investments in telecom network infrastructure

We discuss how to optimize telecoms network infrastructure investments by adopting a multi-criteria evaluation approach based on business, technical and CEX KPIs.

In an investment-driven industry such as telecommunications, optimizing investment decisions has always represented a key competitive advantage for operators. However, in a market characterized by stagnating growth rates and increasing competition, where many telecommunication companies are facing flat or even decreasing revenues, keeping up with the latest technologies in order to ensure differentiation and meet the increasing demands of interactive services becomes binding. Operators are therefore facing new challenges in making investment decisions: how to identify the right investment, at the right time and for the most commercially attractive geographical areas. Arthur D. Little, through its long-standing project experience in the industry, has developed a multi-criteria CAPEX prioritization methodology, based on three sets of KPIs: business, technical and customer experience. By shifting from the traditional investment decision model to the suggested holistic approach, operators will be able to answer new and strategic questions such as "What is the impact of incremental investment on customer satisfaction and, consequently, the churn rate?" and "What is the correlation between network performance and ARPU?"

Urgency for a new investment allocation model

Due to stagnating core market growth and increasing competition, many telecommunication companies are facing flat or even decreasing revenues. In this increasingly difficult landscape, telcos must rethink their investment strategies for making smarter and value-creating decisions. One of the crucial battles between competitors relies on keeping up with the latest technologies in order to ensure differentiation and meet the increasing demand for interactive services and applications, while simultaneously providing a consistent and reliable service experience to customers. This, however, represents a challenge, since deploying, maintaining and upgrading a nationwide network infrastructure is a considerable financial and operational effort. Suffice it to say that the upcoming 5G network standard will increase the run for CAPEX by approximately EUR 500 bn by 2025 in Europe.

It is clear that the key to success for telcos is now, more than ever, an effective and optimized investment allocation strategy. Moreover, the upcoming wave of capital-intensive fiber roll-out is making investment decisions even harder: operators will have to base their investment decisions on very granular (i.e., street-by-street) and complex ROI assessments.

Luckily, the possibilities of improving investment decisions through advanced analytics methods has vastly increased. As of today, not exploiting this kind of data may represent not only a missed opportunity, but also a costly mistake. Unfortunately, we have found out that many operators still base their network deployment investment prioritization on few drivers – mostly either technical performance or customer complaints.

Conversely, a successful investment strategy requires a holistic and granular perspective. Arthur D. Little constantly uses this approach and, while reassessing the whole network-investment prioritization process, introduces new information layers for steering and ex-post measuring of CAPEX effectiveness.

## Granular and performance evaluation criteria

For a proper performance evaluation, it is essential to increase the granularity of investment areas for better scouting optimization opportunities (e.g., the split of the country into the smallest available administrative units, such as districts). This approach eliminates the lack of accuracy that averaged nation levels that KPIs bear and enables punctual actions. Surprisingly, today's large telco operators do not take customer insight into

consideration, and clients remain "black boxes" when making investment decisions. One of the most recent and controversial examples is the monetization of investments associated with 4G services, which have required big investments in frequencies and infrastructures, but have not led to an increase in prices since launch.

We recommend considering at least the following perspectives to generate a holistic analysis and data set:

- **Business:** How attractive is each district commercially?
- **Technical:** What is the actual network performance per site/district?
- **Customer experience (CEX):** How do customers perceive
  a) the overall service quality in each municipality and
  b) improvements in technical KPIs

Overview of relevant network investment steering dimensions
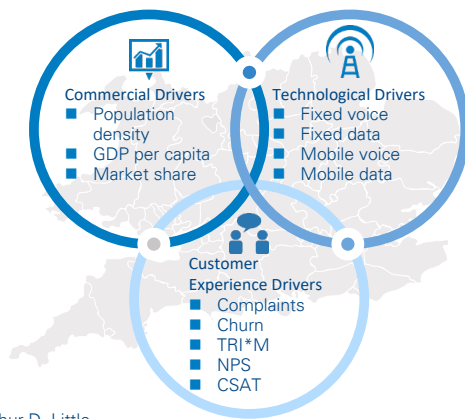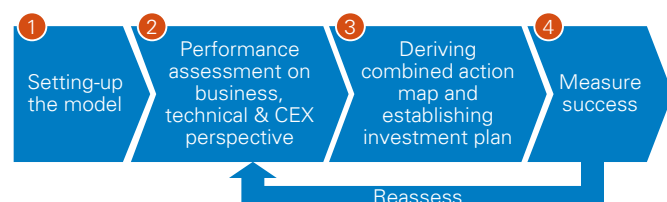

Source: Arthur D. Little

To measure investment monetization effectively, Arthur D. Little developed an integrated CAPEX prioritization methodology based on the dimensions outlined in above illustration.

To successfully implement this methodology, relevant KPIs for each dimension need to be defined and measured at the smallest-possible granularity. The subsequent KPI evaluation process should then be set up in a systematic and automated manner to enable regular tracking and provide management with the opportunity to constantly measure the impact of network investments and adapt investment strategy accordingly

Continuous improvement framework approach

The Arthur D. Little CAPEX prioritization methodology is based on a continuous improvement framework composed of four steps, as illustrated in below illustration

Sourcing and localization of support level

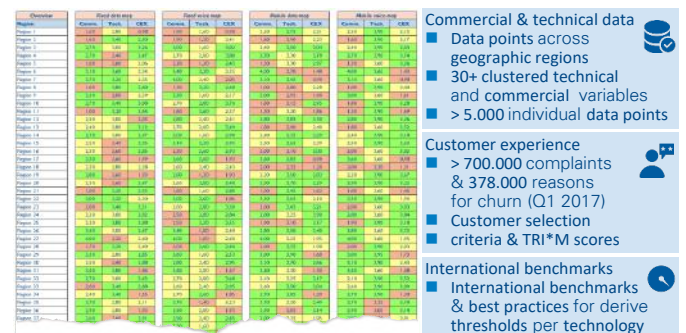Source: Arthur D. Little

Setting up the model

The first step is to establish the basis for a performance evaluation model. The operator's covered geographical area is split into the relevant sub-regional units.

- For business and customer experience indicators, the geographical area is split at least at district level.
- Technical KPIs are measured on a per-site/-district basis

The collected data then needs to be harmonized and included in a model that enables visibility of all KPIs and data points down to the lowest level, as shown in Exhibit 3. If the CEX data is not available at the required granularity, customer touch-point processes need to be modified to allow for data gathering. Additionally, primary market research is conducted. The result is a model depicting the network performance per area across all three relevant dimensions.

Illustrative model outcomes on a regional basis
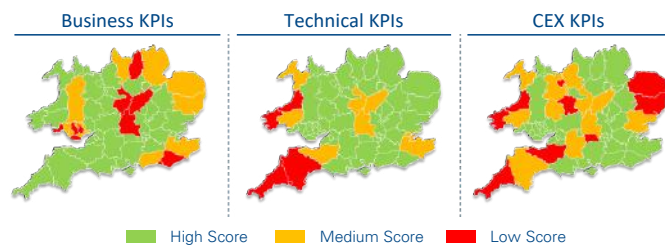

Source: Arthur D. Little

Performance assessment on business, technical & CEX perspectives

Each region's performance is then assessed via the three dimensions through its respective KPIs. A ranking based on pre-defined best-in-class thresholds shows a clear indication of commercial attractiveness, technical capabilities and customer experience per area (Exhibit 4). Through visualization on a map, potential differences between technical KPIs and, for example, perceived customer experience in certain areas would become visible.

From our experience with multiple international operators, we understand that operators tend to have commercially attractive areas with strong technical network performances, but that still experience high churn in some of those areas. In such cases, the CEX map will provide essential input for management to steer further network investments. In order to assess the impact on customer satisfaction, which can be used as a proxy for overall customer experience, the company must shift its focus from the operating performance metrics to customers' quality-of-experience metrics. Managers in technical departments usually have access to complex monitoring dashboards, which,

however, tend to focus only on traditional network performance KPIs. In order to correctly assess all three dimensions, technical departments should introduce new processes and tools that allow for monitoring a new set of values and metrics, which are known as key quality indicators (KQIs).

Overview of business, technical and CEX maps

Source: Arthur D. Little

Deriving a combined action map and establishing an investment plan

Following the individual evaluation, the three-dimension maps are merged into a combined and holistic heat map displaying recommended strategies on a regional basis. As an example, the area with the highest technical score, usually not considered for new investment, can be now reconsidered due to low CEX scores.

As a result, the so-defined heat map has significant influence on the overall roll-out strategy and becomes an ideal tool to determine which areas to prioritize.

## Combined action map for investment steering
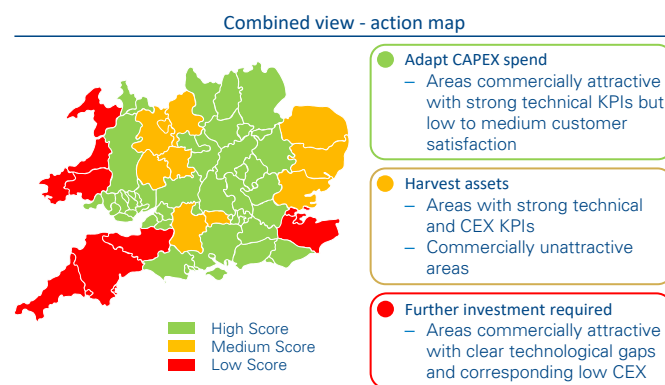
Source: Arthur D. Little

However, it is important to measure and evaluate all the KPIs in a coherent manner. While for business and technical KPIs this is straightforward, it is more challenging for customer experience, since qualitative customer complaints need to be translated into measurable, quantitative KPIs and then actionable CAPEX initiatives (in above illustration).

To ensure coherent CEX indicators, the usual customer touch points (call centers, shops and technicians) need to be equipped with the right tools to translate the magnitude of customer complaints into a limited number of standardized

complaint "buckets". These buckets need to be in line with the requirements of the CAPEX model. Best-in-class operators also engage in proactive outbound campaigns, contacting customers to measure both customer satisfaction and the quality of service provided by their networks. Once these complaint buckets are linked to the relevant technical KPIs, new CAPEX initiatives can be formulated and rolled out in accordance with the identified prioritized areas (in above illustration).

Process of deriving CEX KPIs for investment steering
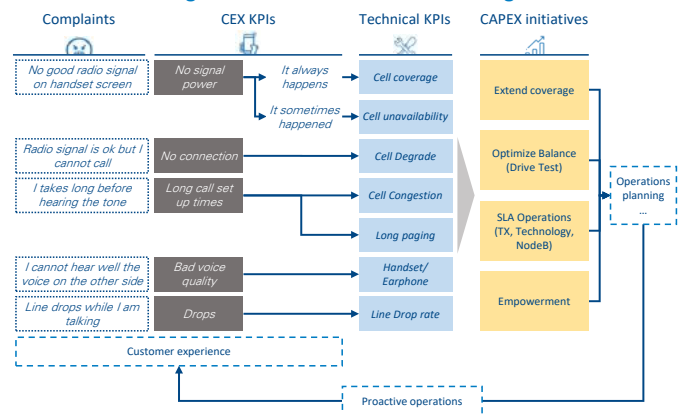
Source: Arthur D. Little

Measure success/continuous feedback

After successful implementation, to assure the long-term performance of the CAPEX prioritization process, constant re-evaluation of the defined KPIs is necessary. This implies automated reporting on a regional level, which offers management a tool for steering future investment decisions, while simultaneously illustrating the impact on technical and CEX KPIs.

CAPEX deployment impacts revenue

The outlined CAPEX prioritization map also provides valuable insight for the ex-post evaluation of the effectiveness and impact of CAPEX strategies:

- Through the introduction of customer experience in the investment steering process, management has additional information on how to optimally develop its network. This is particularly helpful, as an isolated view on pure technical and business KPIs does not offer enough insight into customers' needs and requirements.

- It offers a much-needed bridge between network investments and revenue impact. Measuring the impact of CAPEX initiatives on CEX continuously helps to provide this insight, as CEX improvements can be directly translated into customer retention.

- Finally, it is worth highlighting that the outlined methodology facilitates the budgeting process by allowing all the involved stakeholders (finance, commercial and technical departments) to "speak the same language," while improving customer experience and reducing churn.

Correlation between CEX and customer retention

In some of our most recent projects, we have evaluated, through a multivariate correlation model, how the different variables involved in the investment decision process impact customer retention and revenues.

Both customer-centric and economic variables were analyzed:

- Customer satisfaction index (CSI)
- ARPU
- Relative operator's market share
- Customer's churn rate

Interesting findings have emerged from the implementation of these projects. Arthur D. Little was able to measure the impact in more quantitative terms: on average, an increase of 10 percent CSI showed a positive impact of 6 percent on ARPU. The quantitative analysis, likewise, confirmed the correlation between CSI and churn: on average, a 10 percent CSI increase showed a churn reduction of 3.2 percent.

Conclusion

The time, as well as the enabling technologies required, is ripe to undertake a major paradigm shift in investment-decision methodologies. Telecom operators should move from traditional investment-decision approaches, based on a limited set of variables such as customer complaints and subsequent responses, to more complex and multidimensional approaches

Technical departments should combine business, technical and customer experience data to predict customer expectations, habits and effectively focus investments, in order to enhance customer experience, reduce churn and drive upsell potential. While transformation towards a more data-driven investment approach represents a major methodological shift, data-driven insight will not substitute human expertise, but instead supplement decision-makers' intuition.

To maximize the effectiveness of data for investment decisions, telco operators should embrace culture shifts by making finance, technical, sales and marketing departments key, cross-functional contributors to the investment decision-making process. This will allow a radical change in how data, information and valuable insight flow in the organization. Active communication and collaboration between these units will lay the foundations for an effective holistic approach to network investment prioritization.

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Arthur D. Little

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