



Faculty of Computer Science and Information Technology

DOCUMENT TRACKING OF TAWAU MUNICIPAL COUNCIL

Atikah Kalingalan

Bachelor of Computer Science with Honours (Information System)

2020

DOCUMENT TRACKING OF TAWAU MUNICIPAL COUNCIL

ATIKAH KALINGGALAN

This project is submitted in partial fulfilment of the

requirements for the degree of

Bachelor of Computer Science with Honors

Faculty of Computer Science and Information Technology

UNIVERSITI MALAYSIA SARAWAK

2020

UNIVERSITI MALAYSIA SARAWAK

THESIS STATUS ENDORSEMENT FORM

TITLE DOCUMENT TRACKING OF TAWAU MUNICIPAL

ACADEMIC SESSION: Sem 2 2019/2020

ATIKAH BINTI KALINGGALAN

hereby agree that this Thesis* shall be kept at the Centre for Academic Information Services, Universiti Malaysia Sarawak, subject to the following terms and conditions:

1. The Thesis is solely owned by Universiti Malaysia Sarawak
2. The Centre for Academic Information Services is given full rights to produce copies for educational purposes only
3. The Centre for Academic Information Services is given full rights to do digitization in order to develop local content database
4. The Centre for Academic Information Services is given full rights to produce copies of this Thesis as part of its exchange item program between Higher Learning Institutions [or for the purpose of interlibrary loan between HLI]
5. ** Please tick (✓)

CONFIDENTIAL (Contains classified information bounded by the OFFICIAL SECRETS ACT 1972)

RESTRICTED (Contains restricted information as dictated by the body or organization where the research was conducted)

UNRESTRICTED

Validated by



(Atikah Binti Kalinggalan)



(SUPERVISOR'S SIGNATURE)

Permanent Address
TB 1937 Lorong 4,
Taman Tawau Lama,
Jalan Pantai,
91000 Tawau, Sabah.

Date: 8/8/2020

Date: 8/8/2020

Note * Thesis refers to PhD, Master, and Bachelor Degree

** For Confidential or Restricted materials, please attach relevant documents from relevant organizations / authorities

DECLARATION

I hereby declare that this project is my original work. I have not copied from any other student's work or from any other sources except where due reference or acknowledgement is not made explicitly in the text, nor has any part had been written for me by another person.



.....

(ATIKAH BINTI KALINGGALAN)

(11 AUGUST 2020)

ACKNOWLEDGEMENT

First and foremost, I would like to express my gratitude and appreciation to everyone who provided me the possibility to complete this report. A special appreciation I give to my final year project supervisor, Dr. Fatiha Binti Ramli, for her patient guidance and useful critiques of this final year project. In addition, I would like to thank to Information System department of Tawau Municipal Council for their ideas and guidance to complete the final year project. Furthermore, I would like to give special thanks to my family for their moral support and financial help. Last but not least, I would like to thank to my friends, who gave ideas, supports and recommendation to complete the project.

ABSTRACT

This study concerns about the problems face by the staff of Tawau Municipal Council from the manual system of document transfer. The staff send document to other department by hardcopy. The detail of receiver will be record in the “send log book”. The detail consist of name of document, name of receiver, date of the receive document and sign of the receiver. On the other hand, the receiver will record the document receive in their “receive log book”. The detail consist of name of document, name of department and date of receive document. Sometime, the receiver do not complete all the detail as the detail needed is not stated clearly in the book. This lead to problem such as difficult to have reference on the receive document. Furthermore, the authorization cannot keep on track on the numbers of document transaction each month. Not to mention, arising issue such as misplaced or missing document, time-consuming to find the hardcopy of the document, limitation to record the transaction of document and the fact that the manual process is not environmental-friendly might just add to the downsides of the manual process being practised currently in the organization. Document Tracking of Tawau Municipal Council is introduced as an alternative to the manual process to solve the problem. The system designed for the staff to ease the document transaction in each department and help authorization to keep track on the document transaction. To prove the efficiency and effectiveness of the system, a series of chapter will be discussed in brief further in the report.

ABSTRAK

Kajian ini adalah berkenaan masalah yang dihadapi oleh kakitangan Tawau Municipal Council daripada sistem manual transaksi dokumen. Kakitangan menghantar dokumen kepada jabatan lain menggunakan salinan cetak. Maklumat penerima akan direkodkan dalam “buku log penghantaran”. Maklumat tersebut terdiri daripada nama dokumen, nama penerima, tarikh dokumen diterima, dan tandatangan penerima. Sebaliknya, penerima akan merekodkan dokumen diterima ke dalam “buku log diterima”. Maklumat terdiri daripada nama dokumen, nama jabatan dan tarikh dokumen diterima. Kadangkala, penerima tidak melengkapkan kesemua maklumat kerana maklumat yang diperlukan tidak dinyatakan dengan jelas. Hal ini membawa kepada masalah seperti susah untuk membuat rujukan kepada dokumen dihantar. Tambahan pula, pihak atasan tidak dapat menjejak bilangan dokumen yang diterima dan dihantar oleh jabatan mereka secara bulanan. Bukan itu sahaja, masalah lain seperti menyalahletakkan atau dokumen hilang, memakan masa untuk mencari salinan cetak dokumen, terhad untuk merekod transaksi dokumen dan hakikat bahawa proses manual tidak mesra alam hanya menambah kepada kelemahan proses manual yang dipraktikkan sekarang dalam organisasi. Jejak Dokumen Tawau Municipal Council diperkenalkan sebagai alternatif untuk menyelesaikan masalah kepada proses manual. Sistem ini direka untuk memudahkan transaksi dokumen untuk kakitangan di setiap jabatan dan membantu pihak atasan menjejak transaksi dokumen. Untuk membuktikan kecekapan dan keberkesanan sistem ini, satu siri bab akan dibincangkan lebih lanjut dalam laporan ini.

Table of Contents

| | |
|--|-----|
| DECLARATION..... | i |
| ACKNOWLEDGEMENT..... | ii |
| ABSTRACT..... | iii |
| CHAPTER 1 : INTRODUCTION..... | 1 |
| 1.1. Introduction..... | 1 |
| 1.2. Problem Statement..... | 2 |
| 1.3. Objectives..... | 2 |
| 1.4. Scope..... | 3 |
| 1.5. Brief Methodology..... | 4 |
| 1.5.1. Requirement Planning Phase..... | 4 |
| 1.5.2. User Design Phase..... | 4 |
| 1.5.3. Rapid Construction Phase..... | 4 |
| 1.5.4. Cutover Phase..... | 5 |
| 1.6. Significance Of Project..... | 5 |
| 1.7. Project Schedule..... | 5 |
| 1.8. Expected Outcome..... | 6 |
| 1.9. Outline of Project..... | 7 |
| 1.10. Conclusion..... | 8 |
| Chapter 2 : Literature Review..... | 9 |
| 2.1. Introduction..... | 9 |
| 2.2. Background Study/Literature Review..... | 9 |
| 2.3 Existing Document Tracking..... | 10 |
| 2.3.1. E-Dokumen Politeknik Melaka..... | 11 |
| 2.3.2. Document Management System of Malaysian Handicraft Development Corporation..... | 13 |
| 2.3.3. Graduate Admission Application System of National University of Malaysia (UKM)..... | 19 |
| 2.4. Comparison between existing system..... | 24 |
| 2.5. Summary..... | 27 |
| Chapter 3 : Requirement Analysis and Design..... | 28 |
| 3.1. Introduction..... | 28 |

| | |
|---|-------------------------------------|
| 3.2. Methodology..... | 28 |
| 3.3. Requirement Planning..... | 29 |
| 3.3.1. User requirement specification..... | 29 |
| 3.3.2. System requirement specification..... | 30 |
| 3.3.3. Software requirement specification..... | 31 |
| 3.3.4. Hardware requirement specification..... | 31 |
| 3.4. User Design..... | 31 |
| 3.4.1. Context Diagram..... | 32 |
| 3.4.2. Level 0 Diagram..... | 33 |
| 3.4.3. Level 1 Diagram..... | 34 |
| 3.4.4. Entity Relationship Diagram..... | 37 |
| 3.4.5. Data Dictionary..... | 38 |
| 3.4.6. Proposed system user interface design..... | 40 |
| 3.5. Summary..... | 47 |
| Chapter 4 : Implementation..... | 49 |
| 4.1. Introduction..... | 49 |
| 4.2. Implementation..... | 49 |
| 4.2.1. Database of The Application..... | 49 |
| 4.2.2. User Interface..... | 50 |
| 4.4. Conclusion..... | 56 |
| 4.5. Conclusion..... | Error! Bookmark not defined. |
| Chapter 5 : Testing..... | 57 |
| 5.1. Introduction..... | 57 |
| 5.2. Software Testing..... | 57 |
| 5.3. Functional Testing..... | 57 |
| 5.4. Non - Functional Testing..... | 68 |
| 5.5. User Acceptance Testing..... | 69 |
| 5.5.1. Functionality Testing..... | 70 |
| 5.5.2. Usability Testing..... | 72 |
| 5.5.3. Efficiency Testing..... | 73 |
| 5.6. Conclusion..... | 73 |

| | |
|---|----|
| Chapter 6 : Conclusion and Future Work..... | 74 |
| 6.1. Introduction..... | 74 |
| 6.2. Project Achievement..... | 74 |
| 6.3. Project Limitation..... | 75 |
| 6.4. Future Work..... | 75 |
| REFERENCES..... | 78 |
| APPENDIX A : GANTT CHART..... | 79 |
| APPENDIX B : Questionnaire for User Acceptance Testing..... | 82 |

LIST OF TABLES

| | |
|---|----|
| Table 1.1 Project Schedule of Document Tracking System..... | 6 |
| Table 2.1 Features Comparison Between Existing System..... | 26 |
| Table 3.1 Software tools..... | 34 |
| Table 3.2 Hardware tools..... | 34 |
| Table 3.3 Data Dictionary of admin Entity..... | 41 |
| Table 3.4 Data Dictionary of staff Entity..... | 41 |
| Table 3.5 Data Dictionary of document Entity..... | 42 |
| Table 4.1 Test case of login function | 59 |
| Table 4.2 Test case of logout function..... | 61 |
| Table 4.3 Test case of register staf..... | 61 |
| Table 4.4 Test case of view registered staff..... | 63 |
| Table 4.5 Test case of view document transaction..... | 64 |
| Table 4.6 Test case of send document..... | 64 |
| Table 4.7 Test case of view send document..... | 66 |
| Table 4.8 Test case of view received document..... | 66 |
| Table 4.9 Test case of non-functional requirements testing..... | 68 |
| Table 5.1 Test case of login function | 59 |

LIST OF FIGURES

| | |
|---|----|
| Figure 2.1 Flowchart of Send Document | 9 |
| Figure 2.2 Login Page..... | 12 |
| Figure 2.3 Received Documents..... | 12 |
| Figure 2.4 List of Send Files by User..... | 13 |
| Figure 2.5 Search Feature..... | 13 |
| Figure 2.6 Login Page | 14 |
| Figure 2.7 Search Document Feature | 15 |
| Figure 2.8 The Example of Search Results for Forms Document | 16 |
| Figure 2.9 List of Documents | 17 |
| Figure 2.10 Upload Document | 18 |
| Figure 2.11 Home page of admission application | 19 |
| Figure 2.12 Log in Admission Application Form | 20 |
| Figure 2.13 Admission Application | 21 |
| Figure 2.14 Personal Information form | 21 |
| Figure 2.15 Upload supporting document | 22 |
| Figure 2.16 Confirmation of application | 23 |
| Figure 3.1 Phases of Rapid Application Development (RAD) | 28 |
| Figure 3.2 Context Diagram..... | 32 |
| Figure 3.3 Level 0 Diagram | 33 |
| Figure 3.4 Level 1 Diagram for register..... | 34 |
| Figure 3.5 Level 1 Diagram for sign in..... | 35 |
| Figure 3.6 Level 1 Diagram for manage upload document..... | 35 |
| Figure 3.7 Level 1 Diagram for manage document..... | 36 |
| Figure 3.8 Crow's Foot Entity Relationship Diagram..... | 37 |
| Figure 3.9 Homepage | 40 |
| Figure 3.10 Sign in Page | 40 |
| Figure 3.11 Administrator Main Page | 41 |
| Figure 3.12 List of All Documents | 42 |
| Figure 3.13 Admin Page for Generate Report..... | 43 |

| | |
|---|----|
| Figure 3.14 Staff Main Page..... | 44 |
| Figure 3.15 Upload Document Page..... | 45 |
| Figure 3.16 List of Send Document..... | 46 |
| Figure 3.17 List of Receive Documents | 46 |
| Figure 3.18 Generate Report for Staff | 47 |
| Figure 4.1 Database of Document Tracking of Tawau Municipal Council..... | 49 |
| Figure 4.2 Home sign in page..... | 50 |
| Figure 4.3 Sign in Administrator..... | 50 |
| Figure 4.4 Sign in page staff..... | 51 |
| Figure 4.5 Error message pop out for wrong ID/password..... | 51 |
| Figure 4.6 Home page for administrator..... | 52 |
| Figure 4.7 Staff registration..... | 52 |
| Figure 4.8 List of registered staff..... | 53 |
| Figure 4.9 List of document | 53 |
| Figure 4.10 Home page for staff | 54 |
| Figure 4.11 Send document | 54 |
| Figure 4.12 Upload document successful | 55 |
| Figure 4.13 Send document | 55 |
| Figure 4.14 Received document | 56 |
| Figure 5.1 The result of understanding the system's function for both user..... | 70 |
| Figure 5.2 Functionality of the admin system | 71 |
| Figure 5.2 The result for functionality of staff section | 71 |
| Figure 5.3 The result for usability testing | 72 |
| Figure 5.4 The result for overall of the system | 73 |

CHAPTER 1 : INTRODUCTION

1.1. Introduction

Tawau Municipal Council is using memo and letter to communicate to each other. For example, Information Technology Department send a letter to the Secretary to inform about meeting. The receiver need to sign the book as a reference and proof that the memo or letter is received.

However, the manual process is not effective as the letter and memo may be misplaced or missing, and lead to complication as there are no backup, as it is hardcopy. Besides, detail of the receiver are not precise, which hard to make reference. Also, the manual process is difficult to keep track the total documents that have been send and received monthly and time consuming to search on the documents.

The purpose of the project is to develop a system for Tawau Municipal Council as a solution to overcome the problem they are facing. The system namely Document Tracking is to track the document from a department to another department. The system is based on the manual process that is being practised in the department now. It contain the detail of the receiver, such as name, position and department of the receiver. The system also have document status feature that enable user to track either their document already been received or not. Also, the system will save the softcopy of the document as backup. Furthermore, the system provide generate report which record the list of documents that have been send and received.

1.2. Problem Statement

Currently, Tawau Municipal Council is using manual process to send and receive letter from different department. The sender send document to each department by hardcopy. The detail of receiver will be recorded in the book as reference and proof that the document have been received successfully.

The manual process is not effective as the receiver may forget or misplaced the documents and there are no backup as it is hardcopy. This may lead to problem such as important announcement or notification is not delivered to the person concerned. Besides, it is time consuming to search for the document.

Besides, the detail of receiver is not precise, as the sender may forget to record the details of the receiver. Other than that, the receiver may not give their details such as full name, and position in the department.

Furthermore, the documents are listed daily in different books. A book is to record send document to other department, while another book is to record received documents from other department. This lead to limitation of recorded documents and unorganized. This is because, the documents is recorded daily, without separation of each day. This make the total document difficult to track monthly.

1.3. Objectives

Department in Tawau Municipal Council is still using manual process to send and receive document from other department. The manual process is not efficient as the documents is not may be missing and misplaced, reference is not precise and the

documents records is unorganized. Document Tracking system is develop to solve the problem by achieving the following objectives:

- i. To develop online web based system that able to be access by the staff of Tawau Municipal Council.
- ii. To provide header notification to allow communication from one department to another department.
- iii. To evaluate effectiveness of the system by usability testing done by the staff of Tawau Municipal Council.

1.4. Scope

Document Tracking system is develop to computerized the manual process that being practised in the Tawau Municipal Council. The scope of this project are defined as below:

- i. The system covers document transaction in departments of Tawau Municipal Council only.
- ii. This project will be developed using PHP and HTML.
- iii. Dummy datasets will be used to simulate all functionalities of the system.
- iv. The primary user of the proposed system is staff of Tawau Municipal Council (Pembantu Awam). They able to upload, view and download.
- v. The secondary user of the proposed system is administrator, consist of President, Deputy President, Secretary and Information Technology of Tawau

Municipal Council. They can register and delete staff from the system, access to all documents in the system.

1.5. Brief Methodology

Rapid Application Development (RAD) is used as project methodology for the Document Tracking System. RAD method is based on prototyping and iterative development with no specific planning involved. It is flexible and adaptable to changes, which suitable for system that needs to be produced in a short span of time (“What is RAD Model? Advantages & Disadvantages”, n.d). RAD follows four main phases.

1.5.1. Requirement Planning Phase

During this stage, researching the problem, defining and finalizing the requirement of the system are required.

1.5.2. User Design Phase

Building user design through various prototype, which is design the low-fidelity of the Document Tracking system.

1.5.3. Rapid Construction Phase

This phase takes prototype from the design phase and converts them into working model (“4 Phases of Rapid Application Development Methodology”, 2018). This includes design and develop the system and inserting sample data into database. Then, test the system.

1.5.4. Cutover Phase

Based on “4 Phases of Rapid Application Development Methodology”, 2018, cutover phase is the implementation phase where the finished products goes to launch. It includes data conversion, testing and data changeover to the system and user training(“4 Phases of Rapid Application Development Methodology”, 2018).

1.6. Significance Of Project

The result of the project will be great benefits to society as Tawau Municipal Council is an important organization to administer the city. The greater demand from society, justifies the need for more effective performance of the organization. Thus, developing the Document Tracking system, would be a way to improve the efficiency of the organization by improving the way of communication of each department.

1.7. Project Schedule

The project schedule to develop the document tracking system of Tawau Municipal Council is shows in the table 1.1 (see Appendix for Gantt Chart).

Table 1.1 Project Schedule of Document Tracking System

| No. | Task Name | Duration | Start | Finish |
|-----|---|----------|------------|------------|
| 1 | Submission of the approved brief proposal by supervisor | 12 days | 13.09.2019 | 29.09.2019 |
| 2 | Feedback and comment from reviewer | 6 days | 30.09.2019 | 05.10.2019 |

| | | | | |
|----|---|----------|------------|------------|
| 3 | Submission of final full proposal after amendment | 12 days | 06.10.2019 | 19.10.2019 |
| 4 | Submission of Chapter 1 | 7 days | 20.10.2019 | 26.10.2019 |
| 5 | Submission of Chapter 2 | 17 days | 27.10.2019 | 16.11.2019 |
| 6 | Submission of Chapter 3 | 15 days | 17.11.2019 | 05.12.2019 |
| 7 | Submission of Final Year Project 1 Final report and paper for assessment | 5 days | 06.12.2019 | 12.12.2019 |
| 8 | Submission of the proposed/revised structure of FYP report, Title and Gantt Chart | 5 days | 13.12.2019 | 19.12.2019 |
| 9 | Submission of First Draft for Chapter 4 | 25 days | 20.12.2019 | 23.1.2020 |
| 10 | Submission of First Draft of FYP 2 Full Report & First Draft of Paper | 117 days | 24.1.2020 | 5.7.2020 |
| 11 | Submission of Final Report for examination (word and pdf format), source code, user manual and Paper for Assessment | 8 days | 6.7.2020 | 15.7.2020 |

1.8. Expected Outcome

At the end of this project, a web based system will be produced to support the document transaction between each department in Tawau Municipal Council.

1.9. Outline of Project

Document Tracking system is to replace the manual process that being practised in the Tawau Municipal Council. The system development is composed of five chapters as below:

- i. Chapter One gives an introduction of Document Tracking of Tawau Municipal Council that include the background of project, problem statement, scope, aims and objectives, brief methodology, significance of project, project schedule and expected outcome.
- ii. Chapter Two is literature review of other existing document tracking system, with different features, and platform that can be implement in this project.
- iii. Chapter Three will highlight the project methodology used, which is Rapid Application Development (RAD).
- iv. Chapter Four will describe and give justification of the implementation of the project. and usability and functional testing will be produced in this chapter.
- v. Chapter Five will give produced the usability, and functional testing of the project.
- vi. Chapter Six is conclusion and future work, including the lesson achieved from this project, also future work that would be the improvement of the project.

1.10. Conclusion

In conclusion, Document Tracking system is developed to solve the problem that happened in the manual process that is used in Tawau Municipal Council. The manual process is not effective as the letter and memo may be misplaced or missing, and lead to complication as there are no backup, as it is hardcopy. Besides, detail of the receiver are not precise, which hard to make reference. Also, the manual process is difficult to keep track the total documents that have been send and received monthly.

The system's scope user will be administrator and staff of Tawau Municipal Council and will be developed by achieving the aims and objectives of the project. This including develop system to computerize the manual system that being used now, also design and develop a new database server that can communicate with the document tracking system to store specific data between scope user and able to generate report.

Furthermore, the system is used Rapid Application Development (RAD) methodology, which is suitable for system that has to be produced in short span time. This is because the duration for completing the first half of the project starting from 13 September 2019 until 12 December 2019.

Lastly, the expected outcome will be the system developed to computerized the manual process that being used in the Tawau Municipal Council, while the data is save in database server.

Chapter 2 : Literature Review

2.1. Introduction

This chapter focuses on reviewing and exploring of the system which has the similar function with Tawau Municipal Council Tracking System. The review and exploration will be the guidance to develop the proposed system. The comparison between existing system is list down in this chapter.

2.2. Background Study/Literature Review

Currently, Tawau Municipal Council is still using manual process to send and receive documents between department. The send and receive documents are save in the log book of send and receive in each of the department. The flowchart of the send document to another department is as follow:

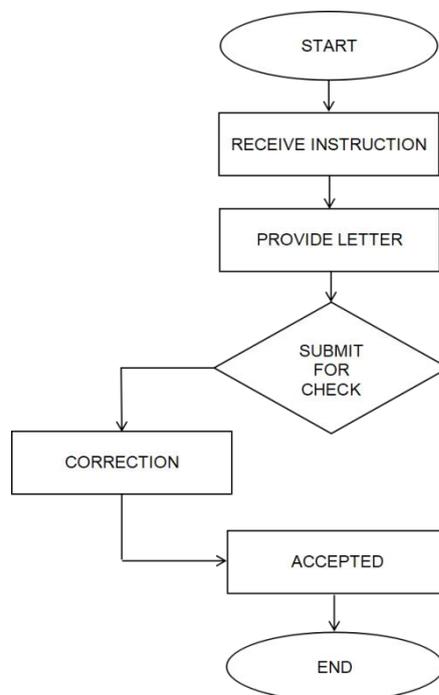


Figure 2.1 Flowchart of Send Document

The receiver's details will be saved in receive log book for each department. However, the details of the receiver may be not precise as they do not give their complete information in the book, also there are limitation of storage. The documents received divided according to their reference number in different cabinets and compartments. This may lead to human error such as time taking to retrieve documents. Therefore, computerize manual process are needed to solve the problem.

Document Tracking is web based system that enable user to track the document they have send, either still pending, accepted or rejected. Based on the manual process, if the document is rejected, the sender can make improvement and send the document again. By using the system, the document transaction is easier, as the staff do not have to send hardcopy to the receiver department. Besides, the process is save time, the receiver detail is more precise and effective. The system also enable administrator and staff to generate report monthly. This feature to track the document send and receive monthly.

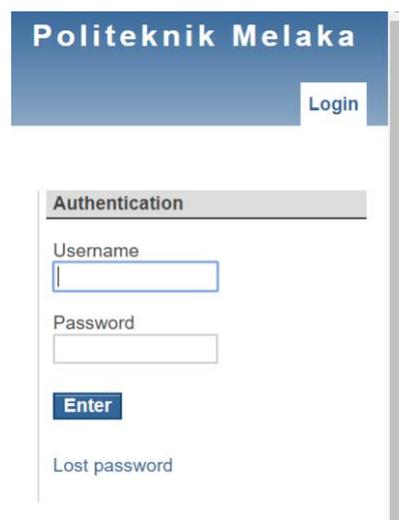
2.3 Existing Document Tracking

There are some existing document filing system and tracking system that have been used by other organization. The existing organization are E-Dokumen Politeknik Melaka, Database Management System of Malaysia Handicraft Development Corporation and Graduate Admission Application System.

2.3.1. E-Dokumen Politeknik Melaka

E-Dokumen Politeknik Melaka is developed by Information Technology Department of Politeknik Melaka in 2008. The system is developed as e-learning for lecturers and as platform to send letters to staff of Politeknik Melaka. The system have been updated from version 1.7.3 to 1.11.6 (Unit Teknologi Maklumat Politeknik Melaka, n.d). The updated system have make classification or each document uploaded. The classes consist of Meeting, Information Sharing Between Department (PMJU), Quality Management System and Letter and Memo Distribution (Unit Teknologi Maklumat Politeknik Melaka, n.d).

Meeting is to upload documents regarding meeting such as minutes of meeting and invitation to meeting. PMJU is used to store important documents that being used in each department such as department time schedule, department activity and paper work. MQA and ISO are being stored in the Quality Management System. Besides, Letter and Memo Distribution is to store letters to individual by online.



The image shows a web login interface for Politeknik Melaka. At the top, there is a blue header bar with the text 'Politeknik Melaka' in white. To the right of the header is a 'Login' button. Below the header is a white box with a grey border containing the 'Authentication' section. This section has a title 'Authentication' in bold. It includes a 'Username' label followed by a text input field, a 'Password' label followed by a text input field, a blue 'Enter' button, and a blue 'Lost password' link.

Figure 2.2 Login Page. Reprinted from *Manual Pengguna edoc Politeknik Melaka*, in Unit Teknologi Politeknik Melaka (n.d) . Retrieved November 13, 2019, from http://www.polimelaka.edu.my/portalpmk/images/stories/logo/Manual_Pengguna_edoc.doc. Copyright 2019 by Unit Teknologi Politeknik Melaka. Reprinted with permission.