

**TOWARDS FORECASTING BUSINESS PREPAID MOBILE
TELECOMMUNICATION USING CONNECTIONIST MODEL**

**A thesis submitted to the Faculty of Information Technology in partial
fulfillment of the requirements for the degree
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by

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ABSTRAK

Khidmat telefon mudah alih pascabayar merupakan suatu keperluan masyarakat dan telah menyumbang kejayaan yang besar dalam bidang perniagaan. Sehubungan dengan itu, rangkaian telefon mudah alih telah berubah kepada penghantaran data yang lebih tinggi dan juga transmisi data berasaskan paket serta menjurus kepada ciri-ciri multimedia. Fakta ini telah memberi peluang terhadap beberapa teknologi mudah alih baru yang lebih menarik. Pada masa ini, kemajuan terkini dalam industri telekommunikasi telah menarik ramai pengguna untuk menggunakan telefon mudah alih dan mengakibatkan pembekal telekomunikasi mengaut keuntungan besar setiap tahun. Walau bagaimanapun, membuat peramalan keadaan perniagaan dalam bidang ini merupakan sesuatu yang sukar dilakukan kerana data diambil berdasarkan tempoh perjalanan masa. Justeru itu, kajian ini mencadangkan rangkaian neural sebagai alternatif untuk meramal keadaan perniagaan mudah alih. Di dalam kajian ini, data trafik telekomunikasi diperolehi dari Celcom khususnya Khidmat Kawalan Bertuju (SCP). Rangkaian neural telah dilatih dengan data tersebut untuk memberi peramalan urusniaga. adalah diharapkan, hasil daripada kajian ini dapat membantu Celcom dalam merancang perniagaan mereka kelak. Hasil kajian ini juga telah membuktikan kesahihan dan kebolehpercayaan rangkaian neural di dalam melaksanakan peramalan perniagaan dalam bidang telekomunikasi pascabayar mudah alih. Pencapaian dari pembangunan model perambatan balik telah memberi ketepatan melebihi 97 peratus. Rangkaian neural dapat mengambil rekod data panggilan menjurus kepada peramalan perniagaan telekomunikasi pascabayar serta menjadikan peramalan lebih pantas dan senang digunakan.

ABSTRACT

Prepaid mobile service has become a necessity to the society and contributed success to many businesses. Realizing its importance, the mobile networks are moving towards higher data rates and packet oriented data transmission and mobile having more multimedia features. This fact has open end opportunities for new and more attractive mobile technologies. However, forecasting the business trend in this domain is a difficult task as it involves time dependency data. Hence, this study proposed a connectionist model as an alternative for forecasting the mobile business trend. In this study, the teletraffic data was gathered from Celcom Service Control Point (SCP). Neural network was trained with SCP data to forecast Celcom mobile business trend. This result will help Celcom in their business planning. This study has proven the capability and reliability of the connectionist model in performing the forecasting business prepaid mobile telecommunication. The performance of the back propagation model with the accuracy above 97 percent is satisfactory. The model is able to capture data from the call event records towards forecasting the trends of business prepaid mobile Telco, thus making it short and simple to use.

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TABLE OF CONTENTS

	Page
PERMISSION TO USE	i
ABSTRAK	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER ONE : INTRODUCTION	1
1.1 Problem Statement	5
1.2 Objective	7
1.3 Scope of the Study	8
1.4 Significance of the Study	9
1.5 Thesis Outline	9
CHAPTER TWO : LITERATURE REVIEW	10
2.1 Telecommunication	10
2.1.1 Types of Telecommunication Media	12
2.1.2 Mobile Usage	13
2.2 Tools for Analysing Mobile Telco	13
2.3 Connectionist Model for Forecasting	14
2.3.1 Introduction of Connectionist Model	15
2.3.2 Back propagation Neural Network	21
2.4 Connectionist Model in Forecasting Application	26
2.5 Summary	27
CHAPTER THREE : METHODOLOGY	28
3.1 Data Collection	28
3.2 Data Preprocessing	29
3.3 The Design and Development of Connectionist Model	32
3.4 Testing	35
3.5 Summary	38

CHAPTER FOUR : RESULTS AND DISCUSSIONS	39
4.1 Binary Data Testing	39
4.2 Bipolar Data Testing	48
4.3 Discussions	56
CHAPTER FIVE : CONCLUSION	58
5.1 Problem and Limitation	58
5.2 Contributions	58
5.3 Recommendation and Future Research	59
BIBLIOGRAPHY	
APPENDICES	
Appendix A : Sample of Raw Data for Service Control Point (SCP)	65
Appendix B : Sample of Normalized Data for Service Control Point (SCP)	67
Appendix C : Source Codes of <i>ForecasTelco</i> Simulator	69
Appendix D : Screen Shots <i>ForecasTelco</i> Simulator	121
Appendix E : The Result of Updated Weight Used For Both Activation Functions	126

LIST OF TABLES

	Page
Table 2.1: Types of Connectionist Models and Typical Applications (Delurgio, 1998)	14
Table 2.2: The Comparison of a Brain and Computer Capabilities (Klemiato, 2002)	16
Table 3.1: Data Type and Representation	31
Table 3.2 : Input-output Variables for Forecasting SCP Dataset	36
Table 3.3 : Dataset (Deo and Naidu, 1999)	36
Table 4.1 : Hidden Unit for Selecting Binary Network	40
Table 4.2 : Selected Hidden Unit of Binary Network with Different Seed Value	41
Table 4.3 : Learning Rates Selection for Binary Network	42
Table 4.4 : Selected Learning Rate of Binary Network with Different Seed Value	43
Table 4.5 : Momentums Selection for Binary Network	43
Table 4.6 : Selected Momentum of Binary Network with Different Seed Value	44
Table 4.7 : Weights Selection for Binary Network	45
Table 4.8 : Selected Weight of Binary Network with Different Seed Value	46
Table 4.9 : Stopping Criteria (Epoch) Selection for Binary Network	47
Table 4.10 : Hidden Units Selection for Bipolar Network	49
Table 4.11 : Selected Hidden Unit of Bipolar Network with Different Seed Value	50
Table 4.12 : Learning Rates Selection for Bipolar Network	50
Table 4.13 : Selected Learning Rate of Bipolar Network with Different Seed Value	51
Table 4.14 : Momentums Selection for Bipolar Network	52
Table 4.15 : Selected Momentum of Bipolar Network with Different Seed Value	53
Table 4.16 : Weights Selection for Bipolar Network	53
Table 4.17 : Selected Weight of Bipolar Network with Different Seed Value	54
Table 4.18 : Stopping Criteria (Epoch) Selection for Bipolar Network	55
Table 4.19 : Forecasting Results	57
Table A-1 : Sample of Raw Data for Service Control Point (SCP)	66
Table B-1 : Sample of Normalized Data for Service Control Point (SCP)	68
Table E-1 : Update Weight for Both Activation Functions	127

LIST OF FIGURES

	Page
Figure 1.1 : Intelligent Network Architecture in Prepaid Mobile Telco	3
Figure 1.2 : The Trend of Mobile Revenues in Malaysia (Nokia, 2004)	6
Figure 2.1 : Growth in Cellular Technology Usage	11
Figure 2.2 : The Human Brain	17
Figure 2.3 : The Neuron	18
Figure 2.4 : The Synapse	19
Figure 2.5 : An Artificial Neuron	19
Figure 2.6 : Structure of a Standard Two-layer Connectionist Model	21
Figure 2.7 : Back Propagation Neural Network Architecture	25
Figure 3.1 : Screen Shot of <i>ForecasTelco</i> System	33
Figure 3.2 : Flow Chart of Back Propagation <i>ForecasTelco</i> System	34
Figure C-1 : Splash Screen for <i>ForecasTelco</i> Simulator	70
Figure C-2 : Main Interface for <i>ForecasTelco</i> Simulator	72
Figure C-3 : Configure Dataset to be Trained for <i>ForecasTelco</i> Simulator	112
Figure C-4 : About <i>ForecasTelco</i> Simulator	114
Figure C-5 : Training Result for <i>ForecasTelco</i> Simulator after User click View Train	115
Figure C-6 : Testing Result for <i>ForecasTelco</i> Simulator after User click View Test	118
Figure D-1 : Splash Screen <i>ForecasTelco</i>	121
Figure D-2 : Main Interface <i>ForecasTelco</i>	123
Figure D-3 : Configure Dataset to be Trained with <i>ForecasTelco</i>	124
Figure D-4 : About <i>ForecasTelco</i> V1.0	124
Figure D-5 : Training Result for <i>ForecasTelco</i> after User click View Train	125
Figure D-6 : Testing Result for <i>ForecasTelco</i> after User click View Test	125

Chapter 1: INTRODUCTION

Mobile telecommunication or Telco industry is considered as a competitive industry nowadays. New Straits Times in its Business Times section on Oct 13, 2003 has reported that Telco industries are competing with each others in serving the latest prepaid services to customer by introducing new packages, reducing call rates and other interesting packages. Celcom, Maxis and DiGi are among the Telco providers or carriers in Malaysia.

There are two types of subscriber packages in mobile Telco which are known as postpaid and prepaid services. Currently, Telco business nowadays is talking about the prepaid service since it giving benefit for provider and users. According to Lucent Technologies (1998), prepaid service is known as service that enables customers to pay in advance for their call and other service features. This frees the customer from the inconvenience of handling regular bills or signing a contract, with the result that customer cash flow is optimised and fraud is minimised. Christensen (2000) also described prepaid or prepay are not unlike postpaid subscribers in sense the subscribers have certain basic needs and desires.

Prepaid subscribers have their own number of options when recharging their accounts. Other benefits by using prepaid include allowing student and international travellers to budget their call usage and controlling their monthly spending. Besides that, each prepaid mobile serves different technology between its packages produced by the carriers such as the voice billing, roaming services, short message service, instant messaging and others. For the increasingly savvy of technology and its capabilities, the mobile device become a device to make lives not just easier but higher quality lives. Many of these services will be paid in advance before

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