To Main Proceedings Document

Winning the Landline vs Mobile Battle

Paul A. Langley, Hendrik Sabert, and Paolo Timoni

McKinsey & Company

(A version of this article was published in the McKinsey Quarterly, January 2000)

Abstract

New technologies give rise to new businesses that could displace rivals based on earlier technologies as the internal combustion engine, for example, undermined blacksmiths by giving rise to the automobile.

Businesses on both sides of a technological transition want to know how many consumers will adopt the new ways, and when. At present, these are the questions facing European telecom companies as they assess the possibility that residential voice traffic, now carried mostly on landlines, will shift to mobile networks. In most European markets, over half of the population will have a mobile phone by the end of 2000. In some countries, mobile phone penetration doubles each year. If it continues at its current rate, growth of the mobile subscriber base in Europe will reach its limit as a significant engine of value creation within two or three years.

There is much at stake for both landline and mobile players over voice traffic hence a big battle is looming. We need to understand (at least) four things well: consumer choice, network economics, capital market reaction and pressures, and pricing / marketing / investment strategies. Furthermore, we need an "integrated" perspective to create internally consistent market scenarios. We have built and calibrated a dynamic market model which generates alternative landline / mobile transition scenarios, including indicators for price, usage, subscribers etc.

System dynamics can help answer the "what ifs" of such transitions by generating plausible future scenarios. Managers can then use the model to develop policies appropriate to each of them and to identify leading indicators about which scenario might be playing out in real life. We show alternative landline vs mobile pricing strategies and the impact on value for both players, and discuss some general insights from the work about winning strategies.

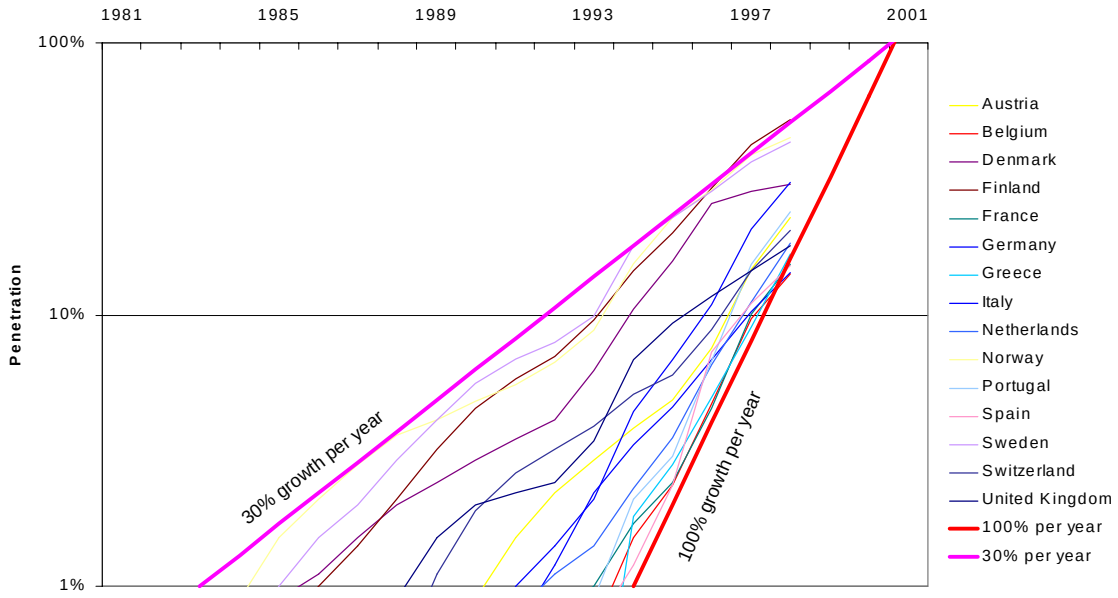
Faced with the development of the motor car, every smart early 20th-century blacksmith had to ask himself the three questions: How many of my customers will trade their horses for cars? How soon? And should I fight, adapt, or admit defeat? The pace of innovation at the start of the 21st century means that similar dilemmas now confront many industries—and none more so than Europe's landline telephone operating business. How many of its customers will trade landlines for mobile telephones? How soon? And what should be the industry's response?

Fortunately, dynamic simulation modeling should make it possible for their managers to frame and pursue winning strategies by experiencing the future before it really happens.

Upward mobility

If mobile operators continue to penetrate European markets at the current staggering rate, by the end of 2000 at least half of the population in most of them will have at least one mobile telephone. Furthermore, if the current growth rates were to continue, mobile penetration would reach the saturation point within two or three years (Exhibit 1).

EXHIBIT 1: Impending European mobile market saturation



Source: Datastream

Declining growth in demand for handsets is only one of the problems mobile operators face. Intensifying competition is another. Regulators are granting licenses to start-ups and opening up existing networks to third parties. Novel technologies are creating extra spectrum for new mobile networks. These developments give increasingly canny consumers an opportunity to search for a better deal by switching among service providers, so it is not surprising that they see the residential voice traffic now carried mainly on landlines as an alluring source of future growth. If 50 percent of the voice traffic that Europe's residential landlines now carry moved to mobile networks, usage on most of them would double or even triple.

Landline operators recognize the threat to the business that makes up, on average, more than 75 percent of their revenue. A bigger share of their income will eventually come from Internet and data broadband services, which now travel more satisfactorily along landlines. But the pace and extent of this growth remain uncertain, and right now, at least, the European market for Internet and data services is too small to give landline operators a serious alternative to their residential voice business.

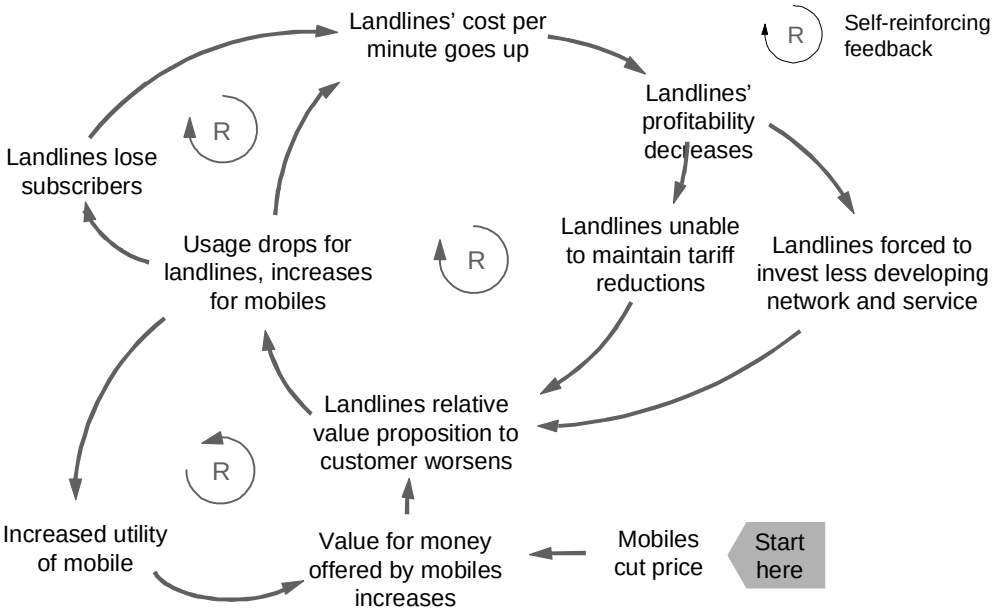
How far, how fast?

Both landline and mobile operators are battling for voice traffic, and some problems are common to both. How far and how fast will the overall voice market grow in size and in value? Apart from price, what makes customers switch from landline to mobile networks? Will customers always prefer to make some kinds of calls over landlines, whatever mobile price rates may be? When, if ever, will the migration from landlines to mobile stop, and when will landline networks cease to be economically viable?

To answer these questions, managers must understand the economics of landline and mobile networks. They will also have to consider intangibles, such as how consumers choose their telephone services and, once they have done so, how other operators compete for their custom. Social trends such as peer pressure on teenagers to use mobile telephones must be considered as well. Young people in Scandinavia, for example, usually acquire their mobile telephones long before they have homes of their own. When they do eventually live on their own, they might see no need to install landline telephones. Once voice traffic begins to

move away from landlines, self-reinforcing mechanisms could put irresistible force behind the shift (Exhibit 2).

EXHIBIT 2: Spiral of decline for landlines



The interdependence of factors comprising markets in technological transition makes them particularly hard to understand and manage intuitively. Yet players still have to take decisions based on how they think the market will develop. To complicate matters, the eventual shape of the market will depend in part on irreversible decisions on investment, marketing and pricing that players have taken along the way.

Forecasting the market's long-term evolution amid such rapid technological change is far from easy. Some telecom industry analysts believe that within a few years, most telephone calls in the residential market will be placed on mobile networks. They go so far as to suggest that by starting price wars, mobile operators could quickly wreck the voice-dependent businesses of most landline operators. Others maintain that the scale of the "sunk" investment in landline networks and the low marginal cost of calls transmitted over them make this outcome unlikely. All such predictions have a common flaw: they focus on part of the picture, not the whole. Analysts' reports bristle with forecasts of market penetration, rates, and usage that are little more than extrapolations of current

trends, or first-cut hypotheses on future industry scenarios. Managers need a more sophisticated approach to foreseeing the future.

Designer models

Dynamic simulation modeling is just such an approach[1]. The model creates a replica of a market, identifying its constituent factors and the ways in which they interrelate. The output of a model shows what might happen if companies pursued various strategies, under different market and competitor scenarios. It helps managers develop robust strategies for a number of alternative futures. A model can also provide early signals about which scenario might be playing out in real life and thus which policy companies should adopt in response.

To illuminate the telecom industry's equivalent of the blacksmith's dilemma—whether and, if so, how quickly mobile operators will win over the bulk of the residential voice traffic now carried by landline networks—we developed a model of the European telecommunications market. Because the model is dynamic, it helps managers understand what could drive or delay the transition from a landline- to a mobile-dominated telecommunications market and supplies insights deeper than those of experience or one analytical technique in isolation[2].

Our model comprises a group of mobile operators competing for subscribers with an opposing group of landline operators, in the manner of two armies. The competitors' strategies, represented by data about prices and investment, are the model's input. The modeled strategies reflect the pressures that influence the participants' decisions in the real market. Mobile operators, for example, need to expand the number of subscribers, encourage the use of mobile handsets, and match competitors' prices. They must also meet their profit targets, at least after the initial growth spurt ends. Landline operators, meanwhile, feel pressure to cut

---

[1] The simulation modeling approach we used has its origins in engineering feedback control theory and was first applied to the understanding of economic and social systems in the 1960s – see Jay W. Forrester, "The beginning of system dynamics", *The McKinsey Quarterly*, 1995 Number 4, pp.4-16. For an application to growing markets see Zafer Achi et al., "The paradox of fast growth tigers", *The McKinsey Quarterly*, 1995 Number 3, pp.4-17. For an application related to adaptation to changing environments see Maurice Glucksman and John Morecroft, "Managing metamorphosis", *The McKinsey Quarterly*, 1998 Number 2, pp.118-129

[2] The model combines complementary but distinct approaches from marketing science, microeconomics and behavioral decision theory to integrate elements of industry structure and conduct. These include consumer choice, network investment economics, capital market reactions to players' performance and players' pricing and marketing strategies.

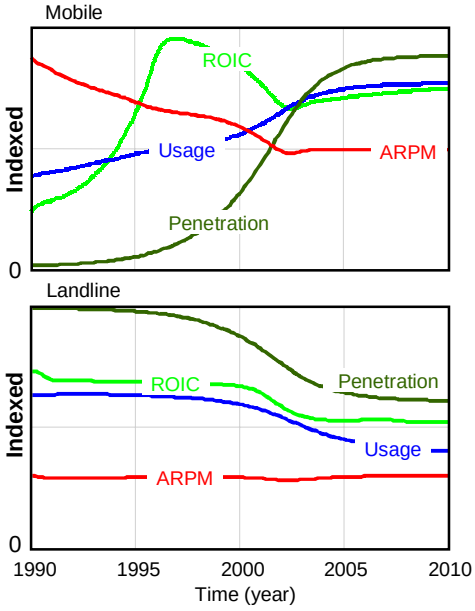
prices in response to the mobile operators' price reductions—sacrificing profits, investment, or both.

The pricing and investment data work through the model's innards—that is, equations replicating the market's behavior. The equations show, for instance, how consumers choose between landline or mobile networks and, if a consumer subscribes to both, which one he or she chooses for different types of call (emergency, functional, or discretionary) at a given price level. The equations also reveal how corporate strategy affects capital invested, depreciation, and operating costs, as well as the capacity of a network and of back-office functions such as billing and technical support. In sum, the model demonstrates the effects of each permutation of strategy on the fortunes of landline and mobile operators over 20 years as measured by market share and financial performance.

Sample scenarios

Exhibit 3, an example of the model's output, shows what would happen if the past three years' trends in price competition and consumer behavior continued. The two charts trace the market's evolution from the early rapid growth of mobile networks to projected saturation, suggesting that by 2010, 40 percent of subscribers will give up their landline telephones, although the landline voice business will remain just about viable on its own.

EXHIBIT 3: How the market could evolve



Definitions

ARPM	Average revenue per customer per month
ROIC	Return on invested capital - an aggregate measure of financial performance
Penetration	Percentage of population owning a landline or mobile phone
Usage	Minutes per month

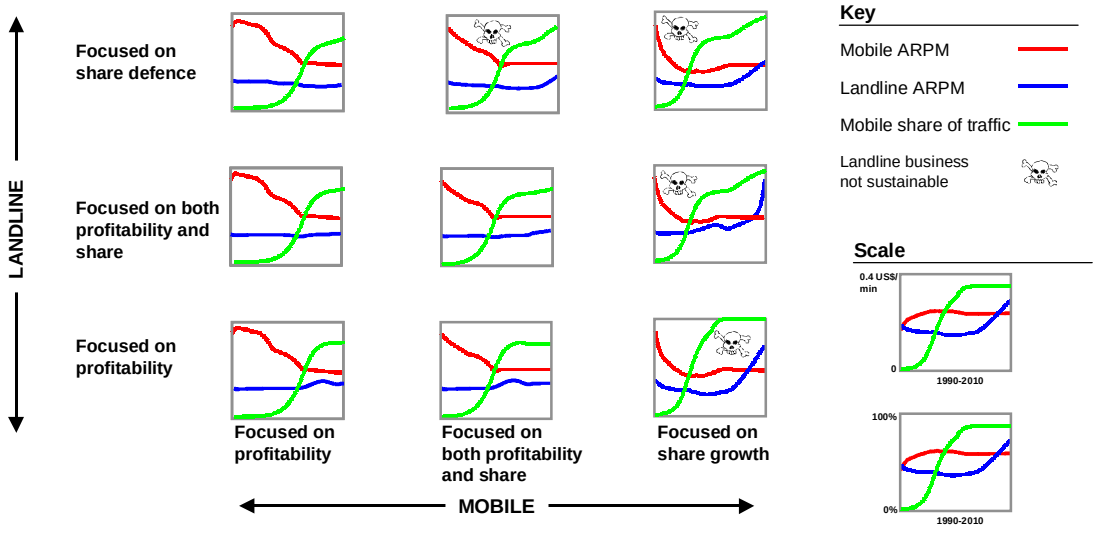
(Note: in this case network costs and service unit costs are assumed to be constant, and data usage is not considered)

But the model really comes into its own answering "what if?" questions. What, for example if mobile operators set their prices low to increase their share of subscribers as quickly as possible and landline operators cut prices quickly after starting to lose market share? Exhibit 4 sets out the range of pricing strategies open to landline and mobile operators, depending on whether they want higher profitability or higher market share. Feeding different combinations of pricing strategies into the model yields different scenarios (Exhibit 5), each including trajectories representing the average revenue per customer per month (ARPM) for both landline and mobile operators, and mobile's share of total voice traffic. So, for instance, the top left-hand scenario shows that if mobile operators focused on profitability while landline players defended market share, mobile's ARPM would fall steadily, the ARPM of landlines would remain stable, and mobile's share of traffic would rise from almost zero to about 80 percent in by 2010.

EXHIBIT 4: Possible pricing strategies

	Landline	Mobile
Share focused	• Match price cuts by mobiles early even though their market share is still small • Cut price further as soon as mobiles gain substantial share, even if that means slowing down reinvestment in the network • Be prepared to take significant losses over an extended period	• Fill capacity as early as possible • Discount heavily to maximise growth of subscriber base, even though new subscribers may be low users • Try to 'hit landlines until they break' even though that means foregoing substantial profits initially. Aim to capture entire landline traffic later
Profitability focused	• Avoid price cuts as long as possible, even though that means losing a significant fraction of subscribers • Shift towards higher subscription and lower per minute charges to encourage usage • 'Shrink network to size' when demand breaks away	• Raise price when necessary to keep subscriber growth below ~25-30%pa • Focus on high usage subscribers even though that means accepting low levels of network utilisation initially • Grow as slowly as necessary to avoid overloading the network

EXHIBIT 5: Nine pricing strategies



A degree of certainty

Almost all of the scenarios the model generated agree on two points. First, 65 to 75 percent of residential voice traffic will travel over mobile networks in three to five years. Second, 35 to 45 percent of consumers will give up their landline subscriptions unless landline operators eliminate fixed monthly charges.

These likely transitions have a number of strategic implications. One is that mobile operators will clearly be in the driver's seat, for whatever pricing strategy landline operators adopt they seem bound to lose many of their residential subscribers and much of their voice traffic. Nonetheless, data traffic will provide a lifeline: even conservative assumptions about the growth of the Internet and the penetration of broadband data applications seem to show that landline operators, incumbent or new to the market, will go on providing attractive returns to shareholders.

Another implication is that if mobile operators price low to capture market share, landline operators' voice businesses will decline, though mobile companies would have to keep their prices down for several years, wiping out most of their own profits and destroying considerable value in the industry. For landline operators, the best response would be to milk their existing voice businesses, to switch customers to their own mobile operations (taking care to avoid price wars), and to develop the markets for data and Internet broadband services as quickly as possible. However, if mobile operators focused more on creating value and less on aggressive pricing, landline prices would rise slightly and mobile prices would fall substantially, but landline calls would still be less expensive.

These are insights about general market developments. The model requires more detailed market, consumer, and economic data to provide firm answers to questions about specific companies, but with refinements it could address their concerns—the effects of cannibalization, for example, on a company that has both mobile and landline operations.

Models for every occasion

Merely clarifying whether incumbent European landline operators can sustain their existing business isn't the only way dynamic modeling could help them prepare for the future. It could also help these companies decide, for example, when and how to expand their broadband data capabilities and to transfer

existing customers to their mobile networks to maximize value. With these issues resolved, managers could then take three related decisions: how to dispose of excess capacity over time, how to adapt organizations during the transitional period, and how to motivate people who work in the declining landline voice business.

The integrated market perspective dynamic simulation modeling provides could also help telecom companies in other regions, not least North America, if and when the battle between mobile and landline operators takes off there[3]. Dynamic simulation modeling could also help companies deal with other kinds of business problems, such as the likely impact on telecom companies of regulation linked to technological innovation.

A model could, for instance, examine the ways regulatory authorities might allocate licenses for UMTS (universal mobile telecommunications system), a new mobile standard that will encourage growth in mobile data services by supporting substantially higher rates of data transfer. Models could also show the market effect of competition between mobile operators and branded resellers (such as Virgin, in the United Kingdom), who lease mobile network capacity and sell it to consumers. Furthermore, models could tell mobile operators how to tackle new markets, such as consumers with low disposable incomes.

Dynamic simulation modeling aims to help managers think through a range of possibilities in a disciplined, quantified way, not to create a single forecast of the future. The role of the simulation model in this iterative process is to help translate a set of managers' assumptions into internally consistent "stories" about the future[4]. Armed with these scenarios and a systematic way of thinking about them, managers can begin to answer some of the many questions that demand to be addressed. What conditions would have to be met for a certain outcome to be realized? Which indicators will tell if it is already happening? And if it really did happen, what to do next? The answers will determine the winners and losers in telecommunications over the next decade.

---

[3] For the moment, the struggle in North America is less acute because the volume of data traffic is already higher there than in Europe, and the market penetration of mobile phones is lower. But rapid advances in the ability of mobile handsets to transmit and receive data suggest that a battle between mobile and landline may develop first in North America for at least part of the data market.

[4] See Arie de Geus, "Planning as Learning," *Harvard Business Review*, 1988 Nov-Dec and Liam Fahey and Robert M. Randall, editors, *Learning from the Future*, New York: John Wiley, 1998 for interesting examples of how dynamic models can help managers learn through experimenting or "playing" with alternative futures, as part of a scenario planning initiative.