FORECASTING THE FUTURE FOR PROFIT

Jonathan Davenport, Nick Milner, Kay Sharpington

For your business to compete effectively, you need to understand your market. If you really want to understand your market, you need a model. Over the past 30 years, the collection and availability of market data has grown rapidly thanks to technology and, particularly, the internet. As a result the complexity of the information available about the market has grown substantially. However, having 'Big Data' and other information about the market is not the same as understanding the market. To truly understand a market and its dynamics, a competitive company needs to know how all of the structural elements interact, both at present and in the future.

WHAT IS A MARKET MODEL?

A market model is a mathematical representation of the market, constructed from historic data about elements such as vendors, price points, geographic regions, and technologies over time. The model shows how these different elements interact with each other over time. This is then used to forecast future trends in these elements and the consequences for the market.

This insight into the present and the future enables companies to position themselves more effectively in the market, target and market to the segments that are growing or have high growth potential, and give themselves a competitive edge. It also provides awareness of how consumer choices and needs will change over time and differ by region.

THE MODELLING PROCESS

To generate an initial forecast, statistical techniques are applied to the collected data to create a forecast line. This can be created using regression analysis and time series analysis (including Box-Jenkins and Holt-Winters methods). However, the results from statistical techniques need to be altered to take account of the underlying market trends. The art of modelling lies in understanding consumer and market behaviour, applying theories such as Diffusion of Innovation, and considering the impact of regional market dynamics. Market theories such as penetration curves, market lifecycles and disruption of technology should be considered and integrated into the forecast. This will ensure that the forecast incorporates the longer-term market trends. The company's regional market intelligence and on-the-ground knowledge of the market should be taken account of in the forecast, to ensure the model is fully aligned with the company's own view of the market dynamics and direction.

SOURCE OF ESSENTIAL INSIGHT

A market model combines all available insights data to show a full picture of market behaviour, which is essential for company strategy and development planning. The market model will show the multiple interactions between structural elements. Examples include: which countries and regions will grow, and where growth will slow or even decline; behaviour of different customer segments; competitor behaviour; how the average selling price will alter and how this will be different for differing markets.

There are various methods of collecting relevant market data, each of which address a specific aspect of a business' future performance. However, in isolation none of them give a full picture of the long-term market and should not, therefore, be used for developing strategy.

Internal view:

A company may choose its strategy based on internal information, such as recent sales or brand tracking, and therefore, set targets such as 'the previous quarter's sales +10%' or 'launching product X in the next year'. This fails to take account of changes in the market's growth rate or trends towards certain product types or features.

Historic view:

Whilst historic data provides a useful starting point, it is not always a good predictor of the future. Looking at past information does not provide any significant understanding about the future direction of the market; this requires a different methodology.

Qualitative view:

Purely qualitative descriptions of market behaviour rarely capture all the relevant information. Even when a description is very thorough, it cannot capture the interactions between variables in the way a market model can. A purely qualitative view will therefore not produce a robust outcome.

"A market model combines all available insights data to show a full picture of market behaviour, which is essential for Marketing strategy and planning."

UNDERSTANDING CONSUMERS AND THE MARKET

Statistics-based models can provide accurate short-term forecasts in mature markets. However, research in technology markets shows that purely statistical (quantitative) modelling techniques cannot be relied upon to provide accurate forecasts without introducing an understanding of consumer behaviour theories. Adoption rates of new technology can grow and decline more quickly than statistical techniques can respond to. What is required is an understanding of the causes of growth at different stages of a market lifecycle.

Penetration curves

Most market growth follows the form of a penetration curve (also called a logistic function curve or S-curve). Figure 1 shows how these are consistent across a range of products. In the early stages of penetration, consumer adoption is slow, as many are unaware of the product or unable to afford it. As more people become aware of the new technology, the adoption rate accelerates as customers choose to make their first purchase. When the market reaches 50% penetration the adoption rate slows, as the product is widely known but there are fewer people left in the market to purchase for the first time. As the market approaches full penetration (where the majority of the target population has bought the product) the rate of growth slows and the market is maintained by repeat purchases. Each of these consumer segments has different attitudes and preferences that the marketer needs to understand.

In reality, these smooth penetration curves may be disrupted by external influences that the forecaster should take account of. For example, as we can see in Figure 1, during strong growth in the adoption of 'autos' there was a period when penetration declined. This was due to the Great Depression followed by World War II, when metal and fuel were needed for the war effort and the sale of new cars was banned.

Diffusion of Innovation

The Diffusion of Innovation theory (Rogers, 2003) claims that adoption is driven by social influences that effect various consumers (in B2C markets) and enterprises (in B2B markets) with or without their explicit knowledge.

Rogers describes five groups of adopters with a different attitude towards innovation. Innovators are the first to adopt new technology and represent 2.5% of the total market. This group is willing to risk failure of a new product because they believe it has, or will have, a high utility. Early Adopters comprise a larger proportion (13.5%) of the market and understand the utility of new technology better because of the experiences of the Innovators. Innovation continues to diffuse through subsequent groups in the population (the Early Majority (34%), the Late Majority (34%), and the Laggards (16%)) with each group taking its lead from the previous group, and from the changes suppliers make to products to make them attractive to the total population. Figure 2 illustrates how progress through these stages significantly affects the market growth rate. The groups have different characteristics, so different approaches are needed for each.

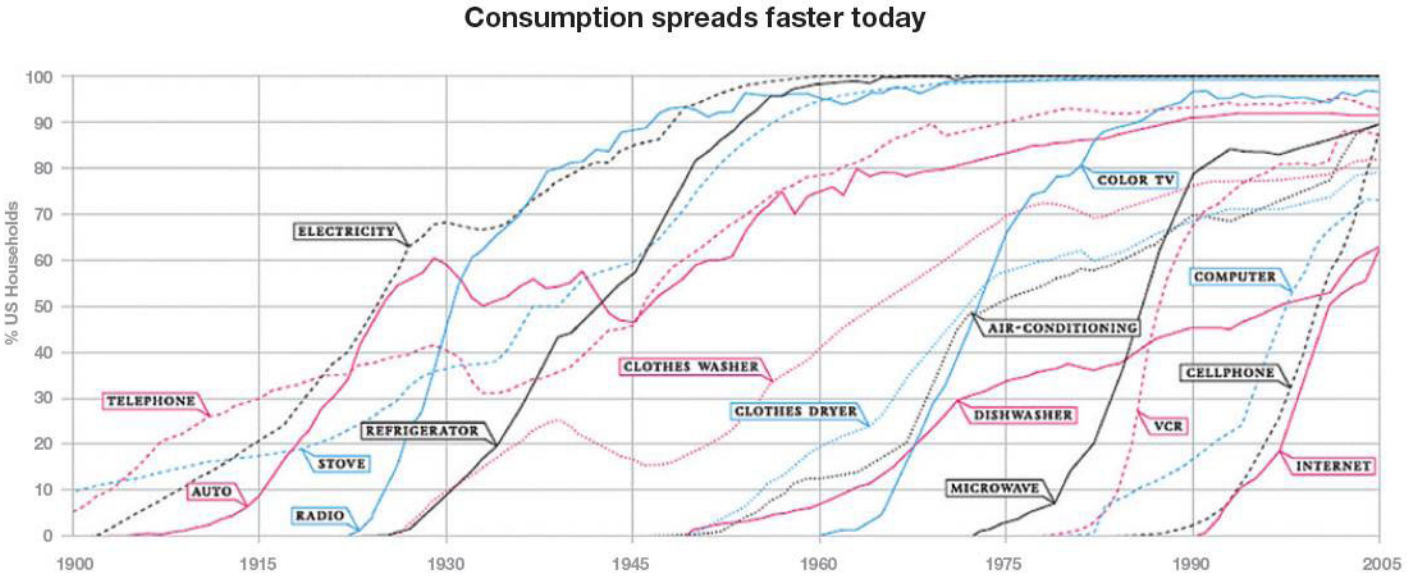


Figure 1: Consumer product S-curves Source: North, S. (2012)

Diffusion of Innovation has been observed to follow logistic function (or penetration) curves across many different technologies including radio, television, VCR, cable, refrigerators, dishwasher, electrification of households, telephone, cordless phone, cellular phone, personal computers, broadband and the Internet (Moore and Simon,1999). Combining market volume data with demographics and Diffusion of Innovation Theory produces a good modelling approach in the technology sectors.

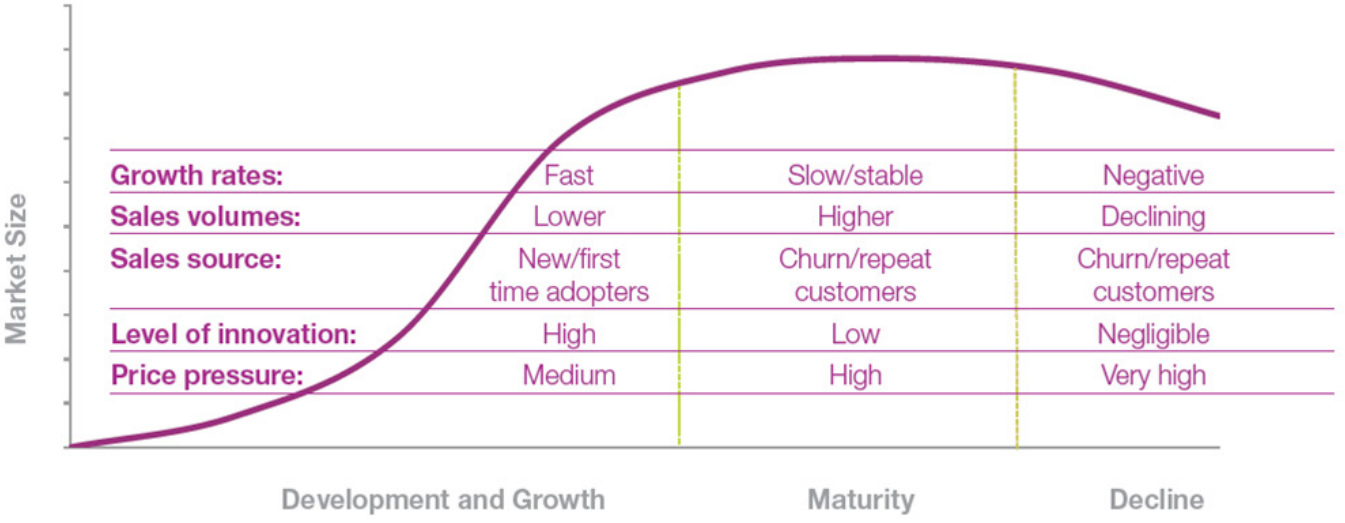


Figure 2: Diffusion of Innovation (Rogers, 2003)

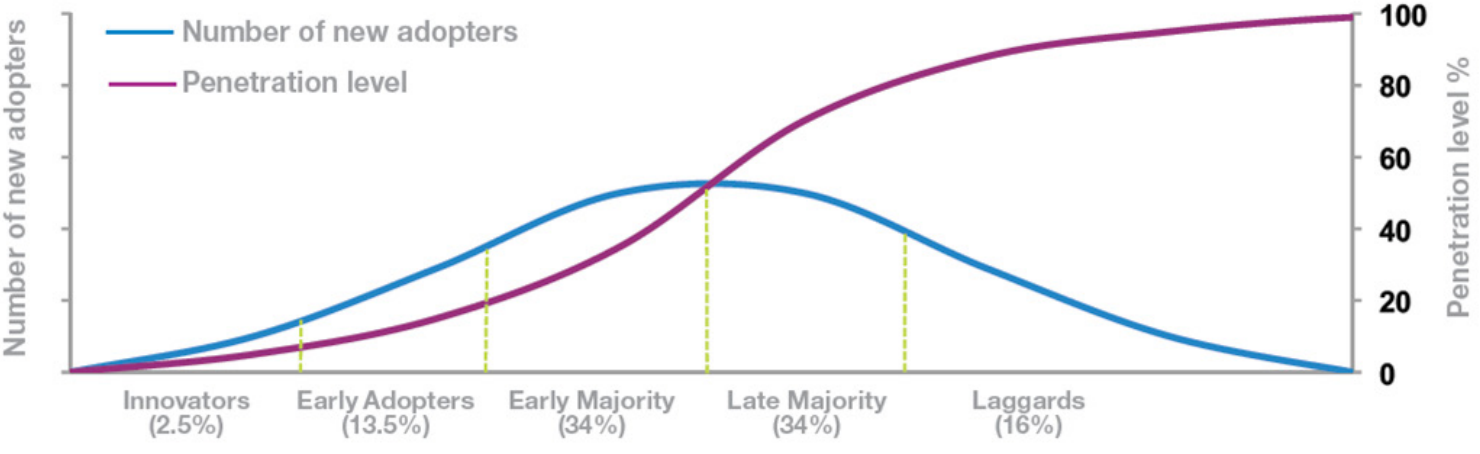
Types of market

Consumers and the market behave differently depending on the market's stage of maturity. Broadly speaking, there are three types of markets: growing markets, mature markets and declining markets (see Figure 3).

It should be taken into consideration that one market might be growing and maturing in different regions simultaneously. The correct forecasting methodologies need to be adopted depending on the stage of development of the market. Furthermore, not all markets leave the growth stage – some fail to reach maturity stage and move straight to decline (Moore (1990)).

"The art of modelling lies in understanding consumer and market behaviour, applying theories such as Diffusion of Innovation and considering the impact of regional market dynamics."

Figure 3: Market Life Cycle Source: Johnson, G., Scholes, K. and Whittington, R. (2008)



Market life cycle – disruption of technology

There is a continuous cycle of innovation and disruption across most markets. The length of time that a market remains in maturity before declining depends on the level of innovation present in or pertinent to the market. "Incumbents lose their market leadership (i.e. dominant market share) when faced with disruptive technological change," (Danneels (2004)). This occurs when customers of a mature market stop buying its products and start to adopt the products from a new, substitute market instead. The shift from film to digital cameras is one such example.

DEFINING THE MARKET

A company's target market is a section of its larger 'addressable' market, which consists of all the sales of a product or service by all the suppliers (i.e. the company and its competitors) to all the customers in a defined geography over a specific time period. Identifying too narrow a niche in the market means a company may miss the wider opportunities available, lack awareness of potential threats, and have a distorted view of the company's actual performance within the market. Conversely, defining too wide a market will not enable a company to see the finer detail of what their target market is doing and will not enable competitive businesses to understand their customers sufficiently. The market model can then be used to track the behaviour of the target market.

IDENTIFYING THE STRUCTURAL ELEMENTS TO TRACK WITHIN THE MARKET

The core elements of any market model are the product or service volumes. To create a useful model, the volumes can be grouped into customer segments, price bands, technology groups, disease categories, geographies or any structural element.

The more factors the model includes, the larger the size and complexity. Take a simple example of a forecast model of the UK PC market with volumes divided into two price bands – under £400 and £400 and over. If the two price groups are then divided into desktops and laptops, the size of the data is doubled. If the data is then split into England, Scotland, Wales and Northern Ireland the market model becomes four times larger. Further elements can be added to look at segments (students, households or business), and the share of 5 other competitors (PC suppliers).

If all of the above factors were included over 12 quarters this would result in a 3,456 cell model, before any summarisation.

Despite the challenge of building and maintaining a model with lots of elements, the benefit is a forecast that exactly matches a company's needs over the time frame of interest. It is clear that, even with a small number of elements, it is not possible to see all of the data interactions and market dynamics without a model.

FORECASTING ACCURACY

Forecasting accuracy can be improved by adding new data as it becomes available. The scientific method (hypothesis, experiment, knowledge and refine hypothesis) can be applied to market models (forecast, collect future market data, understand, re-forecast). Regularly updating a model means the understanding of a company's market can be continually refined. This may lead to new variables being added (e.g. moving from country-level forecast to individual sector forecasts within the country). Measuring forecasting accuracy enables competitive businesses to identify where and how the market dynamics differed from the forecast. In both success and failure it is important to ask questions about why the market behaved as it did and feed this back into the model. This will increase the accuracy of the next period's forecast and help a company to understand current and future customer behaviour better. New hypotheses about consumer adoption rates and competitor behaviour can then be scientifically tested in the marketplace, resulting in greater ongoing market understanding.

BENEFITS OF THE MARKET MODEL

Having ideas about the market are not the same as having a formal market model used across all departments. Departmental targets are based in part on ideas (which may be personal or informal) about what the market is doing or about to do. If Strategic and Competitive Intelligence Professionals supply one model with a unified view about the market, this then provides the basis for a company to derive significant strategic and economic benefits. These benefits are as valid for small companies as they are for very large companies.

Save time

Market data is needed by different departments at different times. Long-term forecasts may be required for Board strategy, Investor relations, or R&D, while shorter term forecasts are useful for marketing promotions and planning and temporary personnel recruitment contracts. If each plan or business case requires a trusted individual market forecast, the process is slowed. A single model therefore saves time.

Align the whole company

When a company uses one model, it allows alignment from top to bottom. A model commissioned by Strategic and Competitive Intelligence Professionals can provide the concrete data, insight, and 'One Truth' (a company-wide accepted view) about the market. This can be used by the Board, Finance, Marketing, Sales, Product Management and Development, Operations, Investor Relations, and HR departments (See Figure 4). This means each interaction between each department can start with "what are we going to do?" instead of "what is going on?" The model allows departmental figures to be checked against the model for feasibility, as the model is based on the company's own strategy and fed into by all departments.

Figure 4: The market model has many uses across the company

First mover market advantage

Diffusion of Innovation theory describes different types of consumers with different attitudes to risk, product maturity, product features, price, and other factors. A well-designed model will help predict when the market is entering different stages and how consumer behaviour will change over time, allowing the company to change marketing, sales, product and distribution plans for maximum economic benefit. First mover advantage can catch competitors off-guard and increase market share.

Share the output of the model

The leadership team can use extracts from the model in the form of PowerPoint presentations to share with teams of employees. Detailed reports (sometimes called Deep Dives) on part of the model can be produced to look at market behaviour in individual countries or sales territories, in specific product sectors or of specific competitors. Sharing some of the data with all employees and with the market (via interviews, articles and presentations) is necessary, as it increases clarity of understanding and helps to build company reputation.

CONCLUSIONS

Markets are complex and multidimensional. A market model allows Strategic and Competitive Intelligence Professionals and their businesses to understand this complexity, and is the only way to fully map the interactions between the core structural elements in the market. By selecting appropriately from the tools and techniques it is possible to forecast market behaviour with a high degree of accuracy using a market model. This accurate understanding of future consumer adoption rates and competitor performance plays an essential role in strategic planning and business development. By combining all available insights to create one picture of market behaviour, intelligent businesses can invest in the right markets and target the right segments. As a result of this, these companies can benefit from increased sales volumes, reduced costs, time efficiencies and better company-wide strategic alignment.

REFERENCES

Danneels, E. (2004) 'Disruptive technology reconsidered: reconsidered: A critique and research agenda' Journal of Product Innovation Management, 21(4), pp 246-258

Johnson, G., Scholes, K. and Whittington, R. (2008) 'Exploring Corporate Strategy' 8th Edition. Pearson Education Limited

Moore, G. (1990) 'Crossing the Chasm' Harper Collins

Moore, S. and Simon, J. (1999) 'The Greatest Century That Ever Was: 25 Miraculous Trends of the last 100 Years' The Cato Institute: Policy Analysis, No. 364

North, S. (2012) 'Speed of Adoption Risk' http://theinnovationofrisk.com/speed-of-adoption-risk/

Rogers, E. (2003) 'Diffusion of Innovations' 5th Edition. New York: Free Press

Jonathan Davenport leads the Market Analysis team at Milner. Jonathan's expertise lies in building bespoke market forecast models which are used to understand market dynamics, including customer buying behaviour and competitor strategies. He also specialises in strategy development, using his extensive knowledge of tools and theory to develop robust market-driven strategies. He has a strong business to business sales and marketing background, developed over 14 years working across the energy, telecoms and bio-tech industries.

Nick Milner, PhD is the Managing Director at Milner Strategic Marketing Ltd. Nick has had significant strategy and marketing experience across a range of enterprises from small start-ups to companies listed on the London and Indian Stock Exchanges. He has 25 years of experience in building market models and forecasting. Nick is a Fellow of the Chartered Institute of Marketing, a Freeman of the Worshipful Company of Marketors, a Chartered Marketer and a Chartered Psychologist.

Kay Sharpington is a Market Analyst at Milner Strategic Marketing Ltd. As part of the Market Analysis team she assists with building market models, forecasting, customer analysis and competitor analysis. Kay is a Cambridge University graduate with experience in statistical analysis, regression analysis and econometric modelling.