



Options to evaluate telecom products' costs and profits

Guidance for selecting and building systems

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1 Introduction

This paper provides an introductory discussion on the use of cost analysis systems for telecom operators and regulators. The paper provides only a brief introduction to a very large subject. The different types of costing system and the situations where each might be used are considered. A background understanding is provided of the different systems and benefits of each. The relative advantages of the systems and the different approaches to implementation, are summarised.

The cost analysis systems (also called “cost models,” even if they also include revenues) may be implemented using different approaches. The model types are described: along with the type of system and the implementation platform, the approach significantly affects the project scope and the outcomes. Options include an evolutionary approach – starting with a simpler system then developing it over time or else a full-specification system can be built, first time, if there is sufficient confidence and skills in place.

The implementation platform can also be different. Spreadsheets, databases and proprietary Activity Based Costing systems can each be used. The existing financial Enterprise Resource Planning (ERP) system can be linked in. Combinations of different platforms can also be used – there is no one optimal solution that fits every company.

This paper helps with understanding of these options and provides a primer for managers who need to start to investigate business solutions or need to develop new approaches.

Additional related papers on the Telzed web site are recommended. These relate to:

- Pilbara Group (a provider of sophisticated ABC IT solutions)
- A one page PowerPoint telco report.

For further information and discussions, please contact Telzed.

2 Financial modelling: business needs and options

2.1 Telco business managers need financial, market and technical information to make decisions

The total costs of a telecoms business are easy to get: they are in the accounts and are accessible from both inside and outside the organisation. Internal accounts of course provide additional details on the cost types and sources, but rarely do accounting systems produce detailed costs for each product or customer segment. Revenues are also available in the accounts and in billing data and this data can usually define the revenues for each product. This leads to an information imbalance: detailed sales data but without equivalent cost data, the profit insights are more limited.

The company account's "bottom line profit" can be an indicator of when to raise prices or cut costs. In competitive markets with many products, managers need better information on which areas to make critical business decisions. Telecommunication is a complex industry that needs to understand much more about individual products, customers and channels to market. It is easy to see that a product's sales growth is exceeding the marketing forecast, but is this a good thing? It might be loss making.

A well-managed business needs to know which products and customers generate most value. It must evaluate new product plans and set sensible investment decision criteria. Profit evaluations need to consider both marginal costs and also the full average costs where general common business costs¹ are also considered. Even defining the marginal cost is increasingly complex to do as services share network facilities, staff teams each deal with many products and technology is changing.

Businesses are under pressure to fully understand the products and customers in new ways due to: movements towards price-bundles that have several services included; and more fixed-price deals for inclusive usage. Without accurate knowledge of: costs; market growth; price trends; profit margins etc., decisions must be made without a full understanding of the risks. A good understanding of profitability helps managers: target customer segments; develop new tariff plans; remove unprofitable plans or services; and make informed investment decisions. Lack of understanding can lead to disaster.

The key questions that managers must consider, include:

- What are the key decisions?
- What are the risks?
- What do we need to know to make the decisions?

¹ Licence fees and head staff office expenses must be recovered by *some* product or service

- How do we get this information?
- What systems and processes are required to make and use the information?

We recommend using a “top down” business approach, led by the strategic business needs.

2.2 The right information is not easy to obtain

Total costs and revenues are in the company general ledger and annual report, but rarely do they relate to a single customer, customer segment, a product, or even to a group of products. A further problem is that some costs are fixed but some vary with volumes of customers or services. Some costs depend on the volume of several different products. The cost driver information and their interaction on the business are not identified in most conventional financial systems.

The information gaps and lack of full insights create problems for managers. This requires a number of economic and financial issues to be considered such as:

- Sunk costs. Telecoms networks typically include assets for which the past investments are considered sunk, but the assets might still be in service.
- Some assets may fully depreciated and have no value in the operator’s accounting records but there may still be a future economic cost if they must be replaced.
- Assets may have a 20 year lifetime and so they still have *accounting* costs after 10 years. What *economic* costs must be recovered in future prices? Are the assets already paid for?
- Some costs exist as a result of spare capacity. Some is needed for future growth and some for technical or operational reasons. Some may be due to inefficient design. How should this be factored in?
- Some costs are driven indirectly: some departments support other departments that in turn are related to product volumes.
- Volumes (and costs) vary over time.
- External pressures might suddenly appear. What if another operator or the regulator claims a price is unfair or anticompetitive. How can this be evaluated? Robust data is needed for competition law cases – the penalties can be huge.

The right types of cost and profit data, are hard to obtain. Some decisions are then made without a full understanding of the implications – which can be dangerous. Lack of data means that performance measures are often also simplified – volume or revenue sales targets, for example. These are easy to measure, and are vital, but even if met², the business could be still making a loss – most managers can sell a million handsets, but to sell a million and also make a profit, is clearly harder.

² The author was asked to help a telco where the sales managers had all met their targets, but bankruptcy was still imminent

2.3 There are five commonly used cost analysis tools

A number of cost (and revenue) analysis tools have been developed to help with management decisions and to address these problems.

The cost side of the business equation presents the hardest problem, but revenues still need to be analysed. Revenues are usually relatively easy to link to products, customers or dealer channels by the billing data. The main types of cost/revenue analysis are:

- The Discounted Cash Flow (DCF) business plan. These plans have the expenses and revenues modelled over time. A weakness is that the costs are sometimes not broken down by product or customer and the relationships of costs and volumes are not easy to model. Forecasts should extend into the future in order to ensure payback and threshold rates of return are made. Inevitably these forecasts will be less accurate further into the future, but the discount rate of return helps to account for this. DCF business plans are *essential tools* for any business and are very useful when the direct costs of a new service and new equipment need to be analysed, but they might not be sufficient for analysis of shared costs from using the existing network (how can this be defined?). The Net Present Value (NPV) of a product is the key measure.
- The bottom up (BU) model. Telecom Regulators need to analyse costs, often to define cost-based prices. Regulators tend to favour BU models, in part because they do not have access to a telco's internal cost data. Some operators have also used these models. These often have more complex cost relationships than used in many business plan models and can cost individual services in great detail. Some economic formulae are used to account for the time factors and replicate the economic rationale of a DCF model. A BU model is often reconciled against accounting-based historic costs: if the model cannot replicate the known past, then is it accurate enough to predict future costs?

BU models are usually based on Long Run Incremental Cost (BU LRIC) methods, as they are often used to define the average future cost over time and the variable (incremental) costs are of most interest. Fixed and common costs are also considered in many BU LRIC models. Although not variable, these costs must still be paid for³. These models should have a similar economic validity as a DCF model but usually use different techniques.

- Top down (TD) models. These allocate accounting costs down through multiple stages to the products and customers. Revenues can also be allocated to give Profit and Loss measurements. This gives a solid view of the past. Key Performance Indicators and other historical information are useful. But business decisions need to be *forward looking*. Adjustments can be made to show the future costs and so make a TD model much more valuable for decision making. TD model use *cost drivers* to give solid allocations. Fixed, spare capacity or fixed costs can be identified to enable a product's marginal or full costs to be analysed. The different cost types can be

³ Investment decisions typically can be approved if the NPV, of the marginal cost and revenues, is positive. A business can still fail if every product only covers its own marginal cost. Licence fees and central business costs are real, but are not part of the marginal cost of any product

analysed to identify the contributions by department or from overheads. Efficiency levels can be investigated and cost management programmes can be planned and measured.

- A hybrid modelling approach. This combines BU or DCF with TD methods – rationalising one against the other. Most TD or BU models include some data that was derived from some form of analysis that uses the alternative method. For example the average unit cost of one piece of equipment may be broken down from analysis of TD accounts and then entered into a BU or DCF model. A TD model often needs detailed individual element costs to be defined using a BU calculation. This is required where the costs are a small part of a large accounting cost – TD models are inherently inaccurate if allocations need to accurately split a very small percentage cost from another large cost.
- Accounting Separation (AS). This uses top down allocation techniques to give a historic (or current cost accounting) view of the costs and profits. The overall Profit and Loss and Balance Sheet are then defined by sets of products (or “Markets,” as defined by telecoms regulators) or by Business Units. A Business Unit can cover a range of services such as: Datacoms; Network Access; Retail Voice Calls; Broadband services; International Services etc. These AS reports are often needed for regulatory accounting purposes to show P&L and notional internal service payments. This helps to ensure that fair profits are made in each Market and major anticompetitive distortions are avoided. The AS is therefore compliance driven and strict guidelines must be adhered to. Audit requirements must be considered.

Each system has advantages and disadvantage and can support different aims. There are various ways in which each can be created.

2.4 The required modelling system depends on the business need

The type of model and the required data both depend on the decisions to be made – what is the data to be used for? This impacts both the choice and the complexity needed. For example:

- A new business. At start up, a DCF business plan is the main, and often only, available tool. Investors need to perform Due Diligence on this. Evaluations and models must consider: what is the market size; are economic growth trends realistic; what are the competition risks; what are the regulatory barriers and risks; and are the values in the model realistic? Managers need the information to develop launch prices, forecast sales and identify the risks. Some of the data could be supplied (or checked) from cost/revenue analysis taken from other operators, or other models to supplement the DCF model.
- A new product. These require direct costs. In addition they usually need to use existing systems and teams – this also causes some incremental cost. Some costs can be analysed using a DCF model. Other costs may be taken from a TD or BU

model of the existing business to enable existing shared-system costs to be included. “Building-block” cost units can be derived and then added to the product’s own specific DCF model. The average unit cost of a bill or an access line should exist in a TD model – these can be an input to the new product. This avoids over-optimistic marginal-cost-only decisions⁴.

- Key Performance Indicators (KPIs). KPIs of total costs, revenues and volumes are essential. A KPI on a product’s profit may tell a different story. Measures of unit profit by product or by customer segment or by region are often needed, but require a more complex cost (and revenue) analysis. Technical/financial KPIs are also desirable: utilisation levels, investment levels, staffing numbers etc., provide a basis for improving operations. Many KPIs need new analysis tools, including those as described above, when the data is not directly available from the accounts, network management, billing or customer-information systems.
- Pricing decisions. Cost and margin analysis can help make better decisions so that a wider range of commercial and regulatory risks are considered. A cost and revenue tool is required to help inform decision makers. With multiple products in one tariff bundle, there is a need for more cost data to be combined and evaluated under different volume-of-use scenarios. Pricing managers should be wary of pricing purely on a competitor’s level – what if undercutting this price is loss making?
- Regulatory reporting. The regulatory authorities define the Accounting Separation and product reporting requirements. This usually requires some form of top down allocation system for both revenues and costs.
- Regulatory costing of services. This is done by bottom-up or top-down models – the latter is usually the option adopted by an operator and the former by regulators.
- Price investigations. Anti-competitive prices are increasingly investigated by regulatory and competition authorities. A response will need data on combined costs where price bundles are sold. Can data show that another operator could replicate the price deal and make a profit? Is there a *price squeeze*?

Every business has its own needs, and these change with time. More than one technique may be needed. Many businesses develop new or more complex costing tools as the requirements evolve.

⁴ There is nothing inherently wrong with pricing a product at marginal cost (or even selling it for less) so long as the wider business picture is considered. A mobile operator might add on data services, priced at the marginal cost, but what if a competitor cuts its prices for voice calls and SMS? What services should now pay for the licence fees and central costs, given the consumer resistance to increasing any prices after a product launch?

3 Modelling solutions

3.1 The options

Telzed has a wide range of economic, regulatory, telecoms business, technical and financial experience to assist with the above diverse types of analysis. Some options include:

- Business model support. Due diligence support work is often centred around these tools. Due diligence also needs understanding of the wider business and regulatory risks and the markets. Are the business models aligned to the business needs and to passing the right decision thresholds? See for example the dangers in the earlier footnotes.
- Bottom up models. Models can be created or enhanced. Responses to regulator's projects that make BU model are commonly required – BU models cannot be ignored even if an operator does not need such a model for itself. Fixed network, mobile, access and next generation networks have all been modelled. These models are typically created in spreadsheets. BU models need a lot of data and this may require individual market, technical or TD cost model tools and other sub-projects to ensure the BU model is accurate.
- Fixed Asset Registers (FAR) and Current Cost Accounting (CCA). Many projects need to consider asset investment costs and the costs of replacement of the assets. This often requires re-valuation based on what would be bought today. The historic FAR requires to be developed using CCA methods. The results are better for making forward looking management decisions. CCA re-valuations can be implemented in several ways. Sometimes spreadsheets are adequate. Often a database is needed to process the hundreds of thousands of individual assets that exist in most telcos. Adjustments can be made to: values; lifetimes; asset-categorisations; and how they are assigned in subsequent cost models.
- Spreadsheet TD models. Some cost and profit tools can be relatively simple. Also a "first-time" model is also often best kept simple to help with internal training and to show the potential, before larger systems are considered. The next system can be planned, based on experience. These TD models process the accounting data and modify them as required to give LRIC or historic cost views. Cost drivers are identified using technical factors and Activity Based Costing (ABC). ABC identifies how operational costs are driven and hence how they are allocated. These TD models provide cost and profit information that may be all an operator ever needs to meet its commercial or regulatory needs. Telzed can make simple models or else sophisticated, multi-stage TD systems in Excel. The models are structured to be easy to use and develop. Techniques enable detailed breakdowns of results, so that 10 different cost types can be separately identified in each of a 100 products after multiple cost allocation stages.
- Database TD models. As TD models increase in sophistication, some or even all parts of it need to be moved to other platforms than a spreadsheet. Databases can be easier to manage and are more efficient when processing large volumes of data. Assets, revenues, billing data, ledger accounts are volumetrically large. Often data is processed in standard ways that, once set, does not alter often. This lends itself to

database structures that are easier to maintain and link to Enterprise Resource Planning (ERP) systems. The entire business accounts and every individual asset can be processed using database applications. This can link to a spreadsheet TD model – a hybrid implementation.

The entire costing system can also be delivered in a database. The amount of data that can be processed can be much larger than in a spreadsheet. It allows much more reporting data to be transferred through the system. Databases are more akin to accounting systems and can be better for supporting AS. Once stable, they could even be ported into the ERP system itself or to another proprietary tool.

- Proprietary costing systems (ABC tools). General purpose ABC tools have been developed to help with cost and profit analysis for any industry. Few tools are telecom specific – and as a result some general purpose ABC systems can lack some features that telecom models require, but these can usually be added in.

The proprietary systems have major advantages of sophisticated user interfaces and built in analysis and reporting tools. They have a huge range of features, many of which would be extremely hard to develop in a database or spreadsheet approach. They are especially useful where ABC-management is desired and process costing is needed. A downside is the IT complexity that needs licences and training – the system is then not open for any manager to use and adjust, making scenario analysis and ad hoc reporting/investigations less easy⁵. Audit or review also requires specialist skills.

A large business with 1000 products and 1000s of cost centres would need to consider an ABC tool.

These costing systems are usually major investments and need significant planning, specification and subsequent building phases. On-going maintenance and updates must be planned for, but this can be contrasted with: how often has a spreadsheet model been still used after 5 years?

These ABC systems are often used where major account processing and complex regulatory and commercial reporting are required. Depending on the system, the implementation costs can also be lower than expected, and with the right vendor and external support, ABC systems can be used in smaller projects.

3.2 Systems selection

There is no one best solution. The business requirements (and budget) must be considered. Systems evolve, and sometimes starting with a simple model and developing this over time is a good approach. This will require some updates later if the platform changes e.g. from spreadsheet to database solution or ABC tool, but a lot of the information and techniques should be carried over.

⁵ This can be an advantage. It is very hard to control spreadsheet models, as each manager can develop adjusted versions which can be hard to review and control. Which model is then the “correct base-case -view” of the business?

Going immediately to the more sophisticated platforms and so direct to a full specification solution, avoids the update costs, but unless this is specified correctly and managers are able to use and understand it fully, evolutionary approaches may be better.

Selecting among the various ABC IT platforms that are on the market is a major subject in itself. Please ask Telzed for further advice on some of the factors to consider.

Whatever system is built, it is vital that the users *and* decision makers have confidence in it and know its limitations. If managers do not believe the output numbers, the data will be ignored. Information and reports that cause no useful action are pointless. Decisions are then not made properly and the project investment is wasted: buy-in to the cost/profit system from across the business is vital.

Once in place systems must evolve and continue to be used, if they are to provide real value. This means the project-plan and the system-build stages are not the end of the story. On-going systems management, updates and reporting are required to ensure managers are linked in to the information and continue to make use of the data.

3.3 Telzed can help

Every model and project is different. Telzed help can help you answer questions, such as:

- What do I need?
- How should it be used?
- How to build and manage the system?
- What are the limitations – what does it *not* help with?
- How should it link to strategy and marketing plans?
- How can systems enhance business value?

A solution is available to meet any business need and budget limit.

Training and workshops can be provided to help plan a project to define the needs, options and scope.

3.4 Next steps

Please contact Telzed to discuss issues and options: generalenquiry@telzed.com.

Alternatively, please speak to Roger Steele, +44 (0) 777 178 7607: rogersteele@telzed.com.