Econometric Models Building for British Gas Call Centre

Executive summary
This project successfully developed econometric models in identifying the key drivers which have some impacts on weekly incoming call volumes in British Gas. The findings of this project will be useful for the long term business and scenario planning for the Call Centre staff scheduling in British Gas.

Challenge Overview
Call centres play a major role in the way many businesses operate. It has also become one of the most common interfaces between businesses and their customers. British Gas, as the biggest Gas and Electricity provider in the UK, has dedicated to improve their call centre services for customers. A special phone line has been set up when customers are making enquiries, such as regarding their bills or changing their payment schemes etc. The current resource planning team is responsible for producing medium and long term forecast for incoming call volumes from 13 weeks to 3 years out. However, due to fast changing market environment and recent business restructuring in British Gas, call volumes in recent years become more volatile. Although the team has some strong opinions on what the true drivers of call volumes are, their correlations have not been proved.

The Problem
The objective of this project tends to identify long term key drivers and evaluate their impacts in driving incoming call volumes through the econometric model building process. This project encounters several problems, including high frequency data modelling, moving and unstable holiday effects, multiple level shifts and structural breaks in the time series with ambiguous starting and ending dates and data limitations. In this case, specific-to-general approach has been used while the regression models are built step by step. Multivariate econometric regressions are finally built and the drivers are identified with elasticity of these drivers are evaluated.

Results and Achievement
The final model results show that calendar and holiday effects, customer numbers and price change effects are the key drivers impacting on call volumes. Both customer numbers and price changes are the most important drivers to the call volumes, given that they have higher elasticity than other variables.

- By a 10% increase in Gas or CC customer numbers, the call volumes are expected to increase by around 3.3-3.5%.
- Call volumes are expected to increase when there is a price change, regardless whether it is a price increase or decrease, by an estimate of 378 extra calls is expected per unit change in price.

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