

## CHAPTER 2

### An Introduction To Retail and Consumer Modelling

#### 2.1 Definition

A model may be defined as a simplification or abstraction of reality using selected analytical techniques. It is a formal elaboration of an informed guess or hypothesis. Models can contribute in a special way to the refinement of good questions. They may take the form of a map, classification or a functional assignment of mathematical symbols, yet they have all one thing in common, namely, each are approximations of varying degrees of the retail phenomena. Chorley and Haggett in their seminal book, *Models in Geography*, published in 1967, state that a model is a simplified structuring of reality which presents supposedly significant features or relationships in a generalised form. They describe the many functions that a model may perform in scientific investigation, including:

1. a psychological device which enables complex interactions to be more easily visualised;
2. a normative device which allows broad comparisons to be made;
3. an organisational framework encouraging the collection and manipulation of data;
4. a direct explanatory device; or
5. a constructional framework accompanying the search for theory or for the extension of existing theory.

What underpins any model is deductive thinking and its application has had the greatest success in the physical sciences because variables in the complexity can be controlled in laboratory situations. Deductive reasoning develops preliminary hypotheses before data is collected to empirically verify them. The alternative within scientific method is by induction, where data is explored in a search for hypotheses. Inductive reasoning may produce hypotheses that may in turn be false, but nevertheless it can be an important starting point, if meaningful hypotheses cannot be deduced.

Deduction and induction often involve the assignment of names or numbers to phenomena. This depends on the nature of the phenomena, how well analysts understand them and the context in which they occur. When a type or kind can be discerned, the assignment is nominal, and if it can be ranked, or form part of a sequence, it is ordinal. Such a process depends on such concepts as 'category' or a 'boundary' in the assignment of meaning and both can be applied to the same

phenomenon. For example, a regional shopping centre is classified by either the number of major anchors or floorspace or both and has a trade area boundary, which can vary according to the time of day or day of the week. The concept is transferable for comparison to other regional shopping centres in different contexts. Table 1.1 on page 8 could then be argued to be a model of shopping centres, even though it is simply a classification. Models, therefore, are used to organise information and to generate meaningful generalisations. Further, they are a lynch-pin for good hypotheses and a focus for empirical testing. They can also provide a ‘crystal ball’ for predictions into the future, if the assumptions and outcomes are scientifically verifiable and reproducible.

## **2.2 A Justification for Modelling**

Public policy is made for communities, rather than individuals, and it is the understanding of generalisations and their objectivity that best serves good policy for communities. For example, the contest between academics in Australia over the 1998 Southeast Queensland Sunday Trading Case, before the Full Bench of the Industrial Relations Commission, is a good example of retail modelling successfully influencing public policy. Numerous small business people presented cases before the Commission of their individual circumstances and hardship, but it was the predictions, rather than these individual accounts (which nevertheless were important to those people), which won the day in court. The Commission was able to observe predictions of vacant shops and the decline of traditional retail precincts in seven days-a-week trading communities. This was one of the major pieces of evidence that convinced the Commission that the costs to small business and local government outweighed the economic arguments of individual choice, from the shopping hour deregulation of major supermarket chains.

Generalisations from model predictions can have policy implications, but this puts increased focus on the underlying assumptions. The retail aggregate space-time trip (RASTT) model, used in the above shopping hours case, is underpinned by the assumption of distance minimisation and regular shopping behaviour. Such assumptions may only occur as the determinate in fifty per cent of shopping trips, but for trips to a supermarket, this model is far more relevant than for clothing or gift shopping. Trips to large regional shopping centres increasingly do not fit this assumption, but this conclusion was only reached after looking at the empirical evidence of trip behaviour in a sample of the same shopping centres in Sydney over twenty years (the so-called ‘Sydney Project’; Baker, 1994a, 2002). The modelling of aggregate patterns can provide some explanation, but it is recognised that distance minimisation is relevant only to select situations. For example, trips by less mobile populations (such as, the elderly) or purposes (such as grocery shopping) or the centre size (smaller community to sub-regional shopping malls) all appear to conform to this strategy. The use of the model is then conditional, but it provides a benchmark to define variations in trip processes and change.