Sirin Luengwitchajaroen 2010: A Comparative Study of Classification Methods in
Determining Factors that Affect the Purchasing Decision of Life Insurance Policy:
A Case Study of Bang Khen District, Bangkok. Master of Science (Statistics),
Major Field: Statistics, Department of Statistics. Thesis Advisor: Associate Professor
Prasit Payakkapong, M.S. 139 pages.

The aim of this thesis is to study factors that affect the purchase decision of life insurance
policy by using 3 different classification techniques: Logistic Regression (LR), Decision Tree (DT)
and Back Propagation Neural Network (BPNN). In total, 29 predictor variables were studied, which
broadly cover various aspects of personal factors, attitude factors and marketing factors. 500 samples
were collected around Bang Khen District in Bangkok by means of quota sampling, where 400
samples were used to train the models and 100 were used to test the models.

The performances of classification techniques were compared using accuracy and area under
the ROC curve (Receiver Operating Characteristic curve) of the test data. DT method was found to be
the most effective one, having accuracy of 72% with the area under the ROC curve of 0.743. Second
best performer was the BPNN method, having 67% accuracy with the area under ROC curve of 0.683.
LR method on the other hand yields 66% accuracy with the area under ROC curve of 0.613.

Based on the results from the DT method, five following factors are the most critical in the
customer's insurance policy purchase decision arranged in the order of importance: the attitude that
life insurance is a form of saving, the attitude that life insurance claim is difficult, inconvenience and
is a slow process, personal monthly income, marketing of insurance policy where certain benefits are
given after 2-3 years of payment such as loan and temporary exemption of payment etc. and the
number of sibling. It was also found that DT, BPNN and LR share two common important factors;
the attitude that life insurance is a form of saving and personal monthly income.

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