An Undergraduate Internship/Project on Oracle Fusion ERP for Union Group

By

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Spring, 2021

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June 15, 2021

Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science

Department of Computer Science & Engineering

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Attestation

This is to certify that the report is completed by me, Mohammad Sajjad Khan (ID:1721843), submitted in partial fulfillment of the requirement for the Degree of Computer Science and Engineering from Independent University, Bangladesh (IUB). It has been completed under the guidance of Md. Asif Bin Khaled. I also certify that all my work is genuine which I have learned during my Internship. All the sources of information used in this project and report has been duly acknowledged in it.

Signature

Date 02/04/2021

Mohammad Sajjad Khan

Name

Acknowledgement

I would like to firstly like to thank the Almighty Allah for giving me the endurance and the ability to work hard, and for giving me the ability to write this report and for giving me the chance to be able to do my internship at Union Group one of the biggest among the group of companies in Bangladesh. Also, my parents for their unconditional love and support that have sustained, nurtured, and got me ready for this challenge. I would like to thank my honorable faculty and supervisor Md. Asif Bin Khaled, Lecturer, Department of Computer Science Engineering, Independent University, Bangladesh, for his invaluable guidance, patience, time, constructive criticism and thoughtful advice regarding various aspects of my internship and preparation of this report. Then I would like to express my gratitude to MR. Hafizur Rahman, Head of IT, for giving me the opportunity to complete my internship at Union Group and my ERP team members for their guidance and support in this three months internship program. The learning and experiences I have gathered here have helped me a lot as a System Analyst and resource planning and this will surely help me in the next phase of life. I would also like to express my gratitude to all my colleagues for helping me throughout and making the Internship process so much enjoyable. Without them, this journey would have not been easy.

Letter of Transmittal

May 5, 2021
Md. Asif Bin Khaled
Lecturer
Department of Computer Science and Engineering Independent University, Bangladesh.

Subject: Internship Report submission Spring, 2021.

With due honor and respect, I, Mohammad Sajjad Khan, from Spring 2021, Section 10, would like to submit my Internship report. This report is written to kindly inform you that I have completed my internship program and its report. My internship was conducted from 7th February 2021 to date. I completed my internship at Union Group.

This report is based on my experience and the work I did at Union Group during my internship. The primary goal for my internship was to gain experience in all the different technology related fields of the company, including research and development, documentation, content-writing, software development, and to get acquainted with software development processes and practices.

Over the period of my internship at Union Group, I found out that I learned and applied a lot of new skills and technologies. The company comprises of a small team for ERP, who learn, collaborate, and innovate together.

I would like to thank you immensely for all your guidance and support. I hope and pray that this report fulfills all the requirements and is up to your expectations.

Sincerely,
Mohammad Sajjad Khan, 1721843

Evaluation Committee

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Signature

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Name

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Supervisor

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Internal Examiner

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External Examiner

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Convener

Abstract

In today's world there is a tough economic competition in the corporate sector. A company needs to have a precise and efficient system to reserve their information and balance record. The more the efficient a company can become the more profit it can make out of it. ERP "Enterprise Resource Planning" by Oracle fusion is an advanced technology available at the moment for the mid-range and multinational company. It is very efficient but not that much user friendly to be used. It requires the employee to be trained to get used to the environment. It uses oracle cloud database to store the data which is safe and secured. Moreover the company don't need extra employee to manage the server room. It is a pre-made software ready to be implemented in any company that requires. The task of the company is to create a team for the project to design their data and select desired modules. However technology has become advanced enormously. In this report it will be discussed how to implement an ERP system and how a mid-range company can be benefited from this.

Contents

Attestation i

Acknowledgement ii

Letter of Transmittal iii

Evaluation Committee iv

Abstract v

1 Introduction 1

1.1 Overview/Background of the Work 1

1.2 Objectives 1

1.3 Scopes 2

2 Literature Review 3

2.1 Relationship with Undergraduate Studies 3

2.2 Related works 3

3 Project Management & Financing 5

3.1 Work Breakdown Structure 5

3.2 Process/Activity wise Time Distribution 6

3.3 Gantt Chart 6

3.4 Estimated Costing 7

4 Methodology 8

5 Body of the Project 10

5.1 Work Description 10

5.2 System Analysis 11

5.2.1 Six Element Analysis 11

5.2.2 Feasibility Analysis 11

5.2.3 Problem Solution Analysis 12

5.2.4 Effect and Constraints Analysis 13
5.3 System Design 14
5.3.1 Rich Picture 14
5.3.2 UML Diagrams 14
5.3.3 Data Flow Diagram 15
5.3.4 Use-case Diagram 20
5.3.5 Functional and Non-Functional Requirements 20
5.4 Product Features 22
5.4.1 Input 23
5.4.2 Output 24
5.4.3 Architecture 25

6 Results & Analysis **27**

7 Project as Engineering Problem Analysis **34**
7.1 Sustainability of the Project/Work 34
7.2 Social and Environmental Effects and Analysis 34
7.3 Addressing Ethics and Ethical Issues 35

8 Lesson Learned **36**
8.1 Problems Faced During this Period 36
8.2 Solution of those Problems 36

9 Future Work & Conclusion **37**
9.1 Future Works 37
9.2 Conclusion 37

Bibliography **38**

List of Figures

3.1 WBS of ERP 5
3.2 ERP Gantt Chart Project Planner 6

4.1 ERP Methodology 9

5.1 Partial ERP Rich Picture 14
5.2 ERP UML diagram 15
5.3 DFD part 1 16
5.4 DFD part 2 17
5.5 DFD part 3 18
5.6 DFD part 4 19
5.7 Used case Diagram 20
5.8 Login Page 23
5.9 Sales Order Entry 23
5.10 Complete Sales Order 24
5.11 User Dashboard 24
5.12 Putting Shipment Number 25
5.13 Complete shipment 25
5.14 three layers architecture for the client server 26

6.1 User Dashboard 27
6.2 Order Management Dashboard 28
6.3 Create Order 28
6.4 Sales Order Input 29
6.5 Searching Order with Order ID 29
6.6 Assigning Shipment Number 30
6.7 Assigned Shipment Number 30
6.8 Release Pick slip 31
6.9 Putting the Transaction Date 32
6.10 Confirming The Shipment 33
6.11 Completed Shipment 33

List of Tables

3.1 task wise time allocation 6
3.2 Estimated Costing 7

5.1 Six Element Analysis of ERP 11

Chapter 1

Introduction

1.1 Overview/Background of the Work

For a large company with a variety of business unit it hard to manage their database and come up with the monthly and daily report of the business. Previously the company I am working for "Union Group" used their multiple in-house software and database to keep trace of their data. All the database is then connected to a tally for the accounts.

All this seems to be lengthy process to collect data from the factories and generate reports as per the higher authorities. So they decided to migrate to Oracle fusion ERP software.

Oracle fusion is a platform which provides the interface for the user to record data in ERP for a whole products life cycle starting from Raw Materials to Finish Goods as long as not sold to a consumer. It makes very easy for the user to keep the data and fetch it any time.

1.2 Objectives

The main objective of the project is to ensure easy process for the employee to manage the records of the business unit and create annual reports of it. After the world was hit by the global pandemic most of the companies has faced a huge blow, as it is not possible to check the stocks physically in the warehouses anymore. This website will allow users to get all the relevant information without the hassle of personally going to the factory and match the stocks. They will also be able to match the cart of balance in a secured manner. The most beneficial factor of the website is that, because it is an online-based system, people can use it on their computers and phones, at any time anywhere.

1.3 Scopes

- Order Management: Employees can create order. After creating an order the system automatically assign an OrderID and user can then use the OrderID to edit it according.
- Pricing Administration: Can be used to set price for a unique product in different level.
- Customer Creation: Customer can be assigned for different business unit.
- Contact Management: It provides an interface to create customer contact in the system.
- Inventory Management: Employee can create, update, read and delete the products stocks stored in the inventory.
- Quality Management: It provides interface for Audit Report.
- Receivable: It provides three sections Billing, Account Receivable and Revenue.
- Procurement: It give interface for purchase requisition and receipts.
- My Enterprise: It allows the user to create new offers, update and add new features to the business.
- Tools: It gives the user to schedule processes, set preferences, worklist, report and analysis, collaboration massaging.
- Smart Form: It gives tabs for upload serial information, issue serials and IMEI issues.
- Dashboard: It gives the users dashboard which shows all his/her pending task and completed task, for example: Pending delivery reports.
- Work Execution: Here the user will set plan and input all the raw materials for production and check the output of final good.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

CSE 203, Data Structures: This is the most basic course that helped us with the ideas of several data structures and their applications such as Stack, Queue, Linked List, Array, Pointer and so on . CSE 213, Object-Oriented Programming: In the developing industry most of the data is represented as an object. It also taught how to write modular programs which made codes less repetitive and more reusable. CSE 303, Database Management: This was the course that taught me how to design and plan a project. It covered popular planning and strategy practices such as Six Element Analysis, Problem Analysis, System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model, Normalization and many more. CSE 307, System Analysis and Design: This course gives an overview of Used Case Diagram, Used Case Scenario, SDLCs and how to adopt each one of them to the project. CSE 309, Web Application and Internet: This is the course where the development of web applications was taught. It covered very important technologies that are highly in demand in the industry, such as HTML, CSS, JavaScript, jQuery, View Engines (Handlebars and embedded JavaScript), Node.js, Express.js, and MongoDB.

2.2 Related works

Nike - Nike is one of the most renowned names in the field of commerce and industry and is one of the prestigious and leading shoe companies in the world today. They use SAP ERP to manage their Database.

Bangladesh Bank- Bangladesh Bank is positioned as one of the top Bank that has accomplished a few ambitious projects scattered in the most prominent locations in Dhaka.

Their system was designed to incorporate all the aspects of their services on one platform (SAP ERP).

They use SAP ERP to manage their business system which minimize the amount of employee. Hence reduces the cost. They got benefited due to the system. All the business records are stored in the cloud and they do not need to worry about the disaster that may cause loss to data for the traditional database. As it is in the cloud it is the responsibility of the vendor to maintain and manage it. Here the maintenance cost also reduced.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

WBS is a hierarchical structure which demonstrates a project's breakdown into smaller segments. For our project, we have produced a WBS so that our work is coordinated. WBS covers a visual of all the scopes, risks, points of communication, responsibilities, costs and guarantees that it does not skip essential deliverable. For brainstorming and collaboration, it is the ideal tool for the team. In our WBS, we have used the top-down approach.

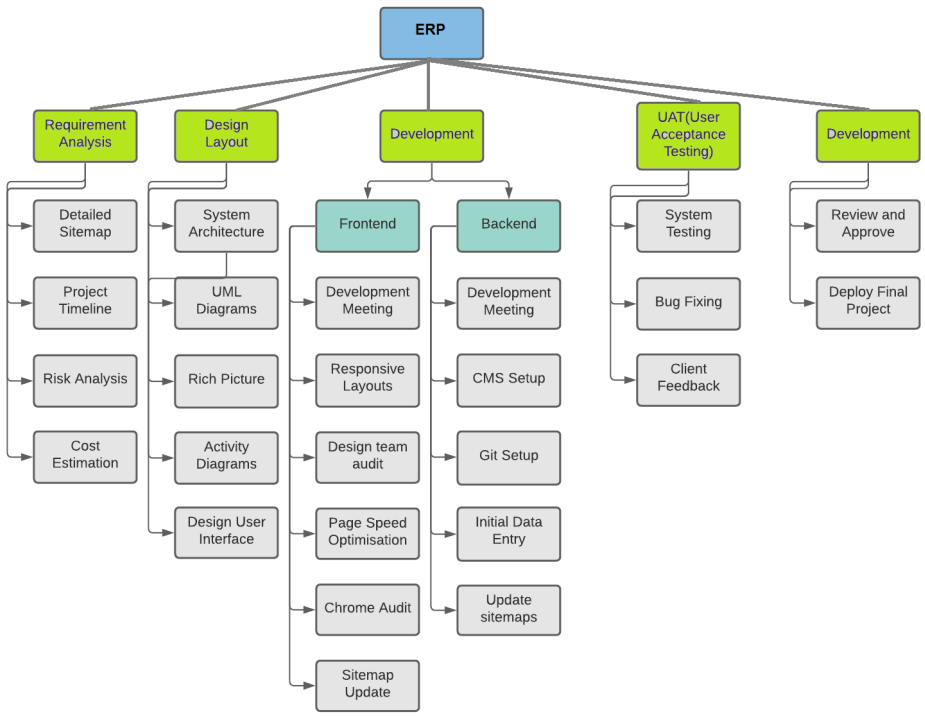


Figure 3.1: WBS of ERP

3.2 Process/Activity wise Time Distribution

For Each Section we have described in the WBS Diagram for ERP we made a time allocation. The Table below shows them in details.

Task	Days	Work Percentage
Requirement Analysis	15	20
Design Layout	10	10
Development	25	40
User Acceptance Testing (UAT)	15	15
Deployment	15	15
Total	80	100

Table 3.1: task wise time allocation

3.3 Gantt Chart

We have used the Gantt chart to plan and schedule all the activities that were needed to be done to complete the project successfully.

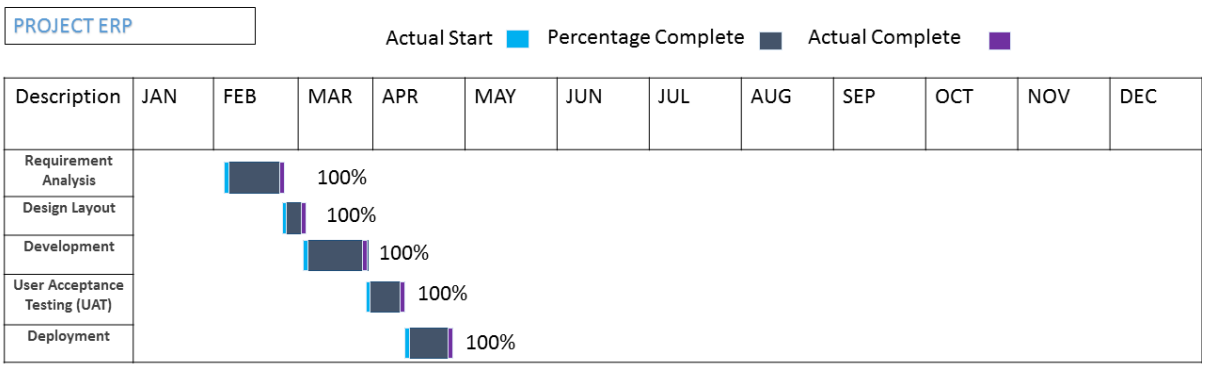


Figure 3.2: ERP Gantt Chart Project Planner

3.4 Estimated Costing

The cost was calculated on the basis of the features the company requirement for the system. This includes pre-designed themes, logo design cost, Number of users included.

Work Distribution	Costing
Oracle (Deployment)	$200000
Development	$50000
User Account	$2000 Per Year
Domain and Hosting	$9000

Table 3.2: Estimated Costing

Chapter 4

Methodology

For a company it is very important to understand the importance of the analyzing of the implementation of ERP, as if there is a high chances of failure for the implementation process which can be later very costly for the company to bare. Usually, to deploy the ERP system the company must follow a specific framework and methodology. We then use and follow this to set a structure and plan to process the implementation of the ERP system. The vital portion of the ERP project is conducted by a team, they develop different tools, templates, structures, entity relationship schema and flow chart which are involved in the methodology. It is considered as the road-map for a successful implementation of the project and we must say it is where the workings for the implementations begins. The most commonly used methodology is Agile, which follows requirements, design, development, testing, deployment, review and then repeat the process. But for oracle fusion ERP the design of the software is already built. All we had to do is design the module according to our needs and keep the required modules and provide them to the valid employee. There is a testing site for the user to test different module before using in the real life data. After all the testing the designed document sign off and declares the user acceptance certificate and declares go live for the company. As the company goes live in the environment, they entry the data for a specific month for all of their business unit and matches the cart of balance with their existing system. If everything goes fine with an accepted error of 5 percentage the project manager declare the Post go live seasons for the system. [1]

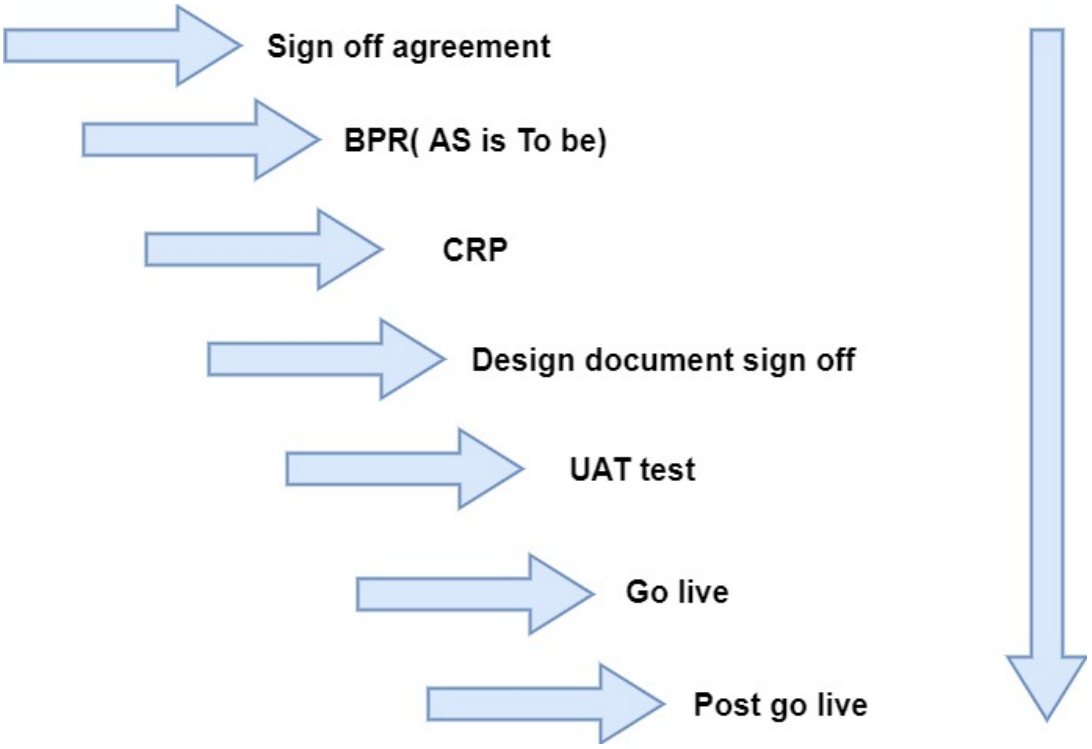


Figure 4.1: ERP Methodology

Chapter 5

Body of the Project

5.1 Work Description

ERP from Oracle fusion is an online website for the Union Group to manage their multiple business unit in a single simplified platform. Here the core ERP team was form by some selective employee of the company from different business unit and the IT division. The Responsibility of the project to manage was handed over to the head of IT who has a clear knowledge about the system and the all the business unit. Moreover the other members of the team are individually expert at their position. They provide their thoughts about how their business unit runs and which modules will be best for them to generate reports for the Chairman and MD. They all worked together to normalize the system to the user. The primary keys and the names of the product are made in such a way that reduces the number of columns in the database which reduces the consumption of space and easier to for the user to save time while working.

My work in the team was to reconcile the data with previous in house software they used and to work on the analysis portion such as BPMN, Used case study and data verification.

5.2 System Analysis

5.2.1 Six Element Analysis

Process	System roles					
	Human	Non-Computer Hardware	Computing Hardware	Software	Database	Communication and Network
Manufacture	Factory In-charge	N/A	Computer and Calculator	Browser	Oracle Cloud	WAN/LAN
Sales Order	Sales Executive	PO Receipt	Computer and mobile	Brower and PDF reader	Oracle Cloud	WAN/LAN and Text Messege
Delivery	Warehouse	N/A	Computer	Browser	Oracle Cloud	WAN/LAN

Table 5.1: Six Element Analysis of ERP

5.2.2 Feasibility Analysis

Firstly we need to know the feasibility study required for ERP. What are the benefits of being implemented to a ERP system? ERP completion consists of some essential factors that we all need to consider before we start or migrate to the ERP system::

• **Needs Assessment:** First thing to do is the needs assessment. Here we analyze if the company is capable to execute to a new software. Then comes the part for the analysis for the company's current business process. Then consider the objectives that the company have for migrating to ERP. Need to discuss any draw back they faced in their previously used system which can be solved once they migrate to a new system. We all need to keep in accounts the future goal of the company business process. The company then research on the ERP system, if it can fulfill all their requirements or not. If they found it's capable to do so then they move on to the next step.

• **Resources Assessment:** The implementation of ERP requires both time and money. The concern arises if the company or institute carries such dedicated person who can give all the effort during the implementation. For the fulfillment of all the functional and technical issues it is necessary to hire a vendor or third-party who will be working in a contract to provide support when needed unless all the employee get used to the new environment. All these requires a handsome amount of fund. If the company stakeholders are willing to fund at the beginning it will value the in long go.

• **Technical Assessment:** Here comes one of the most important assessment where it's need to be sorted what are the equipment and technical support required for the company to migrate to the system. Firstly the thing we need to understand the software ERP by oracle fusion will be hosted in the oracle cloud and there will be no hazard regarding the on-premises database. Then the company need to assure if they have professional team for ERP who can deal with the necessary testing during the development of the project. The team need to analyze does the new ERP system can do all the task which were present in the existing system and relief your workload. Most importantly if there is lack of experts within the company there should be alternative to work with a third party vendor for support to complete the project.

• **Company Culture Assessment:** Similarly like other software ERP also has some drawbacks. If you are not prepared for this you have to count on your sufferings. The needs to assure to adapt to the in environment as soon as it is implemented, otherwise they need to face the greatest barrier of the enterprise resource planning "ERP". The company needs to assure necessary training to the employee for the better understanding and adoption of the new system. All this will define how well the company responded to the newly implemented system and will get to see the outcome in no sooner.

5.2.3 Problem Solution Analysis

There were a number of problems that were encountered while completing the project and they were solved accordingly. Some of the problems were:-

- **Wrong Data:**

Data were gathered from the previously used in house software where there were a lot of mismatch data. It was solve by matching the data with the accounts data to confirm the clearance.

- **Plugin speed and animation problem :**

This problem was solved by doing a complete RD and having customized solutions for plugins using javascript..

- **SMTP mailer issue :**

This was a major problem as it was important to configure the mail address properly. The team solved this problem with the help of a thorough RD and then configuring the server. Lastly, Gmail configuration was done.

- **Ajax/ pjax issue:**

The initial goal was to load a particular section of the page without loading the full page itself. This was done after a lot of RD and then using javascript form submission.

- **Form Consensus:**

There's a good chance that your organization isn't on the same page about a new software system. Starting an ERP project with a divided business leads to widespread frustration. Through the process of conducting an ERP feasibility study, your company can develop a shared understanding about the software investment and how it could improve your business performance. [2]

5.2.4 Effect and Constraints Analysis

This system helps the users to know about the true essence of the company and what are its business sectors and the procedures of each site. Stakeholders are able to look at the company's progress report, choose from the business unit and get all the necessary information, and also apply for a finance report month-wise. However, our system has some limitations. We do realize that it is still not a traditional norm as the price of the product varies and the employee needs to override the price in every orders. We are still thriving to bring out more changes and add more features to our website that would help and encourage more and more people to start this practice of work from home during the pandemic rather than going around from gatherings which is not safe. This will not only make people's lives easier but will also be a big advantage during the ongoing pandemic.

5.3 System Design

5.3.1 Rich Picture

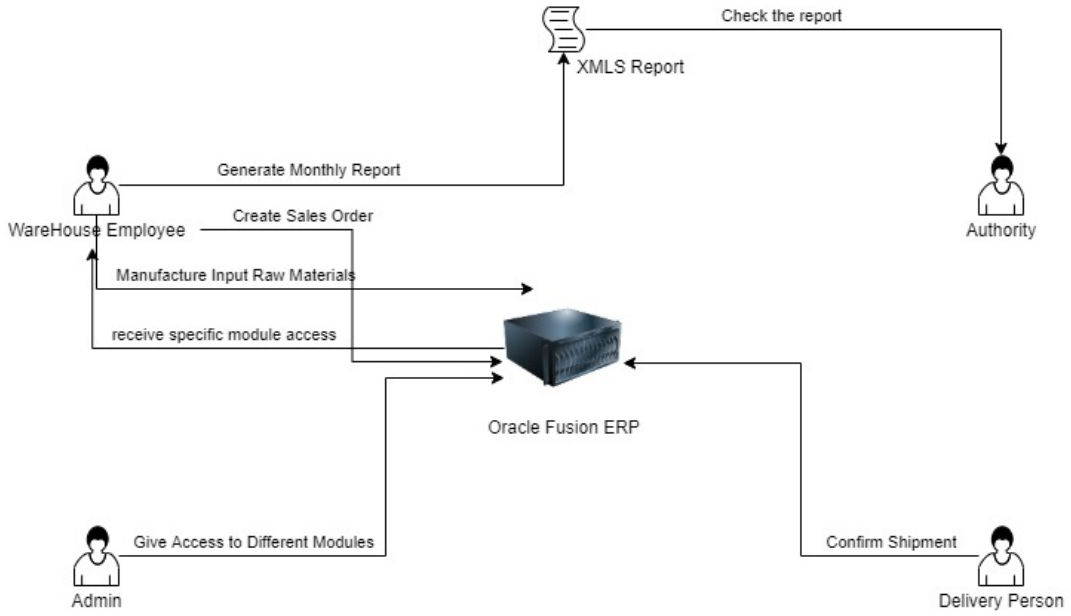


Figure 5.1: Partial ERP Rich Picture

5.3.2 UML Diagrams

The activity diagram is an important UML diagram that shows the row of one activity to another. The activity diagram of the user and admin help to visualize the row of their activity in graphical form.

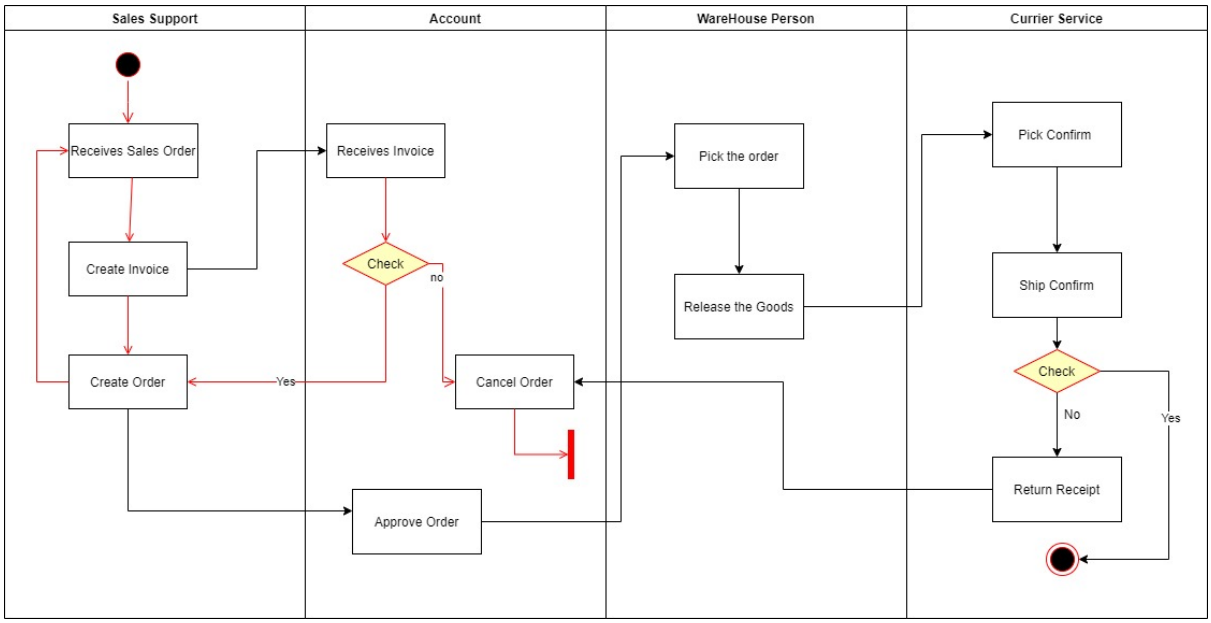
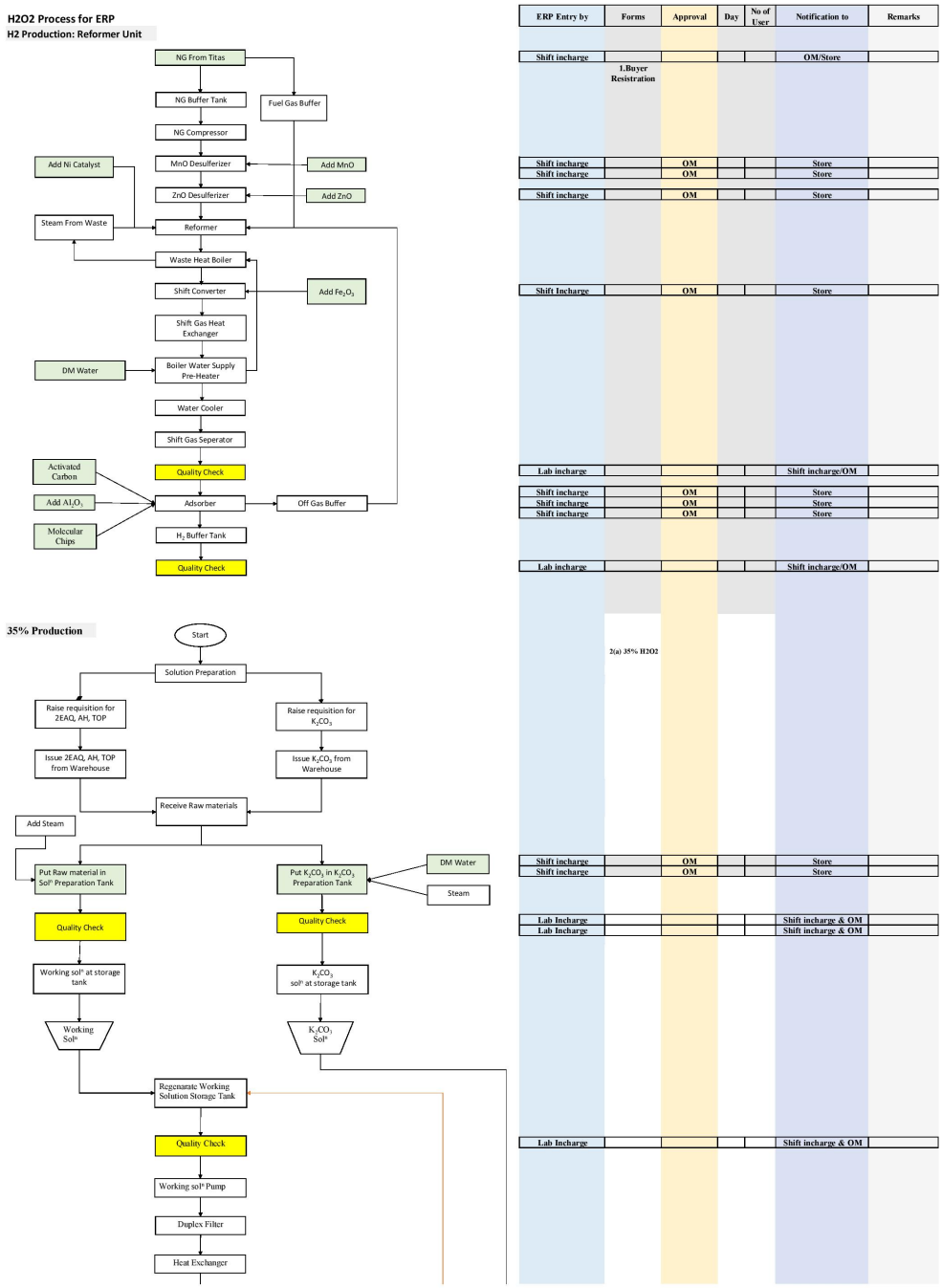


Figure 5.2: ERP UML diagram

5.3.3 Data Flow Diagram

Flow Chart Diagram: Describes the processes for the HP Chemical Factory I had analysed for:



ERP Entry by	Forms	Approval	Day	No of User	Notification to	Remarks
Shift incharge	1.Buyer Resistration				OM/Store	
Shift incharge		OM			Store	
Shift incharge		OM			Store	
Shift incharge		OM			Store	
Shift Incharge		OM			Store	
Lab incharge					Shift incharge/OM	
Shift incharge		OM			Store	
Shift incharge		OM			Store	
Shift incharge		OM			Store	
Lab incharge					Shift incharge/OM	
	2(a) 35% H2O2					
Shift incharge		OM			Store	
Shift incharge		OM			Store	
Lab Incharge					Shift incharge & OM	
Lab Incharge					Shift incharge & OM	
Lab Incharge					Shift incharge & OM	

Figure 5.3: DFD part 1

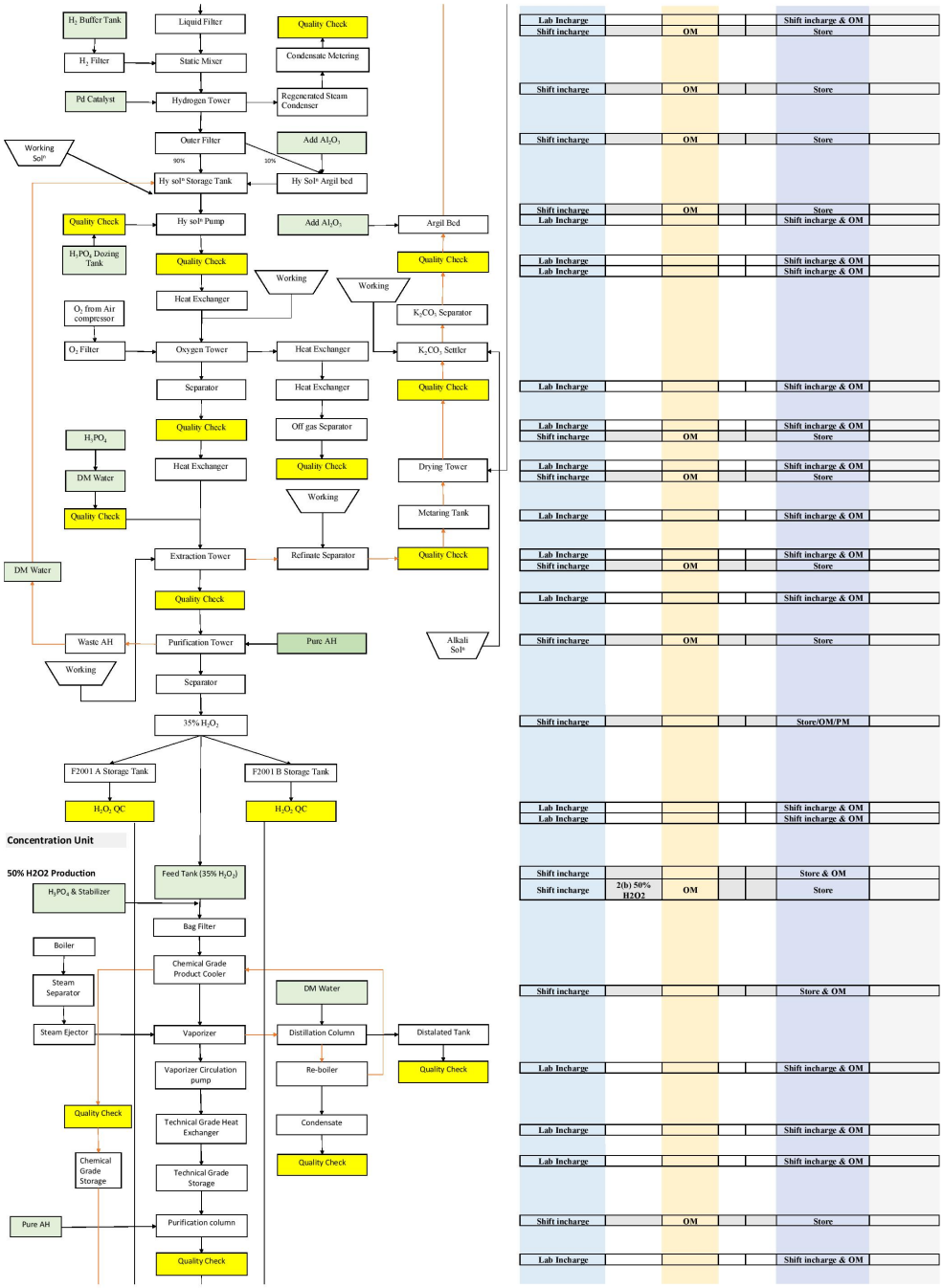


Figure 5.4: DFD part 2

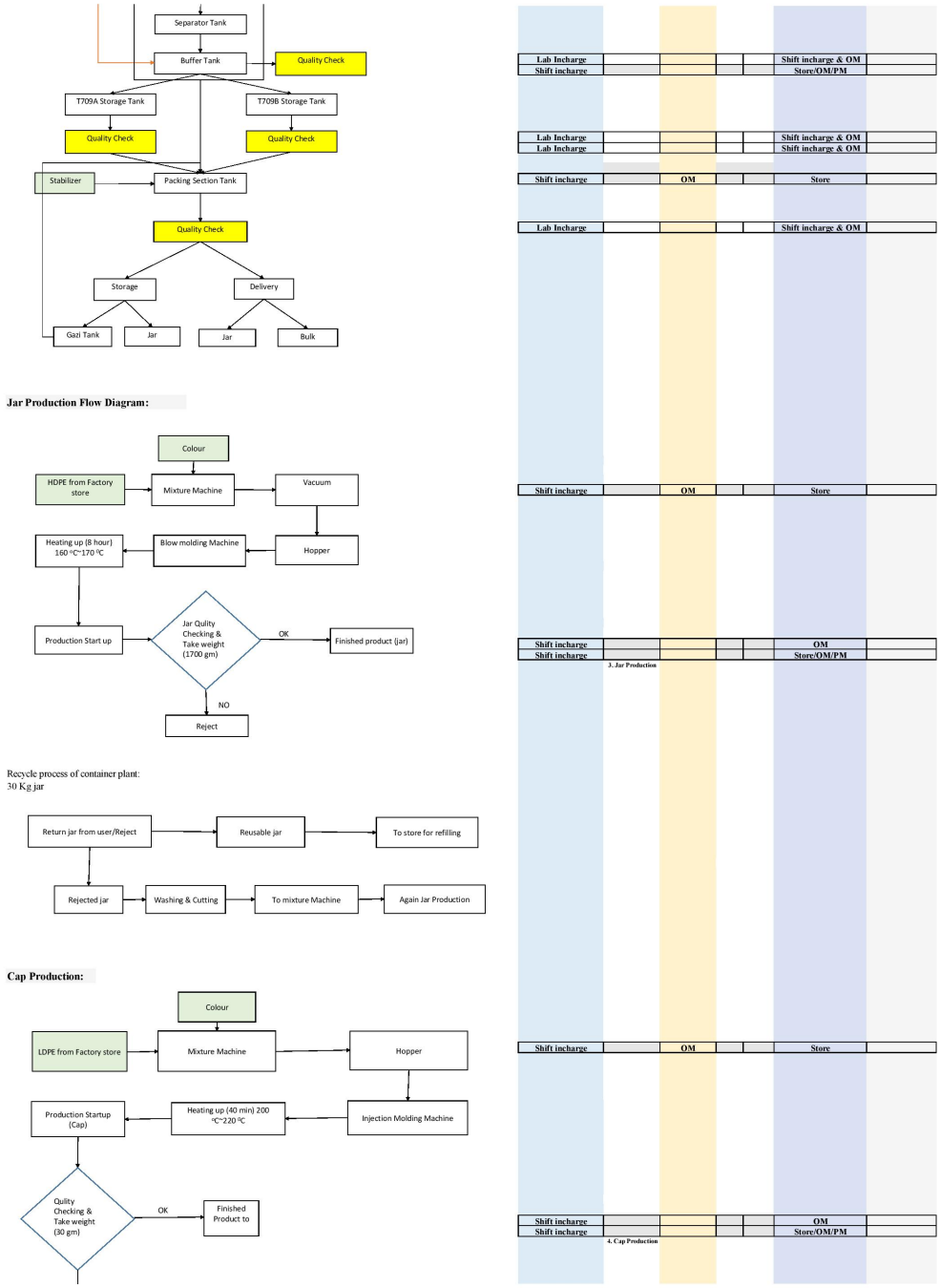


Figure 5.5: DFD part 3

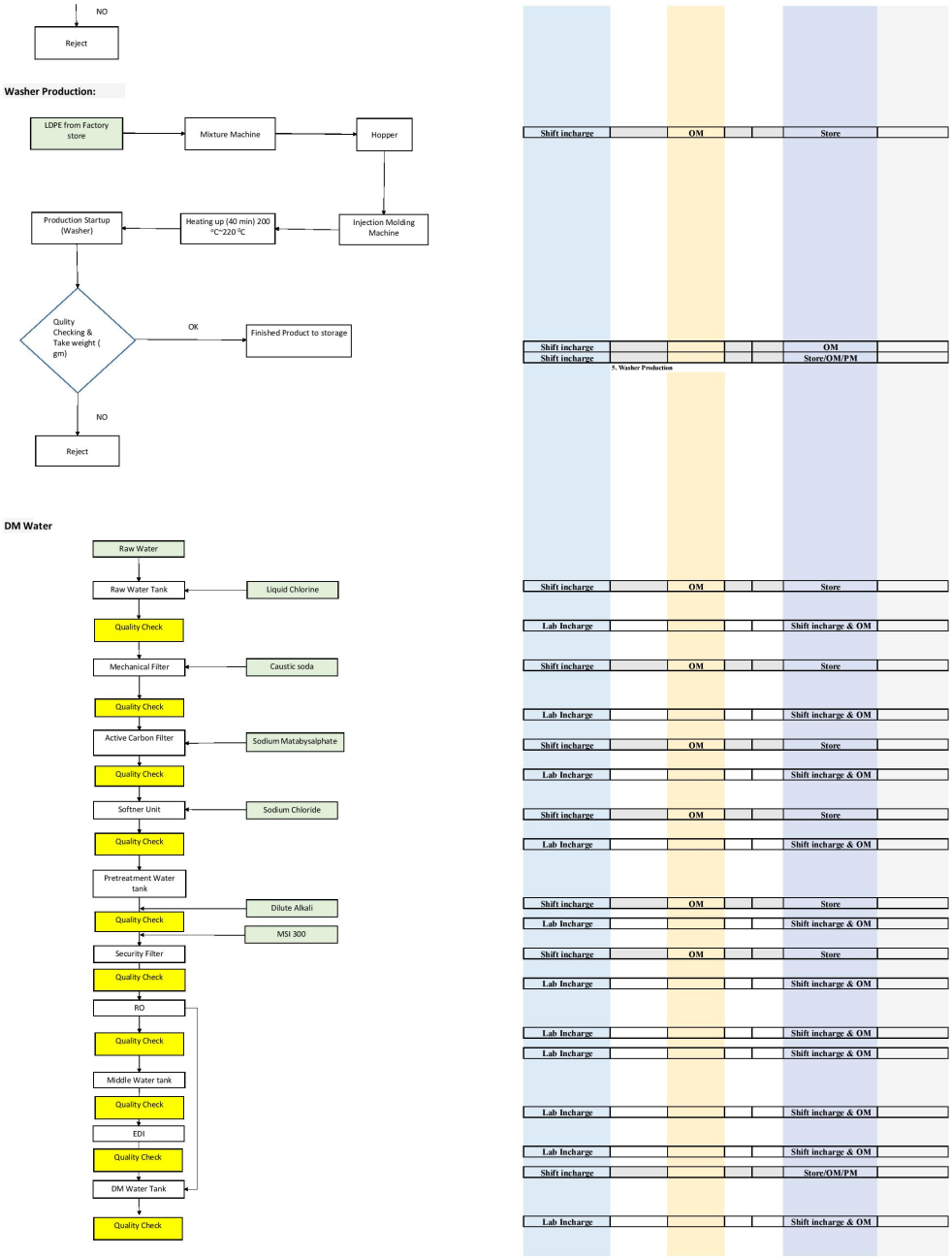


Figure 5.6: DFD part 4

5.3.4 Use-case Diagram

The use case diagram represents the functional requirements of the system. It shows the actors, cases, communication links, system and relationship.

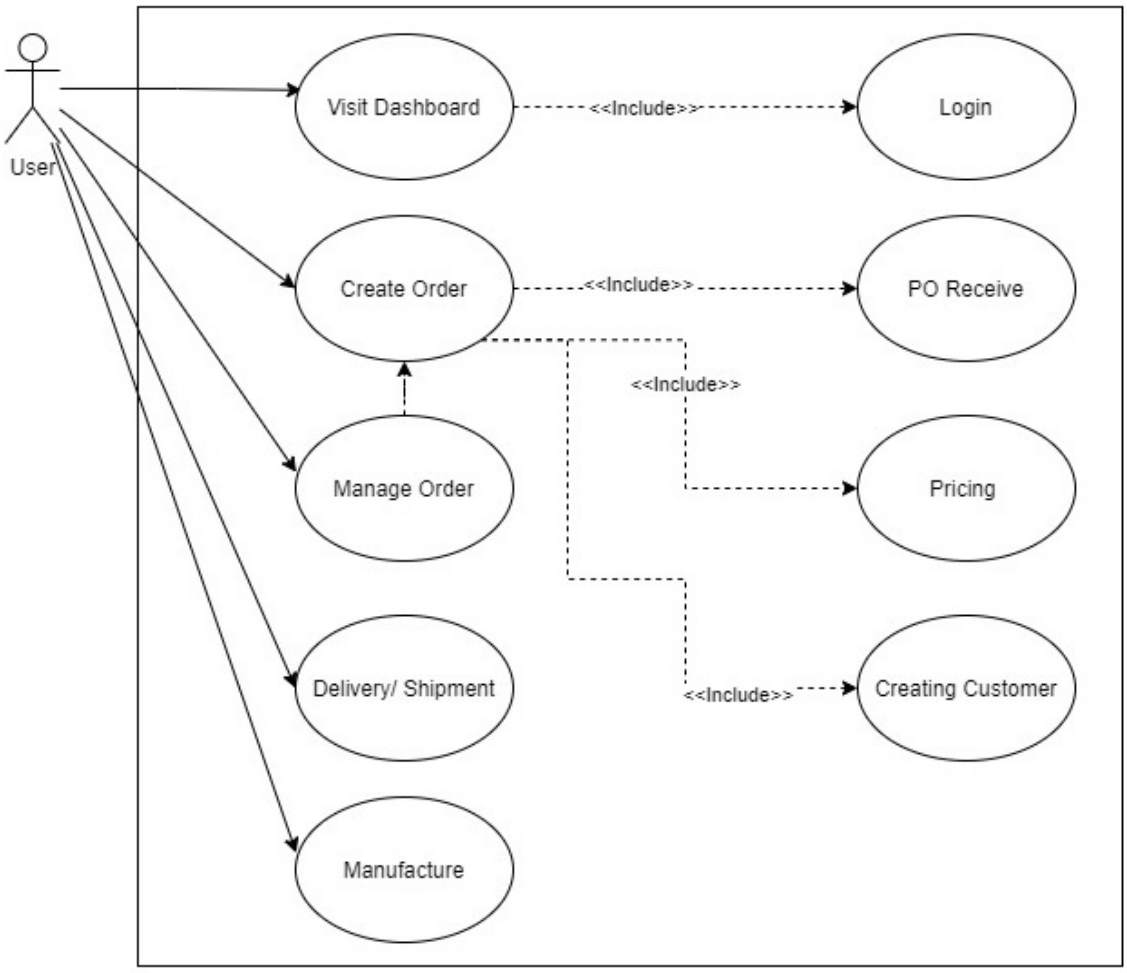


Figure 5.7: Used case Diagram

5.3.5 Functional and Non-Functional Requirements

Functional Requirements:

1. The authentication system validates the entered applicant's name, email and unique password upon receiving the information and logs the user into the app by creating an account.

2. The system will generate unique ID for employees.

3. Verification of those provided information are done by sending a verification email

to the applicant from the system. After which the applicant would be able to login.

4. The system will review if the inputted ID and password exists in the system or not.
5. The system will request for a password recovery if the ID is found but password is incorrect.
6. The system will request for new account if ID is not found in the system's database.
7. The system will send a confirmation email to applicants after successfully creating accounts.
8. The system will let the employee choose different type of modules to work on.
9. The system will allow the applicants save their application to resume working on it later by clicking the button "Save Application".
10. The application will only be submitted after the verification of payment for the form through Bkash or online banking.
11. The user's personal dashboard must always be updated to show what information is missing and what they would need to do to complete their tasks.
12. The system sends notification to the applicant when any updates are made.
13. The officers can search for the application by searching the username of the applicant or email.
14. The officers can also look up other officers to forward a task when required.
15. Admins will be able to add or remove employees in the system.
16. Admins will be able to update the template of the application form in the system and update policy when required in the system.
17. Geo-location based can record the applicant's location as well as information like the number of applicants and the verified applications for the report.
18. The application will have customized sections to rearrange the dashboard form the default dashboard for each user to make it unique and more user friendly.

Non-functional requirements

1. Usability: The system is going to be user-friendly and aesthetically pleasing for the users.

2. Maintenance: This system/app is going to be maintained 2 times in a year, it runs smoothly and does not get slow or lag. Any bugs or problems can be fixed easily.

3. Valid data: All the information being updated in the system must be accurate and consistent for the users to take.

4. Scalability: The system can be accessed from any devices like: Computers, Smartphone's. Apps for smart phones and an aesthetically similar web App for computers are developed.

5. Performance: Performance should always be smooth and easy to understand, such as searching and browsing for officers, submitting information and many more. These should leave a positive experience for users.

6. Service: Employees can use the system from all around the world.

7. Reliability: The system will be backed-up for safety reasons and will not hamper and data during this process.

8. Control: As the system is initialized by the government, privacy will be maintained strictly. It will be completely secured and will be checked by the developer's time to time for any sort of irregularity.

5.4 Product Features

Here I have included all the input and output features a user will receive from this project.

5.4.1 Input

Login Page

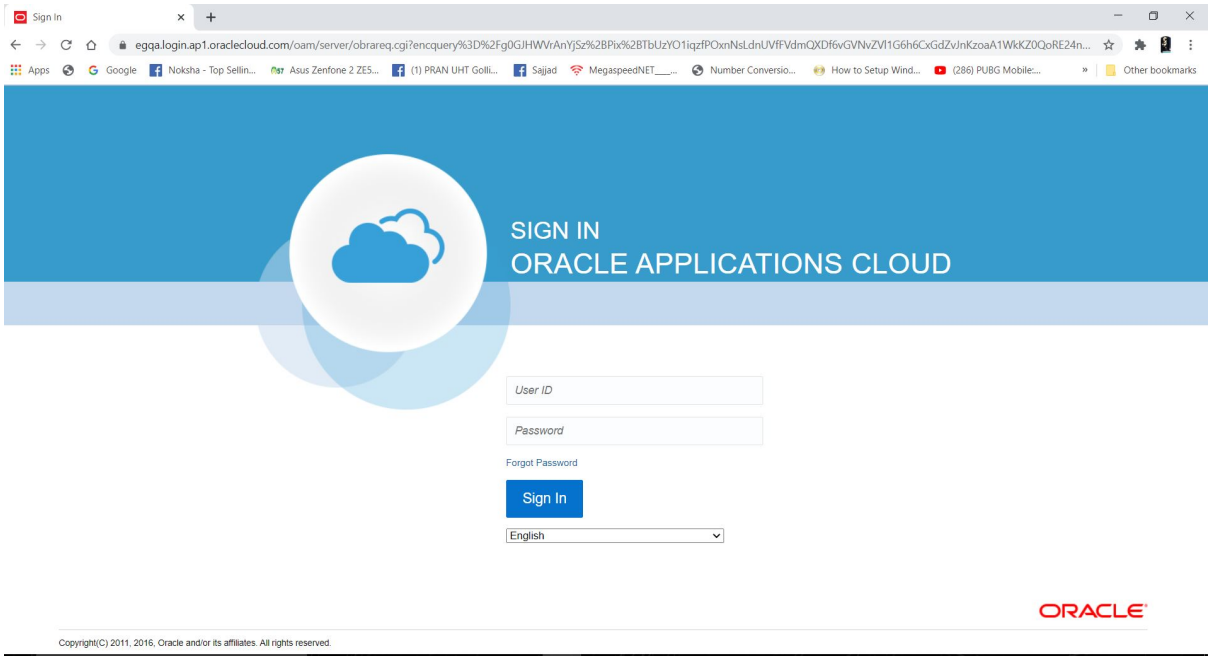


Figure 5.8: Login Page

Sales Order Entry

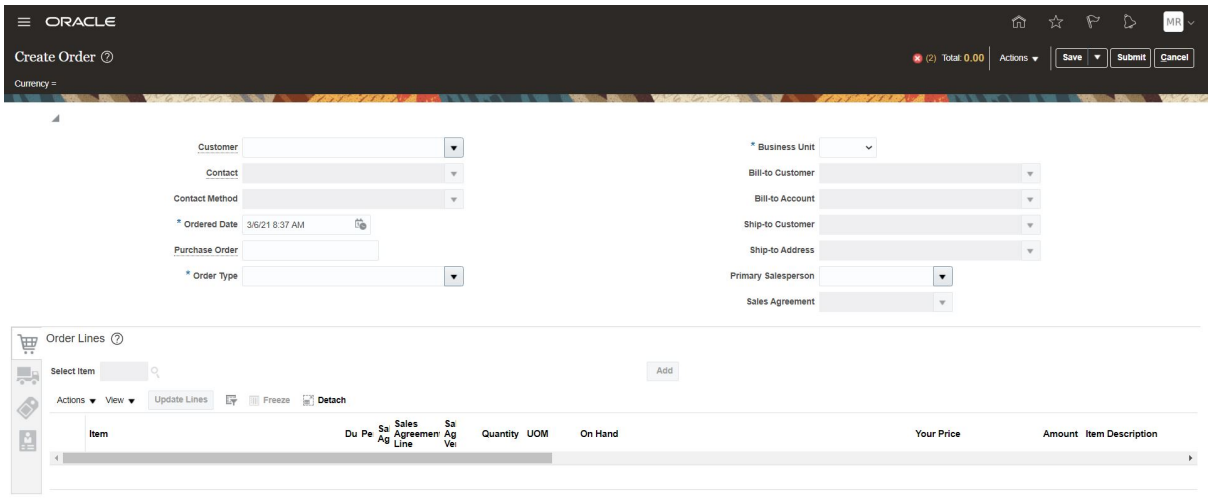


Figure 5.9: Sales Order Entry

Complete Sales Order

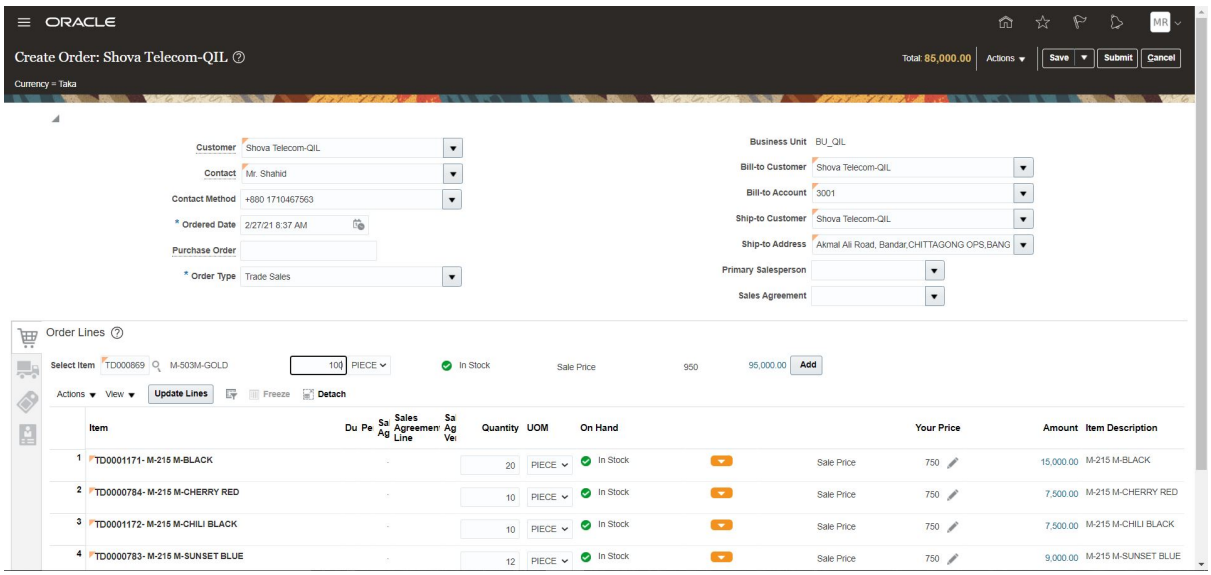


Figure 5.10: Complete Sales Order

5.4.2 Output

User dashboard

Figure 5.11: User Dashboard

Delivery Process

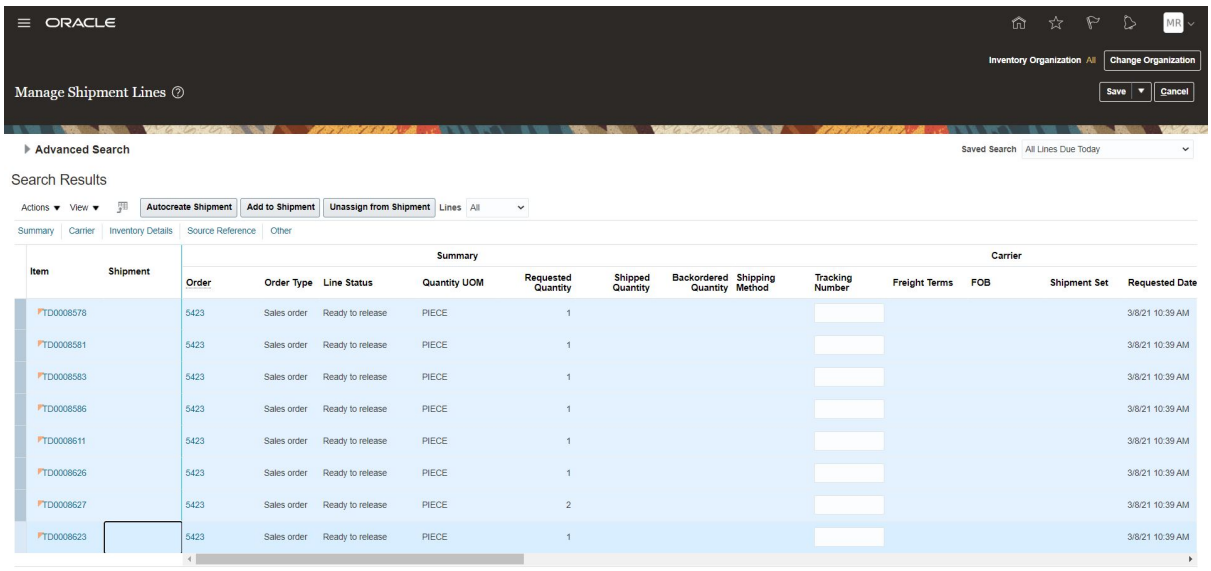


Figure 5.12: Putting Shipment Number

Complete Shipment

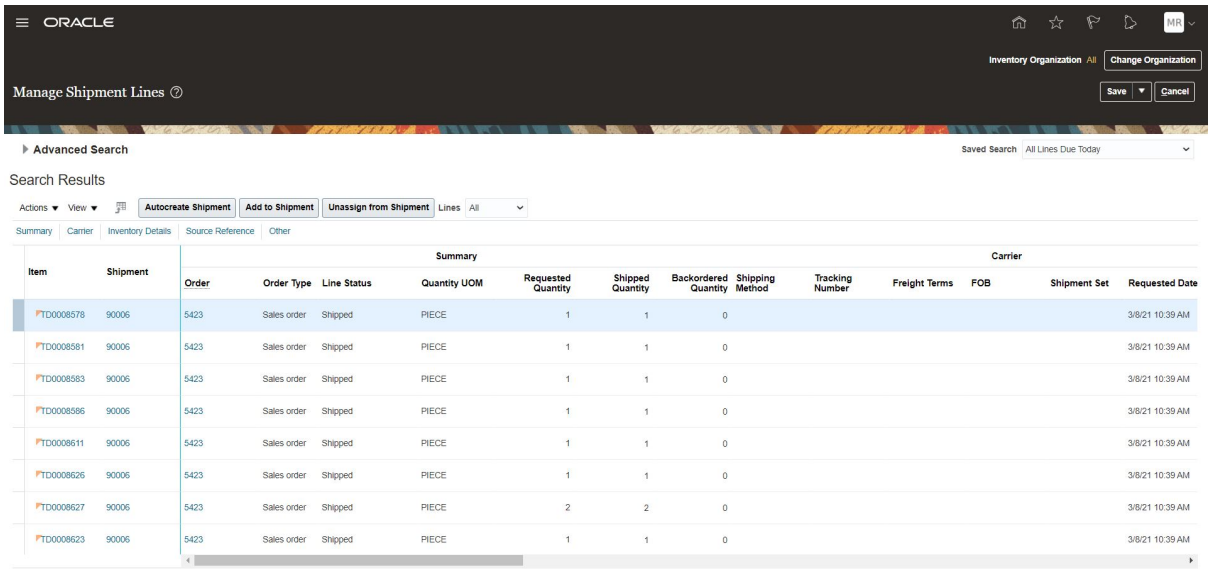


Figure 5.13: Complete shipment

5.4.3 Architecture

There are different types of architecture used in various systems. In our Oracle Fusion ERP system we used Three layers architecture for the client server [3].

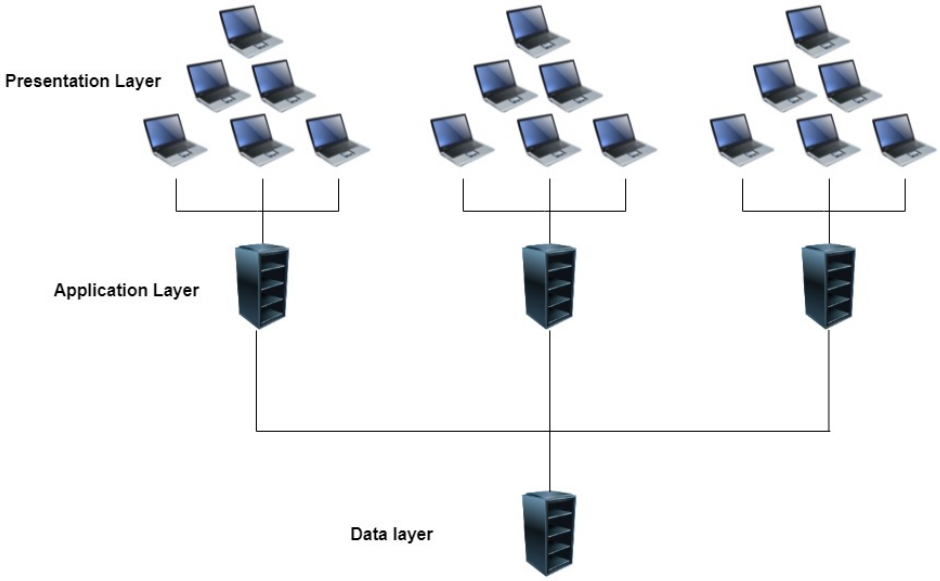


Figure 5.14: three layers architecture for the client server

Chapter 6

Results & Analysis

The Union Group Previously used their in house software Legacy, which was very difficult to work on and keep record of the workings. There is no data recovery process once someone edit the data, it does not keeps the record of it. As they shift to Standard platform Oracle Fusion ERP to operate their business it became very handy and keeps every record that the user gives input.

Figure 6.1: User Dashboard

Here the user can mainly access the “Pending Delivery Reports” “Sales Order Details” “Production Order Report”. I mostly deals with these three modules from the dashboard to deliver and create order for a customer.

There are few steps to follow to create an Order.

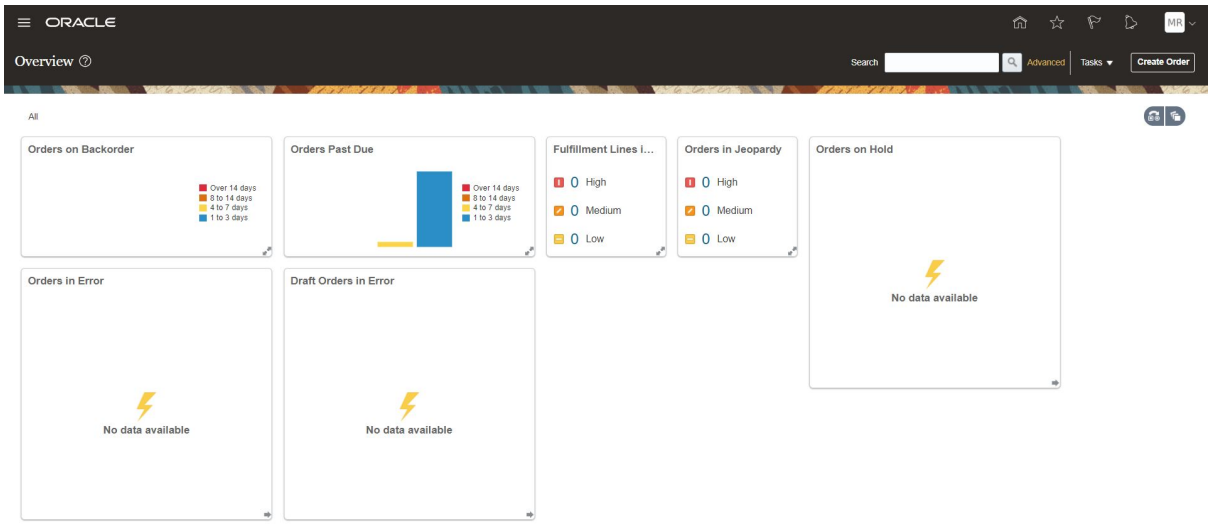


Figure 6.2: Order Management Dashboard

Step-1

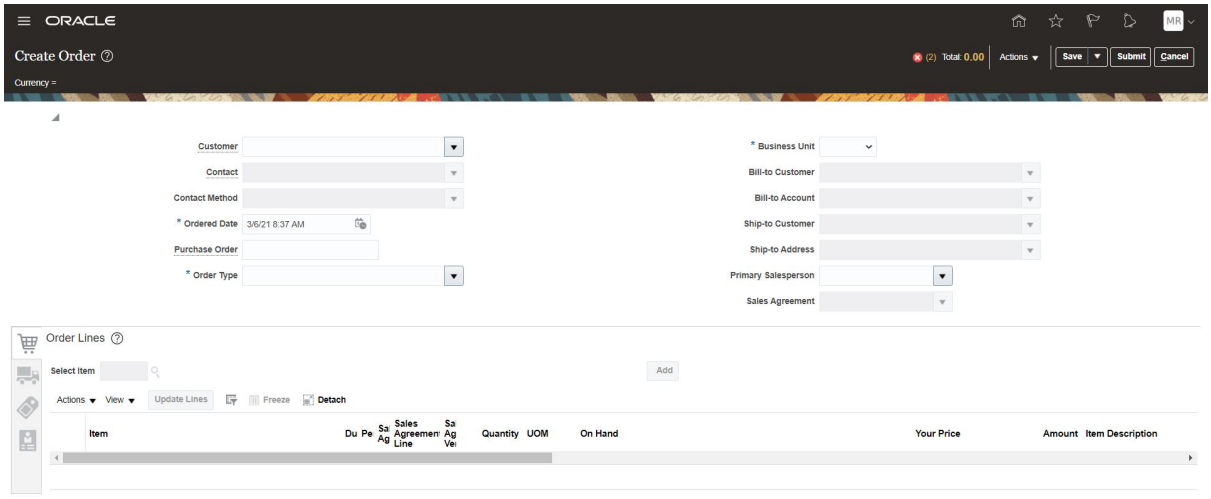


Figure 6.3: Create Order

Step-2

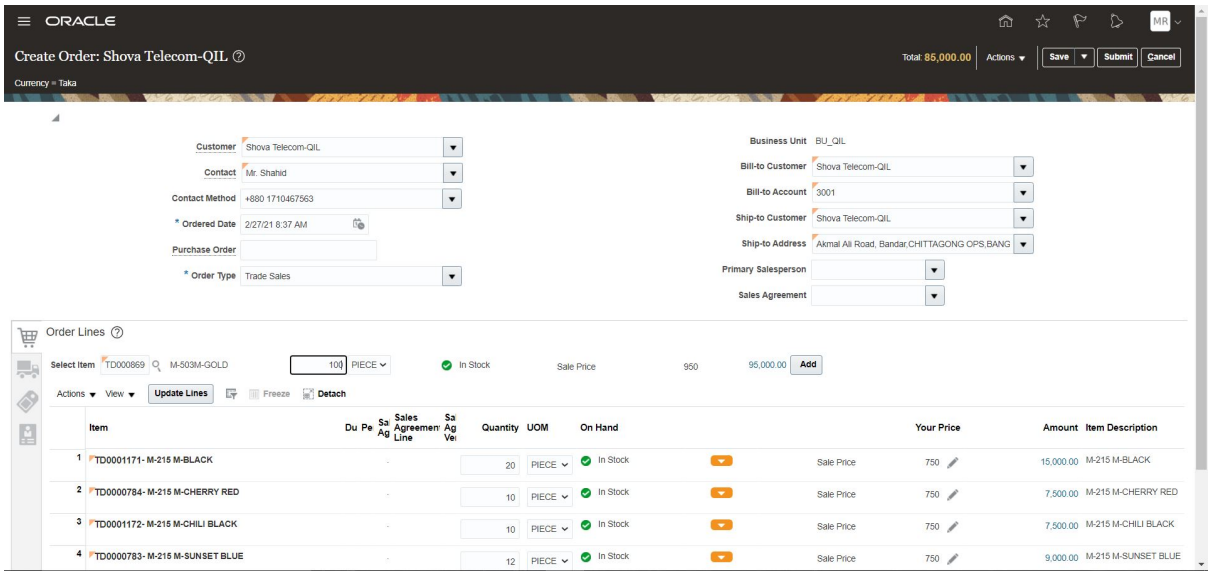


Figure 6.4: Sales Order Input

Step-3

After submitting the sales order it requires approval to start and deduct the quantity from the stock available. The higher authority check the order and gives approval for delivery. After creating a sales order it comes turn for the warehouse to release and delivery the order. Steps need to be followed for shipments.

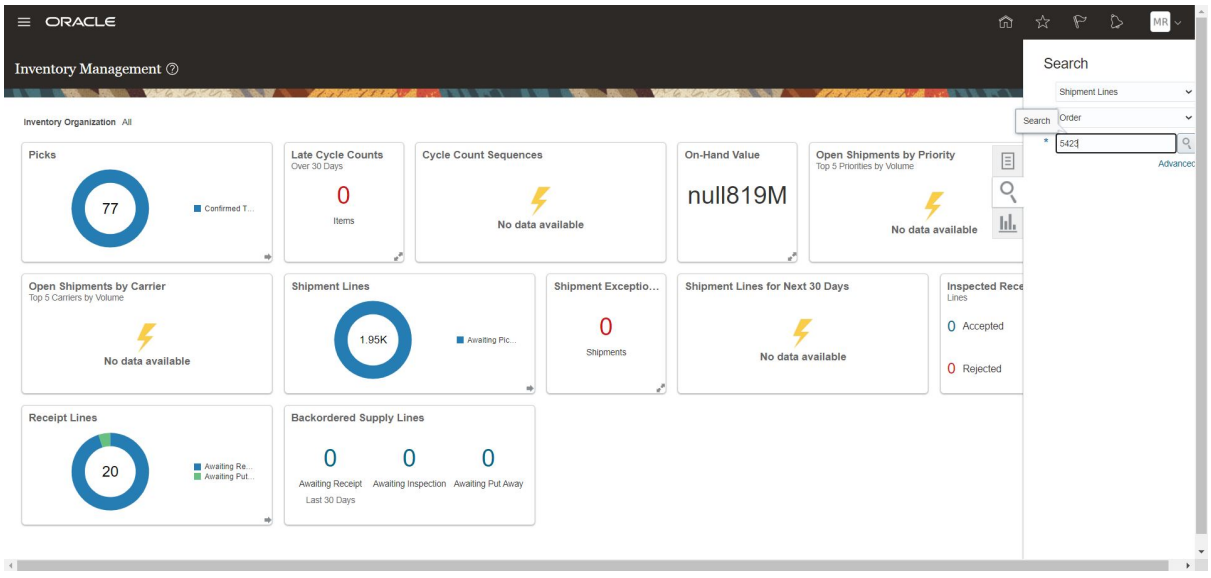


Figure 6.5: Searching Order with Order ID

Step-1 Search with Order number to be shipped

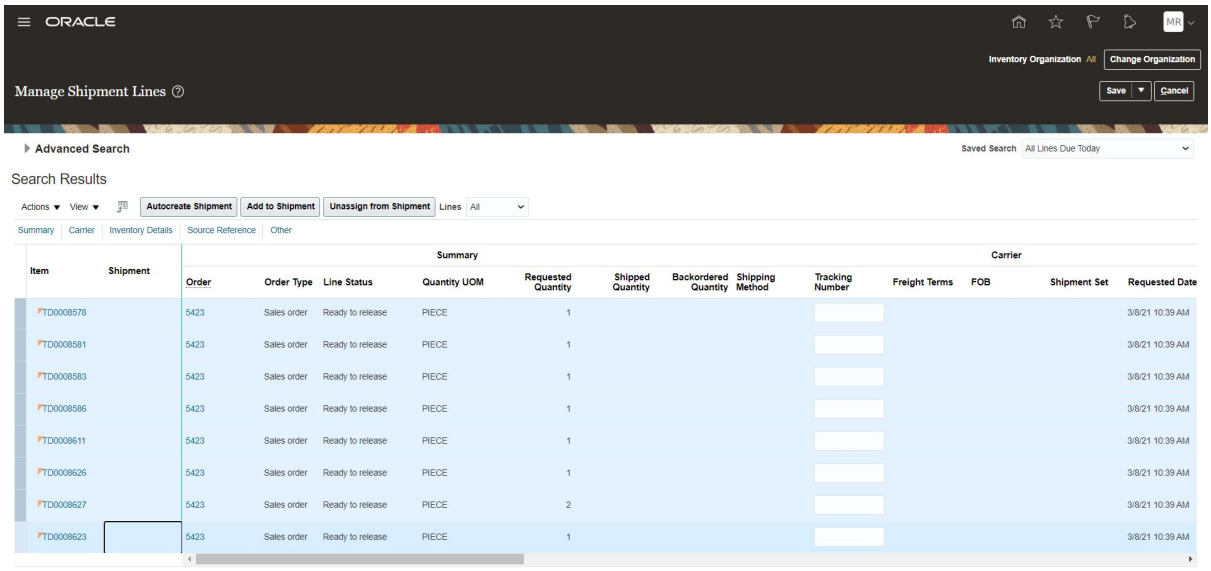


Figure 6.6: Assigning Shipment Number

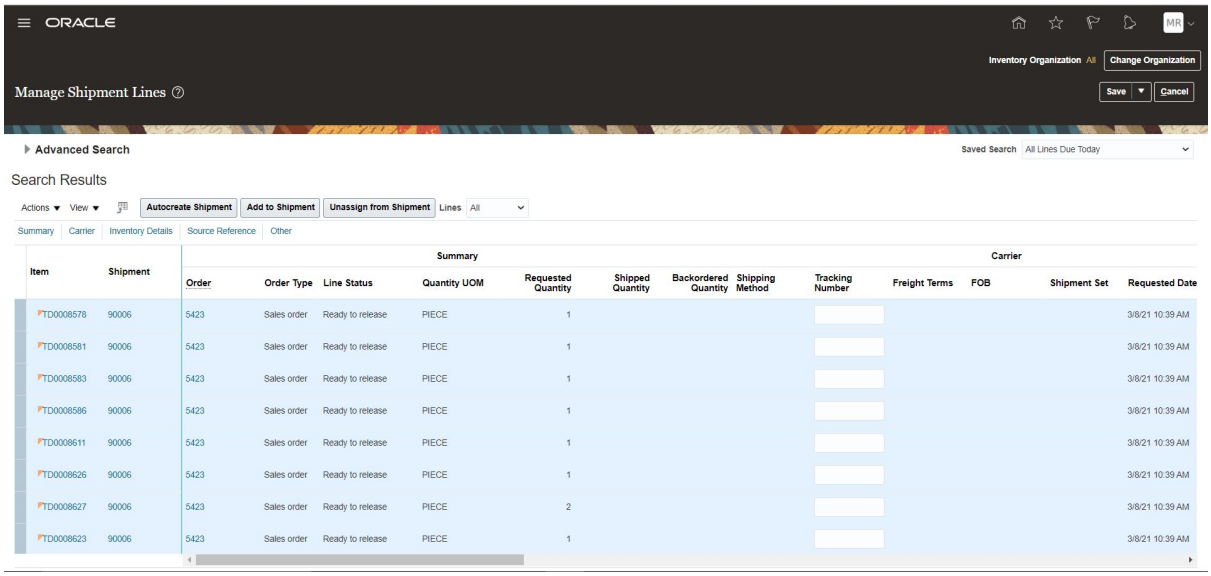


Figure 6.7: Assigned Shipment Number

Step-2 Create a shipment number from “Auto create Shipment”

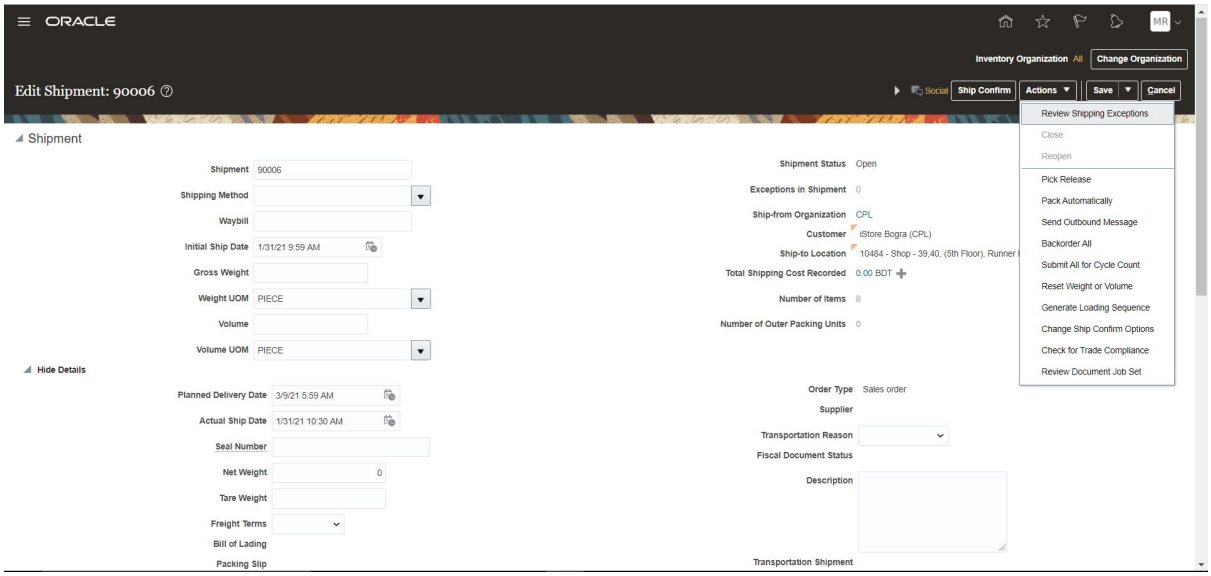


Figure 6.8: Release Pick slip

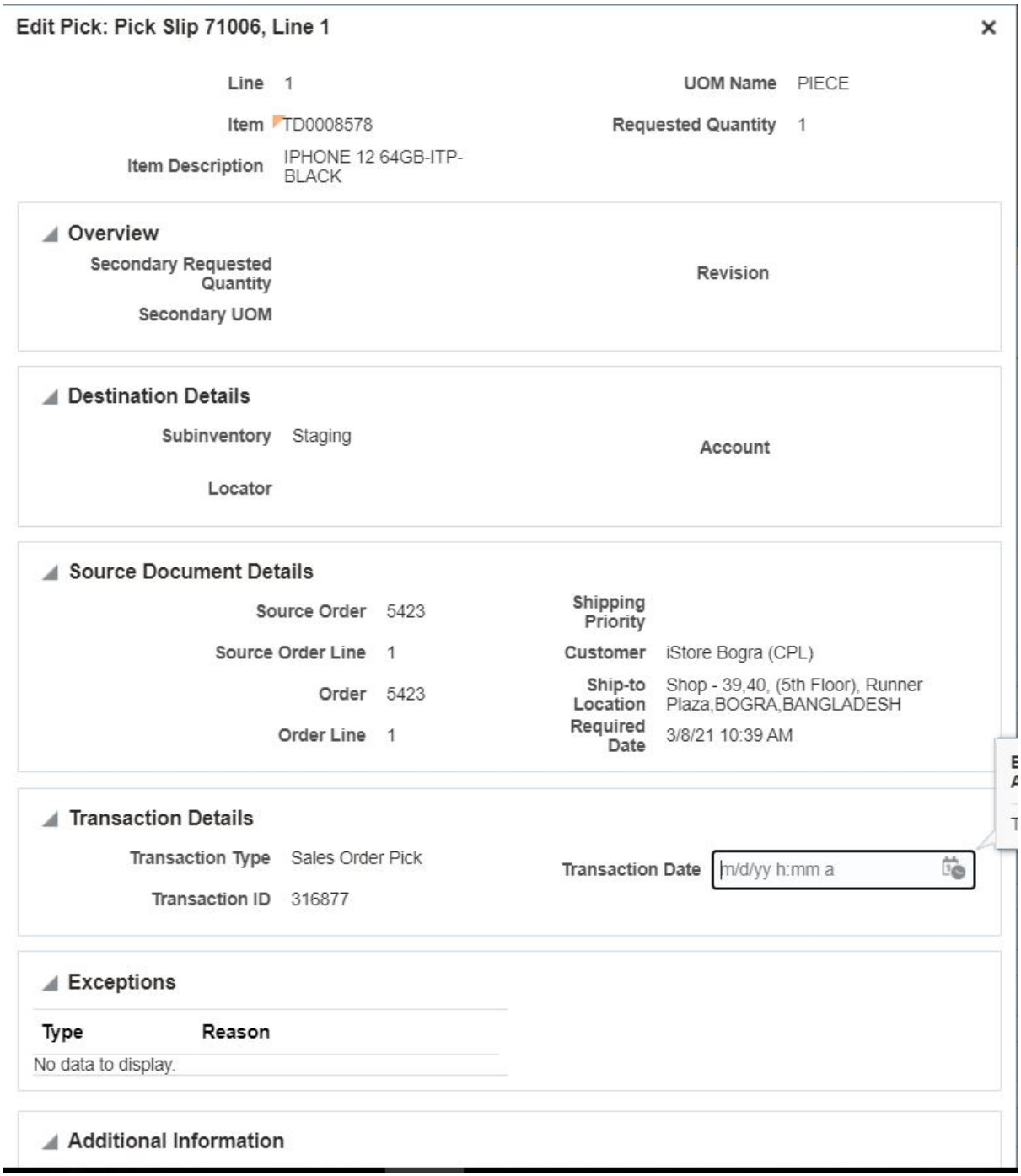


Figure 6.9: Putting the Transaction Date

Step-3 Click on shipment number to assign actual ship date and transaction date

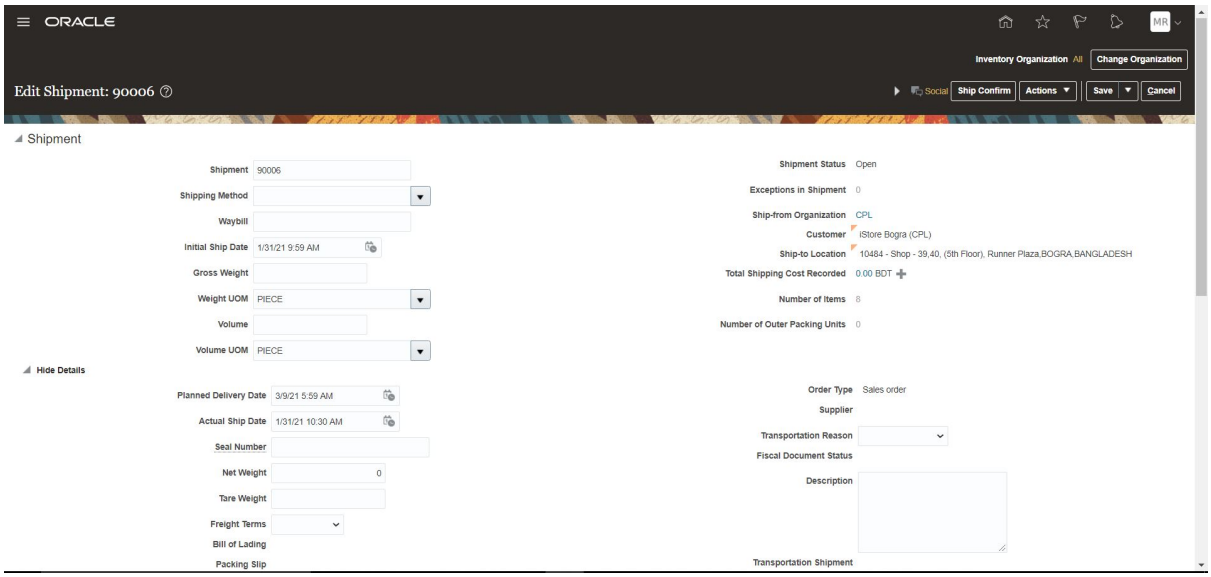


Figure 6.10: Confirming The Shipment

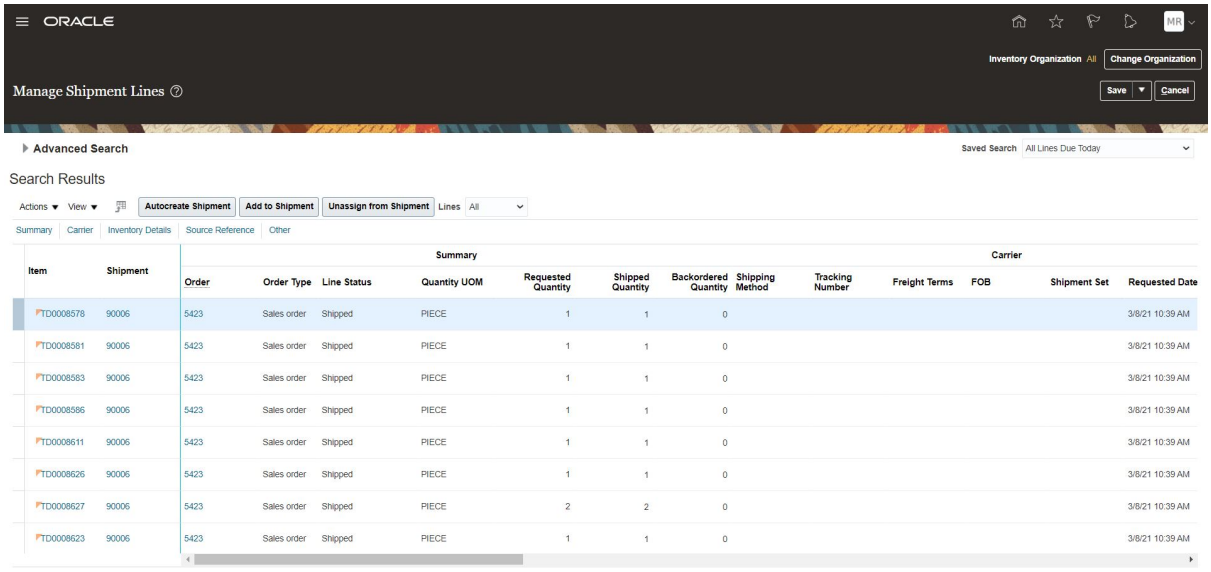


Figure 6.11: Completed Shipment

Step-4 Confirming the shipment by clicking on “Ship Confirm”

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

We need to know what is mean by sustainability of the project. It is the ability to maintain and update the system timely. All the software and website need to be maintained and updated.The advantage of oracle fusion ERP is that it is under observation all the time by the vendor and fixes all the bugs immediately when found or complained. The team keeps analyzing the process how to make it easier and convenient to the user and how the time can be saved here rather doing the same task on their previous platform [4].

Moreover the software will be maintained and supported by a NTS team. It will be updated twice in a year according to the requirements of the customer's needs and all the bugs and problems are regularly updated.

7.2 Social and Environmental Effects and Analysis

Social Effects

The main goal of the website was to bring up all the business unit of the company under one website so that the employee could get and process all the information even from home during the pandemic rather than personally visiting the site. It allows the employee to show daily production, manufacture, orders and the delivery. It will become just a matter of few clicks of the mouse button. I short the platform made the task easier

for the employee and the stakeholders can look over the financial and sales report from here [5].

Environmental Effects

It's a high time when the system can plays its best role in the global pandemic of covid-19. The employees can stay at home and continue their job in the system. Only the labors need to be present at the factory to make the production and delivery in real life. The office works can be done here easily. They will find all the information within the comfort of their homes rather than going out in this pandemic [6].

7.3 Addressing Ethics and Ethical Issues

In the world of smartphones with so much data collection, hacking, cyber-crime, etc. There are some unspoken rules and ethics guidelines that need to be followed when working on creating and releasing an website. The developers made sure there was no breach of conduct and all the points were taken into serious consideration. Some of them are as follows:

Data Storage: All the data are store in the Oracle cloud. So there is a less risk of data loss due to system failure or disaster.

Data Security: Data in the cloud are secured rather than the data's in on premises. There is a less chance to get hacked. A master account is provided to the company to manage other account and give access to the server.

Data Storage Security: Only the lead developer has access to the backend server and database. Since they are hosted in the cloud and can only be accessed via the lead developer's login credentials; the data stored can be deemed safe and secure.

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

It was tough for me to do six days office from 9:00 AM to 6:00 PM while continuing three other courses. I always tried to give my 100 percent during my internship periods. Collecting the data from the different factories about the sales report, delivery report, production report, inventory issues were a huge trouble for our team. As there were a lot of correction in the data according to the data prodided by the accounts and finance team. It always needed to be two way communication between our ERP in the Gulshan head office and the NTS team (Vendor) in Chittagong to clear all the deadlines set by the top authorities of the company. But there were some communication gap which causes a big trouble to our team to cope up with the deadlines.

8.2 Solution of those Problems

During my internship period I have gained new knowledges, skills, and met so many new people. I got insights into professional practice and its relative and required skill set. The internship was also good to find out what my strengths and weaknesses are. I learned about Data Analysis, BI Report, BI development, Structures of data etc. Now I know how can make a project successful and what are the requirements. Since, I worked with a ERP team in Union Group which is a combination of IT, Sales executive, Factory Admin, Developer therefore I have gathered a vast knowledge how to work with the team in a Group of company and how to communicate with other team members doing the project work together with time limitations. The most interesting part that I enjoyed and loved to do is meeting with the top authorities of the company and gathering requirements. I also learnt how to solve problems and give a solution feedback.

Chapter 9

Future Work & Conclusion

9.1 Future Works

As the project is still evolving, the company plans on adding a lot more features and modules to the website to make it even more helpful for the employee to work on and to make it look more appealing. Moreover in every year there will be two updates of the software according to the company needs and requirements.

9.2 Conclusion

It was a wonderful experience working with ERP family in Union Group as an intern. During the internship period, I have learned and applied a great deal. I was introduced to new cutting-edge technologies and I was pushed to do even better. I was pushed to adapt to changes rapidly and come up with logical solutions. I have used all my knowledges on analyzing the data. During my project, I cooperated with my mentors and seniors to solve the challenges faced. Despite their workload, my supervisors were always there to answer any queries and help me settle nicely. They had took me with them in different factory visits “Variants”, “HP Chemical Factory”, “Samree”. This internship opportunity has paved the way to investigate the Company Business Management. I would like to appreciate once again everyone who has made my life as an intern such a great experience. I had learnt to work in pressure and fulfill under the deadline.

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