



Faculty of Computer Science and Information Technology

**BKK INVENTORY SYSTEM FOR BAHAGIAN KOMUNIKASI KORPORAT,
JABATAN PERKHIDMATAN KOMPUTER NEGERI
USING PROGRESSIVE WEB**

AZHAR CHONG

Bachelor of Computer Science with Honours
(Software Engineering)

2023

UNIVERSITI MALAYSIA SARAWAK

THESIS STATUS ENDORSEMENT FOR

TITLE BKK INVENTORY SYSTEM FOR BAHAGIAN KOMUNIKASI
JABATAN PERKHIDMATAN KOMPUTER NEGERI USING PROGRESSIVE WEB APP

ACADEMIC SESSION: 2022/2023

AZHAR CHONG

(CAPITAL LETTERS)

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 (✓)

- | | | |
|-------------------------------------|--------------|--|
| <input type="checkbox"/> | CONFIDENTIAL | (Contains classified information bounded by the OFFICIAL SECRETS ACT 1972) |
| <input type="checkbox"/> | RESTRICTED | (Contains restricted information as dictated by the body or organization where the research was conducted) |
| <input checked="" type="checkbox"/> | UNRESTRICTED | |



(AUTHOR'S SIGNATURE)

Validated by 

(SUPERVISOR'S SIGNATURE)

Permanent Address
Taman Ria Fasa 3, Blok 7, Tingkat 2, No 10,
89208, Tuaran, Sabah

Date: 24th July 2023

Date: 26th July 2023

Note * Thesis refers to PhD, Master, and Bachelor Degree
** For Confidential or Restricted materials, please attach relevant documents from relevant organizations / authorities

Declaration of Original Work

I hereby declare that the content of the thesis “BKK Inventory Management System for Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri using Progressive Web” is an original work that I created, except for any research-based data and related materials that were modified and taken from other sources and then cited or expressed, as stated respectively.



(Azhar Chong)
Faculty of Computer Science and Information Technology
Universiti Malaysia Sarawak

24th July 2023

Acknowledgement

First and foremost, I would like to thank Ts. Dr. Suriati Khartini Binti Jali, my final year project supervisor for her suggestions, encouragements, and help during the project. Despite her busy schedule, I will always be appreciative of her dedication and support. Secondly, I want to express my sincere gratitude to Mr. Mohd Johan bin Ahmad Khiri, my examiner, for his comments and feedbacks on my Final Year Project. Additionally, I would like to express my gratitude to Professor Dr. Wang Yin Chai, the coordinator of the Final Year Project, for his leadership and coordination throughout the process.

Most importantly, I want to express my gratitude to my family, especially my parents, who have always helped me grow spiritually. It would be nearly difficult for me to reach this level in my life without their constant support, encouragement, and care. Thank you to the staff of the Bahagian Komunikasi Korporat and the IT officer of Jabatan Perkhidmatan Komputer Negeri for their insightful recommendations, direction, and encouragement and for taking part in the testing session and acquiring user needs.

Lastly, I want to thank all my friends for the time they spent working on my project with me and for continually reading and commenting on my report to help me expand my ideas. In addition, I want to express my gratitude to my university, Universiti Malaysia Sarawak (UNIMAS), and to the Faculty of Computer Science and Information Technology (FCSIT), for giving me the opportunity to learn new things throughout my studies.

Abstract

Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri is still using a manual system to record corporate gift records in their storeroom. This current manual system has some drawbacks for the productivity of the staff in this division. One of the major issues encountered by the staff is data loss and the complicated task of handling the door gift inventory records. Hence, this proposed system is aimed at developing a progressive web app (PWA) named BKK Inventory System for managing the inventory system for Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri. It is an inventory system that can be accessed by staff and members of Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri. This system will be available for both web and mobile user interfaces. This system is used to store inventory information of the corporate gift stock, maintain stock levels, update inventory, and provide inventory reports on a daily or weekly basis. Customization is what makes this system more distinctive. Users are allowed to select the best functionality for their organisation based on their needs. Users may add, remove, search for, and update data in the inventory system using this system. In addition, it enables users to create reports using the inventory system. The user can also apply for the door gift through the BKK Inventory System.

Abstrak

Bahagian Komunikasi Korporat Jabatan Perkhidmatan Komputer Negeri masih menggunakan sistem manual untuk merekodkan rekod hadiah korporat di bilik stor mereka. Sistem manual semasa ini mempunyai beberapa kelemahan kepada produktiviti kakitangan di bahagian ini. Salah satu isu utama yang dihadapi oleh kakitangan adalah kehilangan data dan tugas yang rumit dalam mengendalikan rekod inventori door gift. Justeru, sistem yang dicadangkan ini bertujuan untuk membangunkan aplikasi web progresif (PWA) yang dinamakan Sistem Inventori BKK untuk menguruskan sistem inventori Bahagian Komunikasi Korporat Jabatan Perkhidmatan Komputer Negeri. Ia adalah dan sistem inventori yang boleh diakses oleh kakitangan dan amin Bahagian Komunikasi Korporat Jabatan Perkhidmatan Komputer Negeri. Sistem ini akan tersedia untuk kedua-dua antara muka pengguna web dan mudah alih. Sistem ini digunakan untuk menyimpan maklumat inventori stok hadiah korporat, mengekalkan tahap stok, mengemas kini inventori dan menyediakan laporan inventori setiap hari atau mingguan. Penyesuaian inilah yang menjadikan sistem ini lebih tersendiri. Pengguna dibenarkan memilih fungsi terbaik untuk organisasi mereka berdasarkan keperluan mereka. Pengguna boleh menambah, mengalih keluar, mencari dan mengemas kini data dalam sistem inventori menggunakan sistem ini. Selain itu, ia membolehkan pengguna membuat laporan menggunakan sistem inventori. Pengguna juga boleh membuat permohonan doorgift melalui Sistem Inventori BKK.

Table of Contents

Declaration of Original Work	iii
Acknowledgement.....	iv
Abstract	v
Abstrak	vi
List of Tables.....	x
List of Figures	xi
CHAPTER 1: INTRODUCTION	14
1.1 Introduction	14
1.2 Problem Statement	15
1.3 Scopes.....	16
1.4 Aim and Objectives	16
1.5 Brief Methodology	17
1.6 Significance of Project	18
1.7 Project Schedule	19
1.8 Expected Outcomes	20
1.9 Thesis Outline	20
CHAPTER 2: LITERATURE REVIEW	22
2.1 Introduction	22
2.2 Reviews on Existing System	23
2.2.1 Manual System	23
2.2.1.1 Disadvantages	25
2.2.2 Inventory System for Hospital Labuan.....	26
2.2.2.1 Features	26
2.2.2.2 Disadvantages	28
2.2.3 mbwebcreator.com: Online Inventory System	28
2.2.3.1 Features	28
2.2.3.2 Disadvantages	29
2.2.4 Inventory Management System for The Network Department of Sabah Net	30
2.2.4.1 Features	31
2.2.4.2 Disadvantages	33
2.3 Comparison on Existing System and the Proposed System.....	34
2.4 Brief Overview of the Proposed System, BKK Inventory System	36
2.5 Summary	36
CHAPTER 3: REQUIREMENTS ANALYSIS AND DESIGN.....	38
3.1 Introduction	38

3.2 Methodology	38
3.2.1 Phase 1 – Requirements.....	39
3.2.1.1 Functional Requirement.....	46
3.2.1.1 Non-Functional Requirement.....	48
3.2.1.1 Software Requirements	49
3.2.1.1 Hardware Requirements.....	50
3.2.2 Phase 2 – User Design	50
3.2.2.1 Activity Diagram	52
3.2.2.2 Use - Case Diagram	54
3.2.2.2.1 Use Case Description Specification.....	55
3.2.2.3 Sequence Diagram	63
3.2.2.4 Class Diagram.....	69
3.2.2.5 Interface Design	70
3.2.3 Phase 3 – Development	86
3.2.4 Phase 4 – Transition	86
3.3 Summary	86
CHAPTER 4: IMPLEMENTATION.....	87
4.1 Introduction	87
4.2 Required Components	87
4.2.1 XAMPP	87
4.2.2 MyPHP Admin	88
4.2.3 Microsoft Visual Studio Code	89
4.3.1 Staff User Interface.....	90
4.3.1.1 Login Page.....	91
4.3.1.2 Dashboard Page	92
4.3.1.3 Add Application Page.....	93
4.3.1.4 View Application Page.....	94
4.3.1.5 File Complaint Page	95
4.3.1.6 View Complaint Page.....	96
4.3.1.7 Manage Account Page.....	97
4.3.2 Admin User Interface	98
4.3.2.1 Login Page.....	98
4.3.2.2 Dashboard Page	99
4.3.2.3 Manage Product Page	100
4.3.2.4 Manage Application Page.....	101
4.3.2.5 Supplies Application Page.....	102

4.3.2.6 Manage user Page.....	103
4.3.2.7 Generate Report Page	104
4.3.2.8 Manage Account Page	105
4.3 Summary	106
CHAPTER 5: TESTING.....	108
5.1 Introduction	108
5.2 Functional Testing.....	108
5.3 Non-functional Testing	131
5.4 Usability Testing	131
5.5 Reliability Testing	131
5.6 User Acceptance Testing.....	135
5.6.1 System Evaluation.....	135
5.6.2 Staff	136
5.6.3 Admin	143
5.6.4 System Usability Scale.....	149
CHAPTER 6: CONCLUSION AND FUTURE WORK	151
6.1 Introduction	151
6.2 Project Achievement	152
6.3 Limitation and Constraints	154
6.4 Future Works.....	155
6.5. Conclusion.....	156
References	157
Appendix A - FYP 1 Questionnaire (Google Forms)	
Appendix B - FYP 1 Questionnaire Result (Google Forms)	
Appendix C – System Evaluation FYP 2 Questionnaire (Google Forms)	
Appendix D – System Evaluation FYP 2 Questionnaire Result (Google Forms)	
Appendix D – User Testing Session	
Appendix E – System Usability Scale (SUS) Score	
Official Letter for Data Collection FYP1	
Official Letter for Data Collection FYP2	
Link of Web Prototype	
Link of Mobile App Prototype	
Google Form Link: FYP2	

List of Tables

Table 2.1: Comparison on Existing Systems and the proposed System	34
Table 3. 1: Software requirement for system development process	49
Table 3. 2: Hardware requirement for system development process	50
Table 3. 3: Use Case Description to Login into the system	55
Table 3. 4: Use Case Description to Add Application	56
Table 3. 5: Use Case Description to View Application Status.....	56
Table 3. 6: Use case description to Manage Application	57
Table 3. 7: Use case description to Manage Product	58
Table 3. 8: Use Case Description to Manage Supplies	59
Table 3. 9: Use Case Description to Manage Orders	59
Table 3. 10: Use Case Description to Manage Complaints.....	60
Table 3. 11: Use Case Description to Generate Report.....	61
Table 3. 12: Use Case Description for Register User	62
Table 3. 13: Use Case Description for Manage User	62
Table 5. 1:User Modules	109
Table 5. 2: Test Case for Log In.....	111
Table 5. 3: Test Case for First Time-Setup	112
Table 5. 4: Test Case for Add Application.....	112
Table 5. 5: Test Case for Viewing Application Status	114
Table 5. 6: Test Case for File Complaint	114
Table 5. 7: Test Case for Viewing Complaint Status	115
Table 5. 8: Test Case for Updating User Profile	116
Table 5. 9: Test Case for Forget Password.....	117
Table 5. 10: Test Case for Log In.....	118
Table 5. 11: Test Case for Manage Product	119
Table 5. 12: Test Case for Manage Application.....	121
Table 5. 13: Test Case for Manage Supply	123
Table 5. 14: Test Case for Manage Complaint.....	124
Table 5. 15: Test Case for Manage User	126
Table 5. 16: Test Case for Generate Report	127
Table 5. 17: Test Case for Updating User Profile (Admin)	128
Table 5. 18: Test Case for Forget Password (Admin).....	129
Table 5. 19: Reliability Test Case	132
Table 6. 1: Objectives and Achievements of BKK Inventory System.....	152

List of Figures

Figure 1. 1: Rapid Application Development (RAD) Phase (Demchenko, 2020).....	xvii
Figure 1. 2: Gantt Chart of project for FYP 1	19
Figure 2. 1: Flowchart of Bahagian Komunikasi Korporat Manual System.....	24
Figure 2. 2: Logbook of manual inventory system (Bahagian Komunikasi Korporat, JPKN, 2022).....	25
Figure 2. 3: Inventory Record List Page (Nur Izza Fikriyah, 2019)	26
Figure 2. 4: Search Inventory Record Page (Nur Izza Fikriyah, 2019)	27
Figure 2. 5: Report List of Inventory Record Page (Nur Izza Fikriyah, 2019).....	27
Figure 2. 6: Inventory list page (Mbwebcreator.com, 2022).	29
Figure 2. 7: Report Page (Mbwebcreator.com, 2022).....	30
Figure 2. 8: Login page (Mohd Syafiq, 2019).....	31
Figure 2. 9: Dashboard of Inventory management system (Mohd Syafiq, 2019).....	31
Figure 2. 10: Staff Inventory List page.	32
Figure 2. 11: Search Result Page	32
Figure 3. 1: Rapid Application Development (RAD), (Demchenko, 2020)	39
Figure 3. 2: Role of the survey's respondent	40
Figure 3. 3: Experience in using inventory management system.....	41
Figure 3. 4: Suggestion suitable number of inventory data should be recorded daily in the current manual system.....	41
Figure 3. 5: Data loss problem in using the current manual system.	42
Figure 3. 6: Eagerness of switching from manual system to a web-based inventory management system.	43
Figure 3. 7: Workload reduced by the proposed system to the staff Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri.....	43
Figure 3. 8: The proposed system will improve the inventory management of Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri.	44
Figure 3. 9: Importance of adding file complaint feature to the proposed system.....	45
Figure 3. 10: Percentage of Availability in both web and mobile user interface.....	45
Figure 3. 11: Suggestion regarding the features that should be included in the BKK Inventory System.....	46
Figure 3. 12: Activity diagram for BKK Inventory Management System.....	53
Figure 3. 13: Use case diagram for BKK Inventory Management System.....	54
Figure 3. 14: Sequence diagram for Log In	64
Figure 3. 15: Sequence diagram for Add Application	65
Figure 3. 16: Sequence diagram for Manage Account.....	66
Figure 3. 17: Sequence Diagram for File Complaint	66
Figure 3. 18: Sequence Diagram for Manage Product	67
Figure 3. 19: Sequence Diagram for Manage Supplies.....	68
Figure 3. 20: Sequence Diagram for Manage Orders.....	68
Figure 3. 21: Class diagram for BKK Inventory Management System	69
Figure 3. 22: Web user interface design for login page	70
Figure 3. 23: Mobile app user interface design for login page	71

Figure 3. 24: Web user interface design for staff dashboard page	72
Figure 3. 25: Mobile app user interface design for staff dashboard page	72
Figure 3. 26: Web user interface design for add application page	73
Figure 3. 27: Mobile app user interface design for add application page	73
Figure 3. 28: Web user interface design for view application page	74
Figure 3. 29: Mobile app user interface design for view application page	74
Figure 3. 30: Interface design for file complaint page	75
Figure 3. 31: Mobile app user interface design for file complaint page	75
Figure 3. 32: Web user interface design of login page.....	76
Figure 3. 33: Mobile app interface design for login page	76
Figure 3. 34: Web user interface design for dashboard page	77
Figure 3. 35: Mobile app user interface design for dashboard page	77
Figure 3. 36: Web user interface design for product page	78
Figure 3. 37: Mobile app user interface design for product page	78
Figure 3. 38: Web user interface design for supplies page	79
Figure 3. 39: Mobile app user interface design for supplies page.....	79
Figure 3. 40: Web user interface design for manage supplies page	80
Figure 3. 41: Mobile app user interface design for manage supplies page.	80
Figure 3. 42: Web user interface design for order page.	81
Figure 3. 43: Mobile app user interface design for order page	81
Figure 3. 44: Web user interface design for manage orders.....	82
Figure 3. 45: Mobile app user interface design for manage order	82
Figure 3. 46: Web user interface design for manage account	83
Figure 3. 47: Mobile user interface design for manage account.	83
Figure 3. 48: Web user interface design for generate report page.	84
Figure 3. 49: Mobile app user interface design for generate report page.....	84
Figure 3. 50: Web user interface design for manage complaint page	85
Figure 3. 51: Mobile app user interface design for manage complaint page.	85
Figure 4. 1: Download Page of XAMPP	88
Figure 4. 2: Database structure of BKK Inventory Management System.....	89
Figure 4. 3: Screenshot of the coding progress using Microsoft Visual Studio Code	90
Figure 4. 4: Web User Interface for Staff Login Page	91
Figure 4. 5: Mobile User Interface for Staff Login Page	91
Figure 4. 6: Web User Interface Staff Dashboard Page	92
Figure 4. 7: Mobile User Interface Staff Dashboard Page	92
Figure 4. 8: Web User Interface for Staff Add Application Page	93
Figure 4. 9: Mobile User Interface for Staff Add Application Page	93
Figure 4. 10: Staff View Application Page	94
Figure 4. 11: Mobile User Interface for Staff View Application Page	94
Figure 4. 12: Staff File Complaint Page.....	95
Figure 4. 13: Mobile User Interface for Staff File Complaint Page.....	95
Figure 4. 14: Staff View Complaint Page	96
Figure 4. 15: Mobile User Interface for Staff View Application Page	96
Figure 4. 16: Staff Manage Account Page	97
Figure 4. 17: Mobile User Interface for Staff Manage Account Page	97

Figure 4. 18: Web User Interface for Admin Login Page	98
Figure 4. 19: Mobile User Interface for Admin Login Page	99
Figure 4. 20: Web User Interface for Admin Dashboard Page	99
Figure 4. 21: Mobile User Interface for Admin Dashboard Page	100
Figure 4. 22: Web User Interface for Manage Product Page	100
Figure 4. 23 : Mobile User Interface for Manage Product Page	101
Figure 4. 24: Web User Interface for Manage Application Page	101
Figure 4. 25: Mobile User Interface for Manage Application Page	102
Figure 4. 26: Web User Interface of Manage Supply Page	102
Figure 4. 27: Mobile User Interface of Manage Supply Page	103
Figure 4. 28: Web User Interface for Manage User Page	103
Figure 4. 29: Mobile User Interface for Manage User Page	104
Figure 4. 30: Web User Interface for Generate Report Page	104
Figure 4. 31: Mobile Web User Interface for Generate Report Page	105
Figure 4. 32: Web User Interface for Generate Report Page	105
Figure 4. 33: Mobile User Interface for Manage Account Page	106
Figure 5. 1: Distribution of roles among 30 respondents	136
Figure 5. 2: Overall satisfaction of BKK Inventory System	137
Figure 5. 3: Rating of the BKK Inventory System's User Interface	137
Figure 5. 4: BKK Inventory System's performance and responsiveness rate	138
Figure 5. 5: Encountered technical issues or errors.	139
Figure 5. 6: BKK Inventory System's accuracy rate	139
Figure 5. 7: BKK Inventory System's usability and effectiveness rate	140
Figure 5. 8: Make Online Application feature satisfaction.	141
Figure 5. 9: BKK Inventory System's convenience and clarity of viewing application status rate	141
Figure 5. 10: BKK Inventory System's visibility and updates provided	142
Figure 5. 11: BKK Inventory System's overall satisfaction rate	143
Figure 5. 12: BKK Inventory System's user interface rate	144
Figure 5. 13: BKK Inventory System's performance and responsiveness rate	144
Figure 5. 14: BKK Inventory System's accuracy in inventory management	145
Figure 5. 15: Admin Dashboard Page usability and effectiveness rate	146
Figure 5. 16: Ease of managing applications (evaluating, approving, rejecting)	147
Figure 5. 17: Satisfaction of managing users (editing, deleting, adding new users)	147
Figure 5. 18: Effectiveness and ease of adding, viewing, updating, and removing inventory details (product/supplies/applications) in the system	148
Figure 5. 19: Satisfaction of generating inventory and application reports (daily/monthly) .	148
Figure 5. 20: Functionality of viewing, editing, and deleting complaints rate.	149
Figure 5. 21: System Usability Testing of BKK Inventory System	150

CHAPTER 1: INTRODUCTION

1.1 Introduction

Nowadays, computers, servers, and cloud technologies are now necessary for any organisation to ensure that production and administration are efficient and effective. Most organisations will have their own centralised systems to maintain and update their list of information, including inventories and assets.

Jabatan Perkhidmatan Komputer Negeri (JPKN) was established by the Sabah State Government on July 1, 1976. The department was established to provide services related to the field of computing and manage state public sector ICT security to all the State Government of Sabah's ministries, departments, and statutory bodies. (Jabatan Perkhidmatan Komputer Negeri, 2021). Bahagian Komunikasi Korporat is one of the divisions of the department that is mainly responsible for handling and distributing corporate gifts for the visitors.

Currently, Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri still uses manual methods to save information about the corporate gift inventory. They still use a manual system to record and save their data, which means they just write it on a form and then put it in a file. This system is important because the staff of Jabatan Perkhidmatan Komputer Negeri needs to manage and update the data. This proposed system is created to help the staff record the corporate gift inventory as well as save them time by doing it manually.

Other than that, this system will help to store the data and avoid missing data. This is because staff need to update and maintain each record manually, thus increasing the risk of human errors such as misplacing the inventory form, the inventory form going missing, and the form being misplaced the inventory form, the inventory form going missing, and the form not being able to be read as the form might get torn up over time. This project introduced an inventory system for Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Negeri consisting of an automated database.

One of the add-on features of this system is an inventory alert that will notify the user of low stock items through the dashboard of the system. The proposed system will also provide mobile website support, which will benefit the organization by having easier real-time access to the inventory system. Furthermore, the system will also allow the staff to file a complaint if any errors occur in the system.

1.2 Problem Statement

Nowadays, regardless of the organisation, a variety of data types must be recorded. Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri is responsible for planning, coordinating, and implementing publication, promotion, publicity, and strategic collaboration. One of their responsibilities is handling all the corporate gifts for the visitor and all the details of the corporate gifts need to be recorded, such as all the types of corporate gifts, receiver, approval staff, and availability of the corporate gift. Currently, they still using a manual system to record and save their data; they just write it in a logbook, which is no longer suitable during this time. Besides, it is challenging for the staff to locate and search for the records within the logbooks. In addition, they must manually calculate the overall data inventory. It is also challenging for the employees to organise and handle

the data on whether the corporate gift is still available or not. Additionally, data loss is a possibility that can occur at any time. Finally, it may result in a job that is an inefficient and ineffective manners.

1.3 Scopes

The BKK Inventory System for Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri was developed to be used by the staff of Bahagian Komunikasi Korporat. This system is designed to maintain the record of the existing and new corporate gifts and provide updates on the movement of items going in and out of the storeroom inside the Bahagian Komunikasi Korporat. The user which is the staff can make an application for the door gift as well as file any complaints if they are having difficulty using the system. Meanwhile, the admin, which is the Information Technology (IT) officer, can add, search, modify, delete, view, and generate reports of the inventory in the system. The information that they enter will be saved in the database. The IT officer will be responsible for maintaining and handling the system for any issues.

1.4 Aim and Objectives

The aim of the proposed system is to create a systematic way of managing inventory system for Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri which where they are currently using a manual system to manage the division inventory.

The objectives of the proposed system are:

- To analyse the requirement for systematic corporate gift inventory records for the staff in Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri.

- To develop a user-friendly inventory system that can be used by staff in Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri, which is currently using a manual system to record the corporate gift inventory.
- To evaluate the usability and functionality of the proposed corporate gift inventory management system

1.5 Brief Methodology

For this project, the methodology that will be used to develop the Inventory System for Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri is based on the Rapid Application Development (RAD). The figure below shows the phases in the RAD methodology.

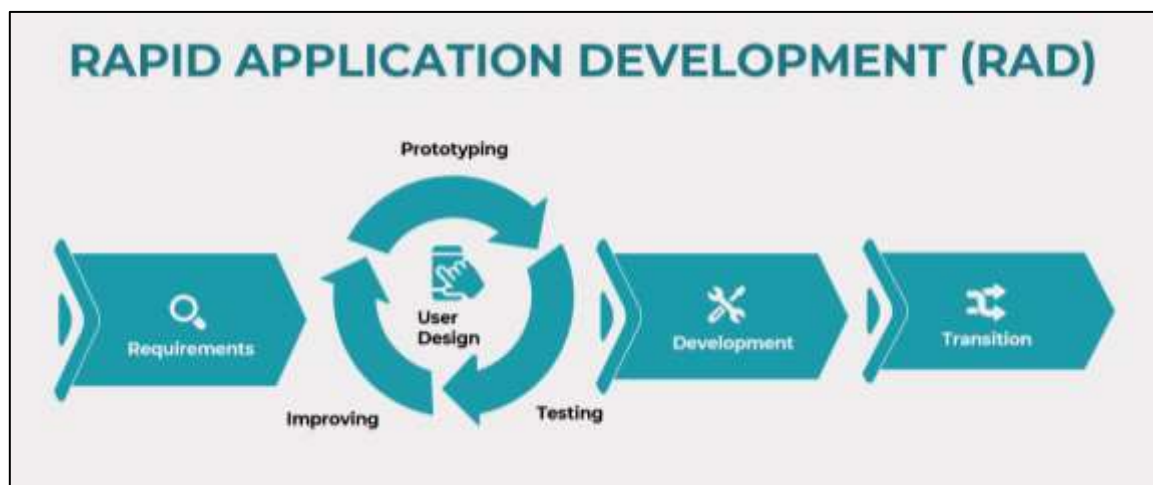


Figure 1. 1: Rapid Application Development (RAD) Phase (Demchenko, 2020)

1.5.1 Requirement Phase

The first phase is the requirement phase, to determine the main objectives of the proposed system. In addition, all the information or requirements necessary for the proposed system will be collected and documented in a design report for requirements. In order to

gather the requirements for the system, data will be collected from surveys that will be distributed to the IT officer and the staff of Jabatan Perkhidmatan Komputer Negeri.

1.5.2 User Design Phase

After the project has been scoped out, the developer will create a prototype of the proposed system for the clients to test. Once the client satisfied with the prototype design, the developer will start developing the system based on the prototype, plans, objectives, and requirement specifications. Gantt charts, use cases, and UML diagrams will be used as tools that assist in establishing system architecture and specifying requirements.

1.5.3 Development Phase

Once the prototype of the proposed system is approved and has been developed, it will then be moved into the development phase. The BKK Inventory System will be created as a web-based system using scripting language and MySQL as the database. The clients can still offer system modifications, additions, or new features during this period of participation. Any limitations encountered during this phase will be resolved.

1.5.4 Transition Phase

In this phase, the BKK Inventory System is constructed, delivered and ready to be launch. The system will be put to the test to see whether it can be used to get user feedback either the system fulfils its objectives and client requirement.

1.6 Significance of Project

The proposed system will improve the management of corporate gifts record significantly. It will be easier and more systematic to keep track of the existing and new

corporate gifts as the authorised users can access the inventory record from any device with an internet connection, making it easier to manage the inventory from remote locations. The inventory information will also be stored in a central database, allowing for systematic access, search, and tracking of the inventory record from various locations. Aside from that, the proposed system will greatly enhance the workflow of the admin as it will save them time to update and record the items, giving them more time to concentrate on tasks of higher priority. Furthermore, the additional feature which is the complaint feature will replace traditional phone support and help improve the complaint process. It will be used to record, resolve, and respond to staff complaints, requests as well as facilitate any other feedback.

1.7 Project Schedule

This project schedule is designed using the Gantt chart to ensure the development of the proposed system can be completed within the timeframe of FYP 1. FYP 1 started on the 11th of September 2022 and ended on the 12th of January 2023, consisting of Chapter 1, Chapter 2, and Chapter 3. Figure 2 represents the Gantt chart of project for FYP 1.



Figure 1. 2: Gantt Chart of project for FYP 1

1.8 Expected Outcomes

This system will be named the BKK Inventory System. It is used to reduce the manual effort of managing the inventory records for the staff and administrators. It allows the staff to make an application for the door gift through the web-based system without needing to make an application and meet the admin directly. By eliminating the need to manually record inventory data to the logbook, it also improved the admin's ability to maintain data and manage inventory details. The user can manage the inventory system using any laptop and mobile devices. Furthermore, the expected outcome is to ensure that the system is user friendly for the easiness of the user.

1.9 Thesis Outline

Chapter 1: Introduction

In this chapter, a brief overview of the project will be provided, including the project title, introduction, problem statement, objectives, methodology, scope, project significance, project schedule, and expected outcome. The problem statement will analyse the weaknesses of the current system used by the user, while the objectives will outline the desired achievements at the end of the project. The methodology will focus on the Rapid Application Development (RAD) approach to develop the project.

Chapter 2: Literature Review

Chapter 2 will explore existing systems like the proposed project through a comprehensive review of journals, websites, conference papers, and articles. The weaknesses of these current systems will be identified, and opportunities for improvement in the proposed system will be discussed.

Chapter 3: Requirement Analysis and Design

This chapter will delve into the detailed methodology employed for project development. It will include an analysis of the project requirements and the design of the database to support the system.

Chapter 4: Implementation

Chapter four will cover the actual implementation of the system. It involves building all the designs prepared in the previous phase and describing the overall structure of the system.

Chapter 5: Testing

Chapter five is dedicated to the testing phase, where the system will be evaluated by involving staff and admin from Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri. Various types of testing, such as functional testing, system testing, and usability testing, reliability testing will be conducted to gather user feedback.

Chapter 6: Conclusion and Future Works

In this final chapter, the entire project development will be summarized and concluded. The achievement of objectives will be discussed, along with acknowledging any limitations of the system. Additionally, potential areas for future improvements and enhancements will be highlighted.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

"Digital transformation" is defined as the use of computer-based technologies in the strategies, procedures, and products of the organization (Pratt & Sparapani, 2021). Moving along with the current of modernisation, Bahagian Komunikasi Korporat of Jabatan Perkhidmatan Komputer Negeri has undertaken digital transformation to boost its ability to compete by better involving and serving its customers and employees. Instead of using manual inventory, an online inventory system, namely the BKK Inventory System, will be introduced to resolve all the problems associated with managing inventory and minimize the risk of human error and data loss.

Literature review is an important component of the project since it summarises and examines the statistical literature that is pertinent to the subject and problem at hand (Snyder, 2019). The objective of a literature review, analysis, and comparison of existing systems is to improve the quality of the system. To back up that claim, a literature review determines the methods used to build the system, the context of the current system, and the instruments chosen to establish a functional system. In order to improve the proposed system, it will be possible to identify the strengths and weaknesses of the existing systems through a literature review.

In this chapter, similar existing types of inventory systems currently available on the market will be compared to the proposed system, BKK Inventory System. For the project, four existing inventory systems will be studied and analysed in detail. This study demonstrated that

most of the existing inventory systems have distinctive and unique features that set them apart from one another. At the end of this chapter, a summary of this chapter is provided.

2.2 Reviews on Existing System

2.2.1 Manual System

A manual inventory system is updated, maintained, and regulated without the use of a technical system. This indicates that the company frequently counts the inventory items physically to update the inventory. Manual inventory systems require the company to manually update the system at the end of each day while keeping track of inventory records daily. Currently, the system used by the staff in Bahagian Komunikasi Korporat is a manual system using forms. The inventory information details, such as corporate gift stock, types of corporate gifts, receiver, approval staff, date of receipt, date of approval, and the availability of the corporate gift, are stored in a single form that will be compiled into a logbook. Figure 2.1 shows the flowchart of the manual system. All inventory information must be recorded and approved by the approval staff for each product that enters or exits the storeroom of Bahagian Komunikasi Korporat.

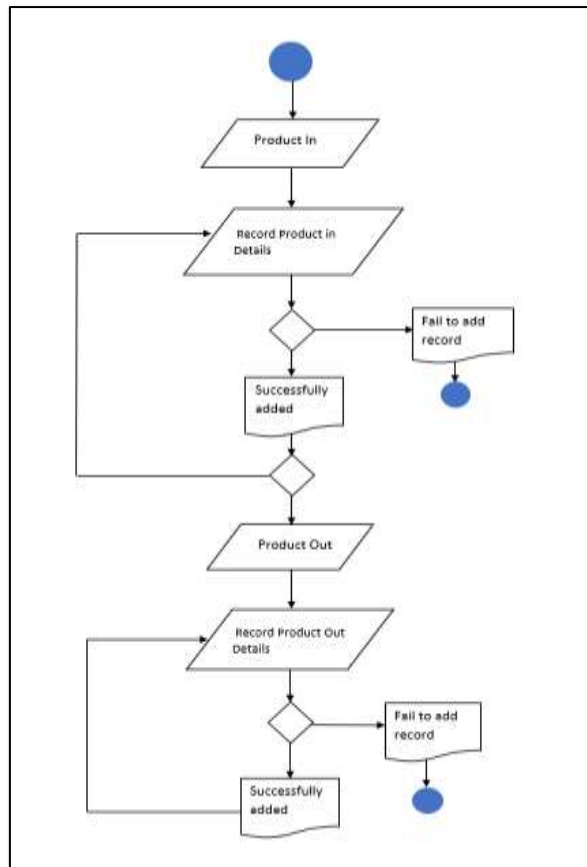


Figure 2. 1: Flowchart of Bahagian Komunikasi Korporat Manual System

When an item is distributed for the visitor from the Bahagian Komunikasi Korporat storeroom, the current stock of the product will be manually updated, and the date of distribution and the number of the item distributed are also updated. If there is new stock of items from the supplier that will be stored in the storeroom, the details of the product name, product quantity, approval staff name, supplier name, and date received are recorded or manually updated on the logbook as displayed in Figure 2.2.