

**UNIVERSITI TEKNOLOGI MARA**

**BACK PROPAGATION NEURAL NETWORK  
APPROACH FOR CHURN PREDICTION:  
A CASE STUDY IN CELCOM (M) BERHAD**

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## **Abstract**

One of the main objectives of modeling customer churn is to determine the causal factors, so that the company can try to prevent the attrition from happening in the future. Churn prediction for mobile telecoms companies is quite complicated but churn is very important as it is a measure of customer loyalty, and therefore how stable a company's subscription revenues are likely to be if sales growth flags.

This report presents the development of an application in the Artificial Neural Network (ANN). The ANN is utilised to predict the churn from a set of historical customer data from Celcom (M) Bhd. The data has been chunk into a few series to determine the significant variables for predicting churn. Computer program were written in Matlab to implement the training and testing programs for the ANN algorithms.

At the end of the study, results showed that the developed technique is capable and feasible to be used in practical. The developed ANN can be utilised for predicting churn and the system stability can be evaluated using new set of data.

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# CHAPTER 1

## INTRODUCTION

### 1.0 Mobile Telecommunications in Malaysia

Domestic mobile growth is slowing in Malaysia as the market reaches saturation. The enforced registration of all prepaid SIM cards has also impacted growth in the short term, with many inactive customers failing to register and therefore being discounted. This had a huge impact on Celcom's subscriber base, in particular, which actually contracted by 3% during Q306. It projects limited growth, with some 27 million mobile subscribers by the end of 2011 accounting for a penetration only just under 100% [1].

Malaysia remains a competitive telecommunication market, with Telekom Malaysia coming under more pressure from alternative providers in the fixed-line and broadband markets. The domestic mobile market remains competitive, and this will only intensify with the introduction of mobile number portability (MNP), providing more good news for the consumer.

Newly demerged from Telekom Malaysia, Celcom (M) Berhad (Celcom) which now under Telekom Malaysia International (TMI) is strengthening out as the one of the leading and vibrant mobile communications provider in Malaysia. Celcom rises to meet new challenges by soaring higher, gaining increased momentum in raising the standards of mobile communications in the country.