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Forecasting category sales and market share for wireless telephone subscribers: a combined approach

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Abstract

The ability to forecast market share remains a challenge for many managers especially in dynamic markets, such as the telecommunications sector. In order to accommodate the unique dynamic characteristics of the telecommunications market, we use a multi-component model, called MSHARE. Our method involves a two-phase process. The first phase consists of three components: a projection method, a ring down survey methodology and a purchase intentions survey. The predictions from these components are combined to forecast category sales for the wireless subscribers market. In the second phase, market shares for the various brands are generated using the forecast of the number of subscribers that are obtained in Phase 1 and the share predictions from the ring down methodology. The proposed methodology produces the minimum Relative Absolute Error for each market as compared to the forecasts from each individual component in the first phase. The value of the proposed model is illustrated by its application to a real world scenario. The managerial implications of the proposed model are also discussed.

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Keywords: Forecasting; Category sales; Wireless telephone subscribers; Combined approach; Market share

“Since the mid-80’s, the ‘experts’ have consistently forecasted the demise of paging. First, it was Cellular but it performed dramatically well in the US growing from infancy in the early 1980s to the order of 40

million users today . . . and, paging is now celebrating the fifteenth year of its forecasted demise.”

Jim Page, Vice President for Business Development FLEX™

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1. Introduction

Analysts at AT&T forecasted a total of one million cellular subscribers in service by the year 2000. By 1993, the end of the first decade

of availability of cellular telephones, there were 16 million cellular telephones in use, with an additional 14,000 new users coming on line each day (Edwards & Dye, 1996). Table 1 compares the number of subscribers as forecasted by different agencies in 1995 to the actual number of subscribers by the end of 2000. As it can be seen in Table 1, different agencies underpredicted the number of cellular subscribers in Europe by the year 2000 to be between 11 million and 20 million. These validate long-held practitioner beliefs as evident in the above quote.

The telecommunications industry is facing continuous technological and regulatory changes. Jurisdictional differences are being removed and leading US carriers are forming joint ventures with foreign companies to enter new markets. As the industry becomes more competitive, consumers have benefited through lower prices, which have stimulated telecommunications demand to unprecedented levels. Techniques for forecasting the demands for product offerings over a planning horizon of several years are highly complex. Quantitative forecasting methods such as time series and econometric modeling have become less accurate because the industry no longer has the stable historical relationships that these models rely upon. The forecaster therefore needs to incorpo-

rate perceived future industry dynamics into the model (Ozturkmen, 2000).

There are several reasons why prediction in the telecommunications industry is a very difficult task. A representative issue is that the boundaries between television, computers and telecommunication products are being progressively eroded through the growth of the Internet and its service providers. Although data and message traffic is growing to enormous levels, this demand is being counterbalanced by substitution of technology (for example, email substitutes telephonic conversation) (Fildes, 2002). The introduction of new information technology significantly affects the demand for telecommunication services (Cristiano, 1993).

A person with forecasting responsibilities has three options. As the first option, he or she can use an intuitive approach—preparing forecasts based on his or her best judgment. The second option for the analyst would be to use a quantitative approach—preparing forecasts using statistical techniques such as regression and time series analysis. Finally, a combination of quantitative and intuitive approaches can be used. Specifically, a quantitative approach is used to arrive at a baseline forecast, and then the baseline prediction is adjusted by overlaying judgment to arrive at a prediction interval (Armstrong & Collopy, 1998).

Table 1
Comparison of forecast to the actual number of cellular subscribers

Forecast horizon	Prediction in 1995	Actual outcome in 2000
Cellular subscribers in Europe by 2000	11.5 million (EMCI) 16 million (ETCO) 20 million (PA Consulting)	243 million in year 2000
Cellular subscribers worldwide by 2000	100 million (Motorola)	689 million in year 2000

Source: ITU, adapted from OECD (1995) "Mobile and PSTN communication services: Competition or complementarity?" and Micrologic Research.

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