



# JURNAL TEKNOLOGI MAKLUMAT DAN SAINS KUANTITATIF

Jilid 8, Bil. 1, 2006

ISSN: 1823-0822

*Optimal Parameter Estimation of MISO System Based on Fuzzy Numbers*

Razidah Ismail  
Tahir Ahmad  
Shamsuddin Ahmad  
Rashdi Shah Almad

*Modeling Volatility of the KLCI Daily Returns*

Siti Meriam Zahid  
Mohammad Said Zainol  
Ibrahim Mohamed  
Azami Zaharim

*Investigating the extent of Information Technology Usage in Malaysian Batik Industry*

Yap May Lin  
Yap Bee Wah  
Jasber Kaur d/o Gian Singh

*A Fuzzy Logic Model for Students' Scholarship Selection*

Nor Hashimah Sulaiman  
Daud Mohamad

*A Survey on the Use of Data Envelopment Analysis (DEA) in Efficiency Measurement*

Rasidah Mahdi  
Roziyah Mohd Janor

*Operations Management Strategy of Selecting Business Location using AHP*

Mohd Sahar Sauian

*Comparison between Bissel's and Daniel's Criterion in Analyzing a single replicate of Two-Level Fractional Factorial Designs*

Mohd Zain Hamzah

*E-Office for UiTM : A Survey Analysis*

Nalini Dharmarajan  
Anitawati Mohd Lokman  
Zarina Zainol



# E-office for UiTM: A Survey Analysis

Nalini Dharmarajan, Anitawati Mohd Lokman, Zarina Zainol  
Faculty of Information Technology and Quantitative Science, UiTM Shah Alam.  
[nalini], [anita], [zarina]@tmsk.uitm.edu.my

## **Abstract**

*E-Office consists of applications that support the administrative and management functions in the office. These include scheduling system, booking system and leave application. In Universiti Teknologi MARA (UiTM), the staff force consists of nearly 15,000 academic and non-academic employees in 22 faculties and administrative offices. Preliminary studies reveal that there are problems in administrating office tasks. These problems include poor retrieval of information, poorly organized office jobs, out-of-date or inaccurate information, misplaced and poorly designed forms as well as there being no confidentiality and privacy for applicants. Therefore, the requirement to implement e-office applications is highly critical. However, there have been no formal studies in requirement analysis for E-Office applications in this institution. Accurate understanding of the user requirement is essential, as it will determine the acceptance and its subsequent usage of e-office applications. Thus a survey was carried out amongst staffs to identify the user requirement for e-office applications that need to be implemented in UiTM. The analysis of the results shows that the majority of the respondents gave positive responses towards e-office implementation.*

*Keywords: E-Office, Office Applications, User Requirement.*

## **1. Introduction**

The emergence of the Internet and advancements in information technologies has had universities face challenges in managing its people and environment. Universiti Teknologi MARA (UiTM) is one of the largest university's in Malaysia and has nearly 15,000 staffs in 22 faculties. It has experienced a phenomenal growth since its inception in 1956 and has expanded nationwide with 21 branch campuses ([www.uitm.edu.my](http://www.uitm.edu.my)). Consequently, information gathering, processing and distribution, which is concentrated in offices, would not be a simple errand. Currently the staff face problems in administrating office tasks. These problems include poor retrieval of information, poorly organized office jobs, out-of date or inaccurate information, misplaced and poorly designed forms as well as there is no confidentiality and privacy for applicants.

Electronic office (e-office) is an administrative, virtually centralized component of an organization where data, information, and communications are based and disseminated via some form of telecommunications (Marcel Robles, 2002). Computer scientists would describe office activity as a set of tasks resulting from requests for service, with each a specific precedence, and with each activity requiring a supporting file system (Ellis & Nutt , 1980) Office work is complex and cooperative and yet highly individualistic. It resembles an orchestra of highly-trained individuals who collaborate more than a factory of workers who perform preplanned tasks (Laudon & Laudon, 1993). There is a necessity to aid the processing, coordination and distribution of information amongst the employees, either administrative staffs or academic staffs accordingly.

Olson and Lucas (Olson & Lucas 1982) from New York University defined the term "office automation" as the use of integrated computer and communications systems to support administrative procedures in an office environment. Based on the definition, e-office and office automation is more or less the same terminology. Its key attribute is the uninterrupted and unproblematic accessibility of forms, data and information in the organization. Information, communication and transactions are possible from every computer located in the intranet or Internet and should be as simple as a "single click".

Requirements can be thought of as the representation of a need that may be initiated by any individual or group at any organizational level. To specify requirements for a proposed system an individual must assess needs and, depending on the availability of development resources, prioritize them in importance (Valusek & Fryback, 1985). User requirement is an important issue in order to evaluate their needs and based on the result, the development can be started. To be able to estimate the potential e-office applications, a sufficient knowledge of the user requirement is a prerequisite.

## **2. Aims And Objectives**

A survey was carried out amongst academic and non-academic staffs to identify the e-office applications that need to be implemented in UiTM. The issues addressed are to survey the current office systems used in the institution and to determine the user requirements of e-office applications.

## **3. Methodology**

A survey consisting of a questionnaire questions pertaining to demographic information, Internet usage in the office, office jobs information and the need of e-office were distributed to selected faculties and administrative offices in UiTM main campus.

The target respondents were academic and administrative staffs from faculties and office workers from the administrative offices. For the purpose of this study, the faculty's were classified according to the field of studies namely science, medical science, engineering, social sciences, humanities and business management. The classification is in accordance to the UiTM academic system. Shown in Table 1 is the classification.

<b>Field</b>	<b>Faculty</b>
1) Science	- Faculty of Applied Sciences - Faculty of Information Technology and Quantitative Sciences - Faculty of Architecture, Planning and Surveying - Faculty of Sports Science and Recreation
2) Medical Science	- Faculty of Medicine - Faculty of Health Sciences - Faculty of Pharmacy
3) Engineering	- Faculty of Chemical Engineering - Faculty of Civil Engineering - Faculty of Electrical Engineering - Faculty of Mechanical Engineering
4) Social Sciences	- Faculty of Law - Faculty of Administrative Science and Policy Studies - Faculty of Communication and Media Studies
5) Humanities	- Faculty of Art and Design - Faculty of Education - Faculty of Performing Arts
6) Business Management	- Faculty of Accountancy - Faculty of Business Management - Faculty of Hotel and Tourism Management - Faculty of Information Studies - Faculty of Office Management and Technology

**Table 1 : Field of studies.**

## **4. Result And Findings**

A total of 300 staff from UiTM Shah Alam campus responded to the survey which consists of 174 (58%) academic staff and 126 (48%) administrative staff.

### **4.1 Job Category**

<b>Job category</b>	<b>Workplace</b>		<b>Total</b>
	<b>Faculty</b>	<b>Non-faculty</b>	
Academic staff	174	0	174
Administrative staff	48	78	126
<b>Total</b>	<b>222</b>	<b>78</b>	<b>300</b>

**Table 1 : Cross-tabulation between job category and workplace.**

Table 2 illustrates the number of staffs according to their workplace. Respondent's number for administrative staffs were 78 from various administrative offices in UiTM, while 48 were from academic faculties. However, all academic staffs who were involved in this study were from academic faculties.

#### 4.2 Electronic or Manual System

Preliminary studies indicated that the faculties in UiTM have their own office procedures, and some of them performed their daily office jobs electronically while others still resort to manual systems. Therefore, it is necessary to investigate which office jobs were being conducted electronically and which were performed manually.

Table 3 summarizes the percentage of respondents who stated the types of office jobs that are performed electronically.

No	Types of offices jobs	Field of studies (% of respondents)							Mean (%)
		1	2	3	4	5	6	7	
1	None of the office jobs are done electronically	81.3	79.2	84.8	84.6	88.0	89.7	76.9	83.5
2	Claims for part time lecture / Exam paper preparation and marking	1.3	0	0	7.7	0	5.1	3.8	2.6
3	Utility booking / Flight ticket booking	1.3	0	3.0	3.8	0	5.1	6.4	2.8
4	Mileage claims	0	0	0	11.5	0	7.7	5.1	3.5
5	Calendar and scheduling	1.3	4.2	0	3.8	0	7.7	6.4	3.3
6	Leave applications	8	12.5	9.1	3.8	8	12.8	15.4	9.9
7	Breakdown complaints	2.7	0	3	11.5	0	7.7	7.7	4.7
8	Paper presentation / Conference attendance	0	4.2	0	3.8	4.0	7.7	1.3	3.0
9	Applications for university's vehicles	1.3	0	0	3.8	0	5.1	2.6	1.8
10	Applications for academic visits	0	0	0	3.8	0	7.7	1.3	1.8
11	Permission to take equipment out of the campus	0	0	0	3.8	0	7.7	3.8	2.2
12	Booking of rooms	5.3	0	0	3.8	0	5.1	5.1	2.8
13	Booking of teaching aids	1.3	0	0	3.8	0	5.1	1.3	1.6
14	Booking of computer devices	1.3	0	0	3.8	0	0	1.3	0.9

**Table 3 : Percentage of respondents who stated that the office jobs are done electronically.**

**Note:**

- |                     |                         |
|---------------------|-------------------------|
| 1 = Science         | 5 = Humanities          |
| 2 = Medical Science | 6 = Business Management |
| 3 = Engineering     | 7 = Non-Faculty         |
| 4 = Social Sciences |                         |

The results show that on average, nearly 84.0% of the respondents stated that none of the office jobs are done electronically in their faculties. It also indicates that on average, less than 10.0% of the respondents stated that each of the offices jobs is done electronically. However, for the office jobs

that are performed electronically, the results indicate that the leave application is the office job that is mainly done electronically. This confirms that almost all the office jobs in UiTM are currently performed manually.

#### **4.3 Problems faced when using the manual system**

The analysis showed that eighty per-cent (80.0%) of the respondents said they faced problems when performing office jobs manually compared to 18.0% who stated they did not face problems.

The following table 4 shows the problems faced when performing jobs manually by respondents.

<b>No</b>	<b>Problem</b>	<b>Number of response</b>
1.	Time consuming	200
2.	Misplaced forms	174
3.	Forms are unavailable	150
4.	Poorly organized	126
5.	Poorly designed forms	117
6.	Confidentiality / No privacy	91

**Table 4 : Problems faced when performing office jobs manually**

Respondents were asked to state their problems while performing office jobs manually. Based on the highest number of responses as summarized in Table 4, the common problems, which listed were time consuming, misplaced forms and forms being unavailable. Other problems that are recognized were poorly organized and poorly designed forms. Respondents also cited no confidentiality or no privacy as the other problems.

#### **4.4 The types of offices jobs to change into electronic or online system**

Table 5 summarizes the percentage of the respondents who stated the offices jobs that should be changed into electronic or online system according to field of studies.

No	Types of offices jobs	Fields (% of respondents)							Mean (%)
		1	2	3	4	5	6	7	
1	Claims for Part Time Lecture / Exam Paper Preparation and Marking	81.3	95.8	84.8	96.2	64.0	71.8	60.3	79.2
2	Utility Booking / Flight Ticket Booking	62.7	79.2	63.6	69.2	48.0	64.1	53.8	62.9
3	Mileage Claims	74.7	83.3	78.8	76.9	68.0	66.7	59.0	72.5
4	Calendar and Scheduling	65.3	91.7	72.7	69.2	76.0	74.4	65.4	73.5
5	Leave Applications	85.3	83.3	93.9	84.6	88.0	94.9	73.1	86.2
6	Breakdown Complaints	73.3	79.2	81.8	80.8	76.0	89.7	75.6	79.5
7	Paper Presentation / Conference Attendance	74.7	83.3	90.9	84.6	60.0	76.9	66.7	76.7
8	Applications for University Vehicles	64.0	87.5	72.7	80.8	44.0	59.0	74.4	68.9
9	Applications for Academic Visits	62.7	83.3	72.7	80.8	44.0	61.5	57.7	66.1
10	Permission to Take Equipment from the campus	52.0	70.8	75.8	69.2	48.0	59.0	60.3	62.2
11	Booking of Room	77.3	83.3	81.8	80.8	72.0	74.4	61.5	75.9
12	Booking of Teaching Aids	60.0	79.2	84.8	69.2	52.0	53.8	59.0	65.4
13	Booking of Computer Devices	58.7	87.5	75.8	76.9	52.0	64.1	60.3	67.9

**Table 5 : Percentage of office jobs to change into electronic / on-line system.**

**Note:**

- 1 = Science
- 2 = Medical Science
- 3 = Engineering
- 4 = Social Sciences
- 5 = Humanities
- 6 = Business Management
- 7 = Non-Faculty

The result in Table 5 indicates that on average, majority of the respondents (over 60.0%) stated that all of the office jobs are needed to be changed into electronic or online system. The office jobs that mostly chosen by the respondents to be converted into electronic were leave applications (86.2%), breakdown complaints (79.5%), claims for part time lecture/exam paper preparation and marking (79.2%) and paper presentation/ conference attendance (76.7%)

**4.5 Benefits of the e-office**

The last section of the questionnaire aims to investigate the respondents' perception towards the benefits of the e-office. Initially, there were 12 beneficial items which were measured using a 5-Likert scale response format (1= Strongly disagree to 5 = Strongly agree). Factor analysis was performed aiming to reduce these large items to several items called as factor.

Factor analysis is a statistical method used to represent a set of large variables (items or questions) to several factors. Each factor contains the items that highly correlated among each other. The value of Kaiser-Meyer Olkin (KMO) for sampling adequacy was high (0.944) and the Bartlett test

was significant ( $p\text{-value} < 0.05$ ) suggested that factor analysis was adequate to be carried out. Using *principal component analysis* (PCA) for extraction method and *varimax* rotation, three factors were extracted. Table 6 summarizes the results of factor analysis with their respective items, factor loadings, percentage of total variance explained and the reliability measures (alpha's coefficient).

Factor	Items	Factor loadings
1	Office jobs are well organized	0.813
	Better information retrieval	0.803
	Saves time	0.760
	Improve productivity and performance	0.742
	Easily accessible	0.720
	Better and faster feedback	0.541
	Integration of office jobs	0.507
2	Improved distribution of information	0.810
	More up-to-date and reliable information	0.767
3	Better communication and interaction among employees	0.916
	Increased specialization / skills to support administrative tasks	0.509

**Table 6 : Summary of the results of factor analysis.**

As shown in Table 7, all the items were highly loaded on their associated factors (factor loadings  $> 0.50$ ). The Alpha's coefficient ranged in size from 0.680 to 0.940 suggested that the factors were highly reliable. The three factors extracted explained 77.51% of the total variance and were defined as follows;

- 1) Factor 1 (7 items) = Efficiency
- 2) Factor 2 (2 items) = Reliability
- 3) Factor 3 (2 items) = Interactivity

Then, the mean score for perception towards the benefits of the e-office were computed and the results are as follows;

No	Benefit	Mean score for perception	Perception
1	Efficiency	4.1074	Agree
2	Reliability	4.1117	Agree
3	Interactivity	3.7107	Agree

**Table 7 : Average score for perception towards the benefit**

#### **4.6 The opinion regarding the use of e-Office applications in daily office jobs**

Most of respondents gave a positive responses and constructive comments regarding the implementation of e-office applications. They stated that e-office could enhance the users' skills and knowledge, improve productivity and performance of daily jobs, easily accessible, reliable and

easy to use. They also recommended that proper training should be provided to users before implementing the e-office. Moreover, they suggested that the implementation should be aligned with a good accessibility of the Internet and facilities. Finally, they are hopeful for the e-office to be implemented as soon as possible.

## **5. Conclusions**

There are various types of office jobs that are performed daily by academic and administrative staffs in UiTM. This study reveals that currently almost all the office jobs in the institution are performed manually. Majority of staffs irrespective of their job category and field of studies stated that they faced problems while using manual system in performing office jobs. The main problems identified were time consuming, misplaced forms, forms being unavailable as well as no confidentiality.

The study also indicated that majority of the respondents required all office jobs to be changed into electronically. The office jobs that were highly recommended by the respondents to convert into electronic systems are *leave applications, breakdown complaints, claims for part time lecture / exam paper preparation and marking and paper presentation / conference attendance*. The Chi-square test of association reveals that respondents' type of preferred system has no significant association with gender, age, job, category and working experience in the institution. The study also revealed that the majority of staffs preferred electronic system rather than manual system to perform office jobs regardless of their gender, age, job category and working experience in the institution. Factor analyses have shown that the benefit of e-office includes efficiency, reliability and interactivity.

In conclusion, both academic and administrative staffs in UiTM believe that e-office could give benefits to them in performing daily jobs and they are suggested that the system will be implemented as soon as possible.

## **References**

- Ellis, C.A., Nutt, G. J. 1980, *Office Information Systems and Computer Science*, ACM Vol. 12, No. 1.
- Laudon, K.C., and Laudon J.P. 1993 *Management Information Systems: Organization and Technology*, New York: Macmillan.
- Olson M.H & Lucas Jr. H.C. 1982. *The Impact of Office Automation on the Organization: Some Implications for Research and Practice*, ACM Vol. 25, No. 11, pp 838.

Robles, M. 2001. The e-Office: What Exactly it is? Office Solutions; Mt Airy 18(6) pp 43-45.

Valusek, J.R., Fryback, D.G. 1985. *Information Requirements Determination: Obstacles Within, Among And Between Participants*, ACM 0-89791-156-3/85/005/0103, pp 104.

Web page of Universiti Teknologi MARA (UiTM). Retrieved 10 March 2005, from <http://www.uitm.edu.my>.