

# Research Horizons

*Highlights of Recent Research by the SHTM*

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## Practical Tourism Demand Forecasting System Developed

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Recognising the fundamental importance of demand to all tourism-related business decisions, the SHTM's Professor Haiyan Song, Visiting Professor Stephen Witt and Post-Doctoral Fellow Xinyan Zhang describe how they developed a web-based tourism forecasting system in a recently published research paper. The value of such a system, they write, is in the scope it allows forecasters to generate their own 'what if?' scenarios. Describing an easily accessed, modular online system that supports scenario analysis and "real-time judgemental contributions of experts in the field", the researchers outline a two-stage methodology with practitioners firmly in mind.

### **Practical Forecasting**

Although a number of forecasting methods have been developed in the academic literature, they are not readily accessible by the people who could most benefit from them. To address this problem, the researchers envisaged a forecasting system that would "facilitate the transfer of information and knowledge from the experts in tourism forecasting to practitioners in the tourism industry". This, they note, necessitates a system that "not only integrates the advantages of modern forecasting methods and scenario analysis, but also allows for a prompt judgemental contribution from a wide range of experts".

Added benefits would include the use of a familiar Web-based environment at low cost, continuously updated

forecasting models and "improved collaboration amongst stakeholders".

Hong Kong is an ideal setting in which to develop that system because tourism is its second largest foreign income earner and contributes around 8 % of local GDP. With approximately 25 million tourist arrivals a year, demand forecasting is crucial to budgeting and planning for the many tourism-related businesses. According to the researchers, "Hong Kong faces the critical problem of creating and maintaining a sustainable competitive advantage". This challenge can be met through a Web-based system that enhances "policy formation and decision making" for government representatives, industry practitioners, consulting firms and tourism researchers.

### **Industry-Focused System Methodology**

Focusing on "the relationship between demand for Hong Kong tourism and its influencing factors", the researchers identify the specific outputs that would be needed from the system on a quarterly basis. These include tourist arrivals and expenditures by source market up to 10 years ahead, demand for hotel rooms by room type and source market up to five years ahead, tourist expenditure on accommodation, retail products, restaurant meals and transport by source market up to five years ahead, and Hong Kong's outbound tourism to key destinations.

The forecasting process occurs in two stages, with the first involving the use of econometric models to produce statistical forecasts. The variables include tourism demand as measured by tourist arrivals from a particular origin, the cost of living for tourists in Hong Kong, the price of tourism products that could be substitutable for a stay in Hong Kong and the income level in the country or region of origin. The source markets, constituting 85.5% of tourist arrivals in Hong Kong, include the Chinese mainland, Taiwan, Japan, the USA, South Korea, Singapore, Macau, Australia, the UK and the Philippines.

When a forecast for one of these source markets is produced it becomes the initial input for a second stage, in which a panel of 12 tourism experts adjust it “according to their intuition, experience and practical knowledge”. The experts are anonymous practitioners, public servants and academics who provide their judgements over two rounds of the same survey through a Web page. Feedback is provided by an administrator after the first round, to help narrow down the resulting judgemental forecasts.

### **Ease of Use**

When the complete quarterly forecasts have been generated, general users and subscribers can access them from their own computers. The researchers note that general users can only access annual statistical forecasts of tourist arrivals, but subscribers have access to all of the statistical and judgemental forecasts, and can perform scenario forecasting themselves. In the scenario analysis, the original statistical forecasts can be used “as benchmarks against which to portray other possible scenario forecasts”, with a standard set of two optimistic scenarios and two pessimistic scenarios and the ability to accept user-defined scenarios.

The homepage itself is set out in an easy-to-use manner, with all functions clearly labelled in the left-hand column and the main operations, including user input and system output, covering the rest of the screen. The various functions are presented intuitively, with the arrival forecasting interface, to give a prominent example, allowing users to select a forecasting period from a drop-down box and then choose origin countries or regions by clicking on the appropriate check boxes. The output is provided in tabular format for general users, and in graphical form for subscribers once they log in to the system.

### **Future Applications**

Looking to the future, the researchers note that “Hong Kong tends to be over-responsive to market conditions”. With the various tourism sectors vulnerable to economic cycles, a forecasting system easily accessible by policymakers and industry strategists will help to minimise the impact of foreseeable fluctuations. The researchers are considering the addition of new forecasting methods to the system to further strengthen its demand forecasts and the scenario analysis process, and the possibility of incorporating user feedback into the expert judgment stage, amongst other refinements. The aim will always be to enhance the long-term development of the tourism industry in Hong Kong.

#### **Points to Note:**

- Demand forecasting is crucial for all tourism related sectors.
- Hong Kong’s tourism industry, however, lacks a demand forecasting system.
- An easy to use Web-based forecasting system can enhance tourism policy and decision making.
- The Hong Kong Tourism Demand Forecasting System combines statistical forecasts, expert judgements and user-defined scenario analysis in an industry focused Web service.

Song, Haiyan, Witt, Stephen F., and Zhang, Xinyan (2007). Developing a Web-based Demand Forecasting System. *Tourism Economics*, Vol. 14, No. 3, 445-468.