Zainol, Z., Lokman, A.M., Dharmarajan, N.(2005). "A Framework for E-Office in UiTM." Proceedings of the National Conference on Computer Science, Technology and Networking 2005 (CSTeN '05). UiTM, Malaysia: UPENA. Pp 139-143. ISBN 967-958-211-6. PP 139-143.

A Framework for E-Office in UiTM

Zarina Zainol, zarina@tmsk.edu.my; Anitawati Mohd Lokman,
anita@tmsk.uitm.edu.my; Nalini Dharmarajan, nalini@tmsk.uitm.edu.my
FTMSK, UiTM Shah Alam, Selangor, Malaysia.

ABSTRACT

E-office consists of applications that support the administrative and management functions of 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. Currently the staffs 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 These problems include poor retrieval of information, poorly organized office jobs, out-of-date or inaccurate information, misplaced and poorly designed forms as well as there being no confidentiality and privacy for applicants.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. Based on the result, we have come out with a framework for the e-office applications.

1. INTRODUCTION

The emergence of the Internet and advancements information technologies has had universities face challenges in managing its people and environment. Universiti Teknologi MARA (UiTM) is one 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). Consequently, information gathering, processing and distribution, which is concentrated in offices, would not be a simple errand. Currently the staffs 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 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 (Clarence A. Ellis and Gary J. 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 and Laudon 1993). There is a necessity to aid the processing, coordination, and distribution of information amongst all the employees, either administrative staffs or academic staffs accordingly.

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 (John R. valusek Dennis G. 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 requirements 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. In addition to that, we also come out with a framework for the e-office applications.

3. METHODOLOGY

A survey consisting of a questionnaire with 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.

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 staffs were classified according to the field of studies namely science, medical science, engineering, social sciences, humanities and business management as shown in Table 1. The classification was in accordance to the UiTM academic system.

Table 1: Field of studies

Field	Faculty
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

The questionnaires were distributed to the respondents and 300 respondents were then randomly selected as a sample for the study.

4. RESULT AND FINDINGS

The following are the results of the survey done.

a. Job category

Table 2: Cross-tabulation between job category and workplace

Count

		Workplace		
		Faculty	Non-Faculty	Total
Job category	Academic staff	174	0	174
	Administrative staff	48	78	126
Total		222	78	300

Table 2 illustrates the number of staffs according to their workplace. For administrative staffs, majority (78 respondents) were from various administrative offices in UiTM, while 48 respondents were from academic faculties. However, all the academic staffs that participated in this study were from academic faculties.

b. Electronic or online 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 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.

Table 3: Percentage of respondents who stated that the office jobs are done 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 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 from the campus	0	0	0	3.8	0	7.7	3.8	2.2
12	Booking of Room	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

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

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 generally done electronically. This confirms that almost all the office jobs in UiTM are currently performed manually.

c. Problems faced when using the manual system

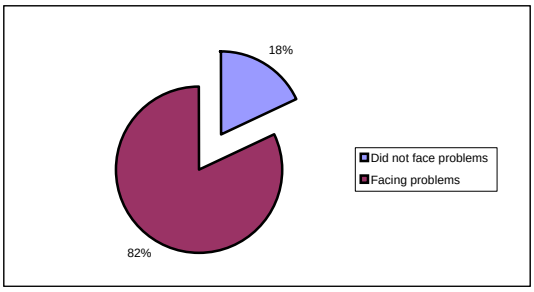

Figure 1: Problems when using manual system

Figure 1 shows the percentage of respondents who face problems when performing office jobs manually. 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.

Table 4 shows the cross-tabulation of problems faced when performing jobs manually by respondents.

Table 4: Problems occurred when performing office jobs manually

No.	**Problem**	**Number of response**
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

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 occurred were poorly organized and poorly designed forms. Respondents also cited no confidentiality or no privacy as the other problems.

d. The types of offices jobs that should be changed into electronic or online

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

e. 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 carried out, which aimed to reduce these large items to several items called as *factor*.

Table 5: Percentage of respondents who stated the office jobs should be changed into electronic / on-line

No	Types of offices jobs	Field of studies (% 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**

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 the office jobs to be changed into electronic or online. 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%)

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-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 7 summarizes the results of factor analysis with their respective items, factor loadings, percentage of total variance explained and the reliability measures (alpha's coefficient).

Table 7: Summary of the results of factor analysis

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	
	Better and faster feedback	0.720
	Integration of office jobs	0.541
		0.507
2	Improved distribution of information	0.810
	More up-to-date and reliable	
	information	0.767
3	Better communication and interaction	0.916
	among employees	
	Increased specialization / skills to	0.509
	support administrative tasks	

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;

Table 8: Average score for perception towards the benefit

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

f. 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 use of e-Office applications. They stated that e-office could enhance the users' skills and knowledge, improve productivity and performance of daily jobs, and are easily accessible, reliable and easy to use. They 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. Finally, they hoped that the e-office could be implemented as soon as possible.

5. CONCLUSIONS

There were various types of office jobs that are normally performed 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 staff 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.

This study also indicated that majority of the respondents wanted all office jobs to be changed into electronically. The most offices jobs that were highly recommended by the respondents to be converted into electronically were *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 found that respondent's type of preferred system has no significant association with gender, age, job category and working experience in the institution. This study revealed that 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 analysis reveals that the benefits of e-office were 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 suggest that the system should be implemented as soon as possible. In our future research, we will concentrate with the design part, which may include the database design, interface design and development of the e-office applications.

6. 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, Page 838

Robles, M. (2001). The e-Office: What Exactly it is? Office Solutions; Mt Airy 18(6) Pages 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, Page 104

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