

1st MSC Malaysia R&D Series 2009 “ Innovation in the Global Economy ”

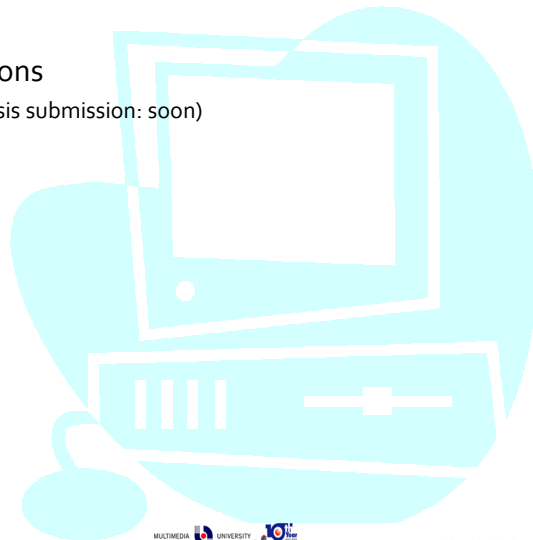
MDeC Researcher Attachment Programme

Chin Wen Cheong
Senior Lecturer
Multimedia University



1.0 Personal Information

- Academic qualifications
 - Phd (Finance)-UKM (thesis submission: soon)
 - MSc (Statistics), UPM
 - BSc (Physics), UM
- Subjects Taught
 - Calculus;
 - Numerical analysis;
 - Linear Algebra;
 - Time series analysis.









2.0 Research (Financial system)

Research Funding

- **RESEARCH DESIGN & DEVELOPMENT & INNOVATION GRANT 2007-2008 (5.8K)**
An Empirical Study of Structural Break in Malaysian Stock Market
Project Leader
- **FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) – Jul 2007-Jul 2009 (60K)**
Modelling volatility persistency of stock returns using daily and realized volatility models
Researcher
- **GERAN UNIVERSITI PENYELIDIKAN (GUP)–Oct 2007-Apr 2009 (100K)**
The dynamic relationships of asset prices, trading volume, volatility and monetary policy: Some evidence from Malaysia
Researcher
- **e-SCIENCE – sep-2008- sep 2010 (85.9K)**
Evaluation and Application of dynamic long-range dependence volatility in Malaysian Financial markets
Project Leader

2.1 Research Output (Financial System)

Selected Publications (recent)

- C.W.Cheong. Modeling and Forecasting Crude oil Markets using ARCH-models. *Energy Policy*. (in press)
-  C.W.Cheong. Estimating the Hurst parameter in financial time series via heuristic approaches. *Journal of Applied Statistics*. (inpress).
-  C.W.Cheong, Abu Hassan S.M.N, Zaidi Isa (2007). Asymmetry and long memory volatility: some empirical evidence using GARCH. *Physica A: Statistical Mechanics and its Applications*, 373, 651-664.
-  C.W.Cheong (2008). Time-varying volatility in Malaysian stock exchange: an empirical study using multiple-volatility-shifts fractionally integrated model. *Physica A: Statistical Mechanics and its Applications*, 378(4), 889-898.
-  C.W.Cheong (2008). Heavy-tailed value-at-risk analysis for Malaysian stock exchange. *Physica A: Statistical Mechanics and its Applications*, 378(16), 4285-4298.
-  C.W.Cheong, Abu Hassan S.M.N, Zaidi Isa (2007). An empirical study of realized and long memory GARCH standardized stock-return. *App. Econ. Lett*, 3, 121-127.
-  C.W.Cheong, Zaidi Isa & Abu Hassan S.M.N. (2007). Modelling financial observable-volatility using long memory models. *Applied Economic Letters*, 3, 201-208.

2.1 Research Output (Financial System)

Selected Publications (2007-2008)

- C.W.Cheong, Abu Hassan S.M.N, Zaidi Isa. (2007). Long persistence volatility and links between national stock market indices. *Int. R. J. of Fin. and Econ.*, 7, 175-195.
- Abu Hassan S.M.N., C.W.Cheong (2007). An empirical study of realized volatility and trading volume dynamics. *Int. R. J. of Fin. and Econ.*, 9, 160-166.
- C.W.Cheong and Zaidi Isa (2007). The impact of multiple structural-breaks on Malaysian Stock Market. *Euro. J of Econ. Fin. and Ad. Sc.*, 7,94-103.
- C.W.Cheong (2007). Statistical Evaluation of market Barometer in Malaysian Stock Market. *ICFAI J. of Fin. Econ.*, 5, 7-27.
- C.W.Cheong and Zaidi Isa (2007). Tests of random walk hypothesis under drift and structural break – a nonparametric approach. *W. App. Sc. J.* 2(6), 674-681.
- C.W.Cheong, Abu Hassan Shaari Mohd Nor and Zaidi Isa. (2008). Market efficiency of the Malaysian Stock Exchange: further evidence, *Int. J. Mgt. Studies*, 15(2), 41-68.
- C.W.Cheong, Zaidi Isa & Abu Hassan S.M.N., (2008). Fractionally integrated time-varying volatility under structural break: evidence from KLCI, *J. Sc. Mal.*, 37(4), 405-411.
- C.W.Cheong, Zaidi Isa and Abu Hassan Shaari Mohd Nor, (2008). Nonlinear dynamics in stock exchange: evidence from KLSE, *Empirical Economics Letters*, 7(4), 367-375.
- C.W.Cheong, Zaidi Isa and Abu Hassan Shaari Mohd Nor. (2008). The impact of structural break to permanent and transitory components of Malaysian stock market, *Journal of Quantitative Economics*, 5 (2), 83-94.
- C.W.Cheong, Zaidi Isa and Abu Hassan Shaari Mohd Nor. (2008). Stock market conditional volatility analysis: an inclusion of realized volatility, *Empirical Economics Letters*, 7(7), 757-763.



DECEMBER 8-12, 2008
Why is global financial volatility so high?
Prof. Robert Engle

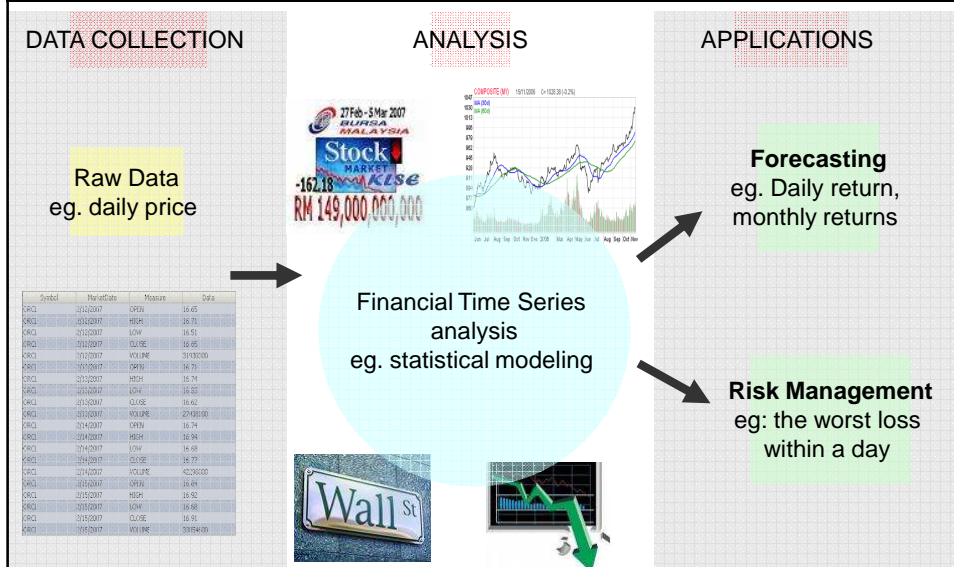


Selected Presentations

- One- and Two-Component Autoregressive Conditional Heteroskedasticity (ARCH) modeling in financial stock market volatility, *Asian Mathematic Conference (AMC2009)*, 22-26 Jun 2009.
- Value-at-Risk evaluations in Malaysian Stock Exchange: heavy-tailed and long-memory-ARCH approaches, *2008 Australasian Meeting of the Econometric Society, Wellington, New Zealand*. Jul 2008.
- Tests of random walk for Malaysian daily stock indices. *International Conference on Mathematical Sciences, ICMS'07, Putrajaya*. Dec 2007.
- An empirical study of realized and long memory GARCH standardized stock-return, *Quantitative Methods in Finance (QMF2006)*, Sydney, December, 2006.
- Stock Market Efficiency, Long-Range Dependency and Non-Linearity Behavior: A Case Study of the Malaysian Stock Market, *Proceeding of The Malaysian Finance Association's 8th Annual Conference*, May 2006, pp. 274-289.



2.3 A Quick View (Financial System)



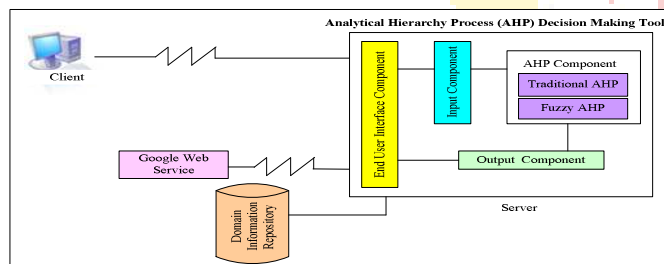
3.0 Research (AI & Information System)

Project (1)

- Decision Making Tool (Project ID 16)

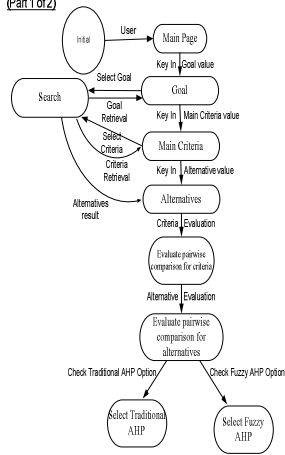
Member: Lee Hua Jie, Mak Chee Meng, Chin Wen Cheong

Description: This project aims to develop a fuzzy multicriteria decision making (MCDM) tool that equips with analytic hierarchy process (AHP) framework to help users in semi-structured and unstructured decision making tasks. The tool provides portability and adaptability features by deploying the software on web platform. In addition, this system provides an integrated domain reference channel via a database connection to assist the user obtains relevant information regarding the problem domain before constructing the AHP hierarchy attributes.

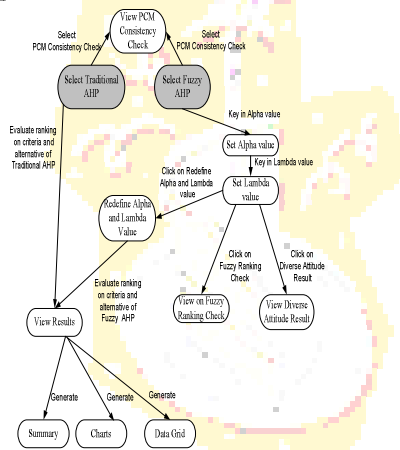


3.0 Project (1)

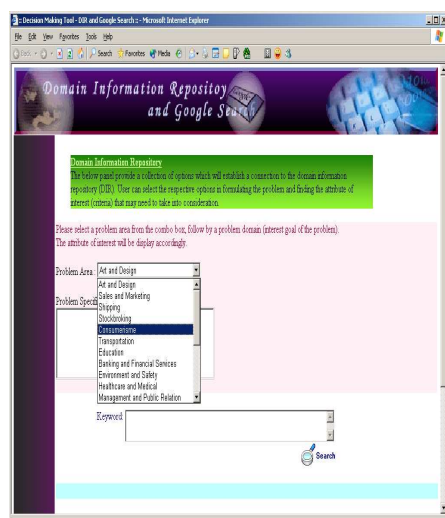
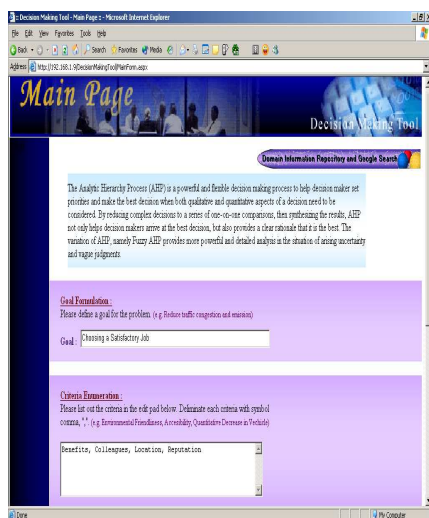
State Diagram of Decision Making Tool (Part 1 of 2)



State Diagram of Decision Making Tool (Part 2 of 2)



3.0 Project (1)



3.0 Project (1)

Results in data grid

Alternative	Final Scores Rank
Job A	0.5069 1
Job B	0.3739 2
Job C	0.1192 3

Alternative	Fuzzy AHP's Final Scores	Traditional AHP's Final Scores	Differences
Job A	0.5069	0.5466	0.0377
Job B	0.3739	0.3442	0.0297
Job C	0.1192	0.1113	0.0079

Results in a spider-diagram

Chart Type Option: Column Chart

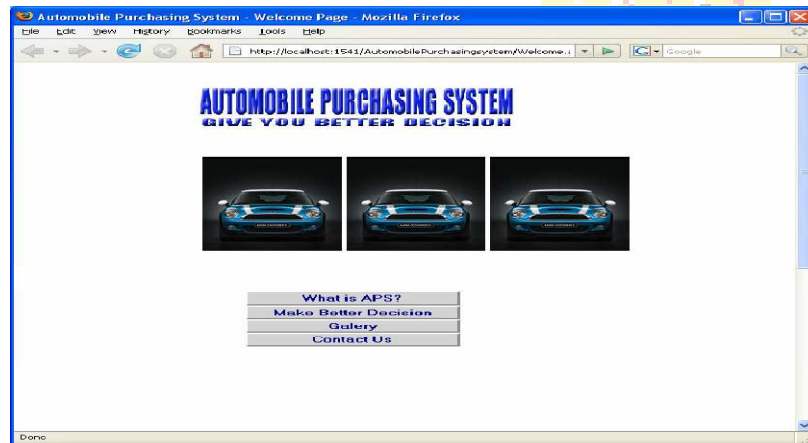
Final Scores of each Alternative in Fuzzy AHP

3.0 Project (1)

- Other output
 - C.W.Cheong, Lee Hua Jie, Mak Chee Meng, Amy Lim Hui Lan (2008). Design and development of decision making system using fuzzy Analytic Hierarchy Process. Am. J. of App. Sc.,5(7), 783-787.
 - Lee Hua Jie, Mak Chee Meng, C.W.Cheong.(2006). Web-based Fuzzy multicriteria decision making tool. Int. J. of Comp. Int. and Mgt. 14(2), 1-14.
 - Lee Hua Jie, Mak Chee Meng, C.W.Cheong. Web-based multicriteria decision making tool-fuzzy approach. International Conference on Information and Technology in Management, Malacca, May 2005.

3.1 Project (2)

- Automobile Purchasing System by using fuzzy set theory (Project ID 02)
 Member: Azura Rahamat and Sit Hawa Ismail , Chin Wen Cheong
 Description: Extension from the previous project. Application in car purchasing event.



3.1 Project (2)

- Automobile Purchasing System by using fuzzy set theory (Project ID 02)

The screenshot shows a web browser window titled 'Automobile Purchasing System - Make Better Decision - Mozilla Firefox'. The address bar shows 'http://localhost:1541/Automobi...'. The page has a blue navigation menu with 'Home', 'What is APS?', 'Make Better Decision', 'Galery', and 'Contact Us'. Below the menu is the heading 'Make Better Decision With APS' and an image of people in a meeting. A form titled 'Please insert your details' contains the following fields:

Name	Siti Hawa Ismail
Gender	Female
Age	24
Salary	5000
Occupation	SA

Below the form is a 'SUBMIT' button.

3.1 Project (2)

- Automobile Purchasing System by using fuzzy set theory (Project ID 02)

Automobile Purchasing System - Make Better Decision - Mozilla Firefox

Please insert your details

Name: Sili Hwasa,smail
 Gender: Female
 Age: 24
 Salary: 5000
 Occupation: ISA

Recommend Car
 Mini Cooper
 Toyota Yaris
 Toyota Akhis
 Waja
 Honda City

Automobile Purchasing System - Comparison Value - Mozilla Firefox

AUTOMOBILE PURCHASING SYSTEM

GIVE YOU BETTER DECISION

Comparison Each Criteria & Alternative

Problem Definition
 Goal: Purchase Car
 Criteria: Exterior Design, Interior Design, Top Speed, Fuel Consumption
 Goal: Mini Cooper, Mini Cooper S, Mini Cooper Convertible

Compare the relative importance of criteria or alternatives with respect to each other. You may perform comparison in numerical or verbal form.

Pairwise Comparison Matrix Criteria

Criteria Scale of importance relationship Criteria

Exterior Design [1 [equal importance] Interior Design
 Exterior Design [1 [equal importance] Top Speed

3.1 Project (2)

- Automobile Purchasing System by using fuzzy set theory (Project ID 02)

Automobile Purchasing System - Comparison Value - Mozilla Firefox

Criteria Context: Fuel Consumption

Alternative Scale of importance relationship Alternative

Mini Cooper [1 [equal importance] Mini Cooper S
 Mini Cooper [1 [equal importance] Mini Cooper S
 Mini Cooper S [1 [equal importance] Mini Cooper Convertible

Evaluate

Traditional AHP
 Fuzzy AHP

Fuzzy AHP Setting

Alpha Cut: 0.50 range 0.0 - 1.0
 Lambda Cut: 0.50 range 0.0 - 1.0

BACK RESULT RESET

Automobile Purchasing System - Result - Mozilla Firefox

AUTOMOBILE PURCHASING SYSTEM

GIVE YOU BETTER DECISION

Home What is AHP? Make Better Decision Gallery Contact Us

Result

Alternative	Mini Cooper	Mini Cooper S	Mini Cooper Convertible	Model
Exterior Design	0.6394	0.2737	0.0869	0.5937
Interior Design	0.2605	0.6394	0.1061	0.2439
Top Speed	0.6394	0.0869	0.2737	0.3010
Fuel Consumption	0.6000	0.3000	0.1000	0.0614
Result	0.5446	0.3442	0.1113	

3.1 Project (3)

- House Loan Selection System Using Fuzzy Set Theory (Project ID 164)
 Member: Farahnaz Naeimipoor, Faraz Ebneali, Chin Wen Cheong
 Description: Extension from the previous project. Application in home loan selection.



3.1 Project (3)

- House Loan Selection System Using Fuzzy Set Theory (Project ID 164)

Banks

View list of Banks and visit web sites

Here is the List of available Banks in Malaysia (Local,International,Islamic) that are providing Home Loan to their customers,you can check their websites by clicking on their names and consider all criteria that are important for you. Selection of Banks is the most important role in final result,therefore you must choose the most appropriate Banks that are offering Loan, close to your criteria.

Affin Bank	Local Bank
Alliance Bank	Local Bank
Arab-Malaysian Bank	Local Bank
Cimb Bank	Local Bank
EON Bank	Local Bank
Hana Leong Bank	Local Bank
May Bank	Local Bank
Public Bank	Local Bank
BHB BANK	Local Bank
Bank Islam	Islamic Bank
Bank Muamalat	Islamic Bank
ABN Amro Bank	Foreign Bank
Bank of China	Foreign Bank
Citi Bank	Foreign Bank
HSBC Bank	Foreign Bank
Standard Chartered Bank	Foreign Bank
United Overseas Bank	Foreign Bank
Other bank: Bank A	
Other bank: Bank B	

Criteria

View list of our Criteria

In the primary step of making decision,user has to select the most important and effective criteria that could effect on applying for house loan bank.The goal in this phase is to think about particular criteria from a set of known options.Criteria comparison are considered fundamental and inputs of HLS system therefore user has to choose them according to his/her interest correctly,we have listed some most and essential criteria that are having highest priority for decision maker in here as below:

- Interest Rate**
- Down-Payment**
- Repayment Period**
- Repayment Amount**
- Loan Amount**
- cost**

3.1 Project (3)

▪ House Loan Selection System Using Fuzzy Set Theory (Project ID 164)

Step 3 Comparing Criteria

Comparing your desired Criteria one by one

Your Selected Criteria: Interest Rate, Repayment Period, Repayment Amount, cost

The pairwise comparisons are the inputs of the Fuzzy Set Theory, that calculates the relative priority of each alternative therefore you should try to enter the correct comparison number in order to achieve a satisfactory result. This step is to compare all criteria that are selected in previous step (Step no. 2) in a difference from important to each of the criteria with respect to the others for you. In each comparison volume, scale of 9 to 1/9 is provided in order to indicate which criterion is more important, and to what extent.

Step 5 Analyse Method

Select one method for analysing your data

After the evaluation is done, you need to choose the desired ANP operation to be performed and achieve final result by selecting Typical (ANP) or Advanced (FANP), even though the output of both methodologies are same at the end. If you choose FANP option a panel will display Fuzzy ANP setting for taking further action that shows degree of *Confident and *Optimum values ranging from 0.1 to 0.9.

*Confident (Alpha): Represents that to what extent you are confident for your selection (e.g. high confident $\alpha=0.1$) and (e.g. low confident $\alpha=0.9$).

*Optimum (lambda): Represents different attitude of the decision maker (e.g. pessimistic $\lambda=0.1$), moderate ($\lambda=0.5$) and optimistic ($\lambda=0.9$).

Typical System
 Analytic Hierarchy Process

Advanced System
 Fuzzy Analytic Hierarchy Process

Confident: Optimum:

[Continue](#)

3.1 Project (3)

▪ House Loan Selection System Using Fuzzy Set Theory (Project ID 164)

Final Advanced HLS Result:

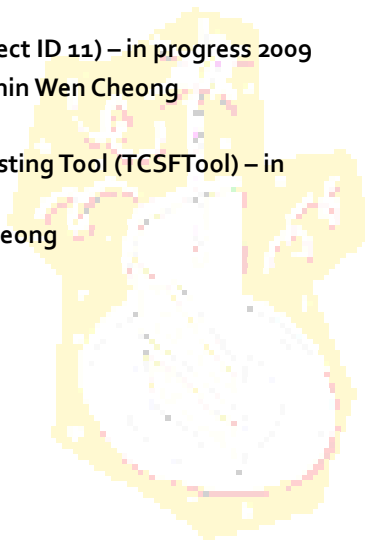
Best Bank for Getting House Loans: **ABN Amro Bank**

[Show HLS Calculating Detail](#)

Alpha Level	Alliance Bank	FIB BANK	ABN Amro Bank
0.1	0.296	0.239	0.455
0.2	0.305	0.241	0.455
0.3	0.305	0.241	0.455
0.4	0.304	0.241	0.456
0.5	0.304	0.241	0.456
0.6	0.303	0.241	0.456
0.7	0.301	0.241	0.457
0.8	0.301	0.241	0.457
0.9	0.297	0.241	0.459

3.1 Project (others)

- Online Journal Submission System (Project ID 11) – in progress 2009
Member: Mohamad Shafie Abu Hanifa, Chin Wen Cheong
- Web-based Trend-Cycle-Seasonal Forecasting Tool (TCSFTool) – in progress 2009
Member: Nasim Behizadeh, Chin Wen Cheong



The End...

