

Reducing the Uncertainty of Techno-Economic Evaluations in the Telecom Sector

Erik Vanhauwaertⁱ

Supervisor(s): Mario Pickavet, Sofie Verbrugge

I. TECHNO-ECONOMIC EVALUATIONS

The telecom sector evolves quickly and important projects within the sector involve huge budgets. A solid techno-economic analysis is therefore crucial to gauge the financial viability of the project in function of the technical aspects. For telecom projects, this involves getting a view on the relevant network dimensions and costs, as well as operational, installation or other process costs. Cost reductions and additional revenues are also taken into account. These calculations of expected cash flows are then turned into a single measurement criterion (often Net Present Value, by discounting all future cash flows to today) for evaluation and comparison purposes. A more complete overview of this methodology is available in [1].

II. GARBAGE IN, GARBAGE OUT

The main problem is that the models used to perform a techno-economic analysis suffer from the Garbage In, Garbage Out-syndrome. Indeed, detailed knowledge is required on certain input parameters, such as the number of customers expected, the prices of all equipment involved and their evolution over time. If estimates for these input parameters are wrong, then the network dimensions and costs will also be wrong, and obviously the NPV as well. The issue is that some of the information it is infeasible or even impossible to get an accurate view on this information (e.g. for future data). This is important, because companies need to make a profit and are risk-averse: a positive outcome must be expected with reasonable certainty before they are willing to invest.

Many input parameters can be thought of, but a few types are often used: market penetration of the product/service over time, initial price of all products/services involved and their evolution. In most cases, dedicated models exist (such as Gompertz and Bass for adoption), but they are too general or based on uncertain assumptions. We will gather data for a few test cases, such as digital television and mobile services, and apply model fitting, regression and classification techniques to improve the existing models.

III. RESEARCH GOAL

This research will reduce the uncertainty of the input parameters by improving the input models through real data analysis. The result is that a project's viability can be gauged more precisely and with more certainty. This will help convince private companies in the telecom sector to launch specific projects, as well as help governments decide on telecom projects, regulations and policies.

References

- [1] S. Verbrugge, K. Casier, J. Van Ooteghem, B. Lannoo, *White paper: Practical steps in techno-economic evaluation of network deployment planning*, published April 14th, 2009

ⁱ PhD student with the techno-economic research unit at IBCN (UGent).