PLANNING MANAGEMENT AND INVENTORY SYSTEM WITH PREDICTIVE ANALYTICS FOR TECHNOPROBE ASIA PTE LTD (PHIL. BRANCH)

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Abstract: The purpose of this study is to create a framework in a new company with limited manpower and increased customer's order planning front to end process is not an easy task, given the fact that the planner needs to account everything before they can commit the delivery date to the customer. The aim of this paper is to help the planner to controls and oversees the exact process of the customer order and account inventory before and after starting the order. This program is designed to control and oversee productions work in process and set priorities depends on customer urgency.

Keywords: Planning Management; Predictive Analytics; Inventory System;

I. INTRODUCTION

A captive portal is a web page accessed with a web browser that is displayed to newly connected users of a Wi-Fi network before they are granted broader access to network resources. Captive portals are commonly used to present a landing or log-in page which may require authentication, acceptance of an end-user Wi-Fi notice agreement, acceptable use policy, survey completion, or other valid credentials that both the host and user agree to adhere by. Captive portals are used for a broad range of mobile and pedestrian broadband services - including cable and commercially provided Wi-Fi hotspots.

II. BACKGROUND

Technoprobe Asia Pte. Ltd. (Phil. Branch) is a manufacturing and service provider for vertical and cantilever probe cards it caters testing semiconductor companies, established on January 19, 2010 with a mother company in Singapore and head quarter in Italy, since Technoprobe is engaged with repairs and rebuild of probe cards it only have short plan goals to meet customers demand based on cycle time agreed by both parties.

This program is designed to control and oversee production work in process and escalates urgent cards that needed attention and keeping direct material in stock to provide continues production process. This program will ease the time for the planner and its staff to check the production for a specific card.

A. OBJECTIVE OF THE STUDY

The planner serves as the kernel of the company, their main objective is to handle vital information produced by the production, gives command to quality assurance, controls inventory flow and disseminate details for every inquiries received from the client and higher management, there is no system created for the planner, their job accomplished by conventional way, they conduct a floor walk to the production area to validate processes for them to furnish a necessarily reports for the management and to supply updated feedback for client's inquiry.

The main purpose of this study is to help the planner control and oversee what was in the productions work in process and set priorities based on committed delivery schedule to the customer. Specifically, the study endeavors to answer the following:

- To design a Planning module for incoming probe cards and incorporate to the existing system.
- To provide a real time tracker for raw materials and supplies required in assembling probe cards.
- To create a browser-based application module that will control and oversee production work in process.
- To include inventory module in the browser application that can help forecast delivery commitment to customer.
- To include Predictive Analysis in the system.
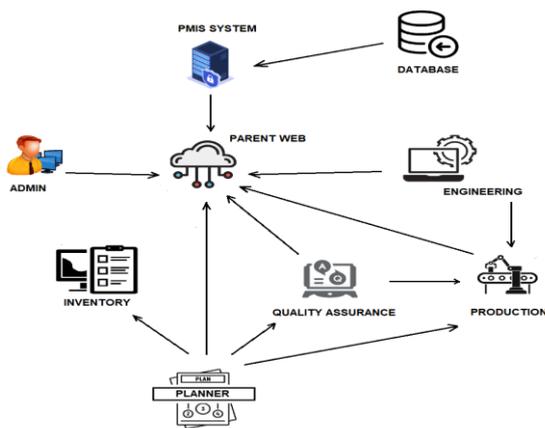
III. DESIGN OF THE STUDY

Figure 1: System Architecture

Figure 1 shows the system architecture of the system. the admin has full control of our parent web while the planner has access and oversees the different processes and departments of the company through their accounts and has access to various information like estimated time of production completion, shipping, real time inventory, client orders and convenient details the planner needs.
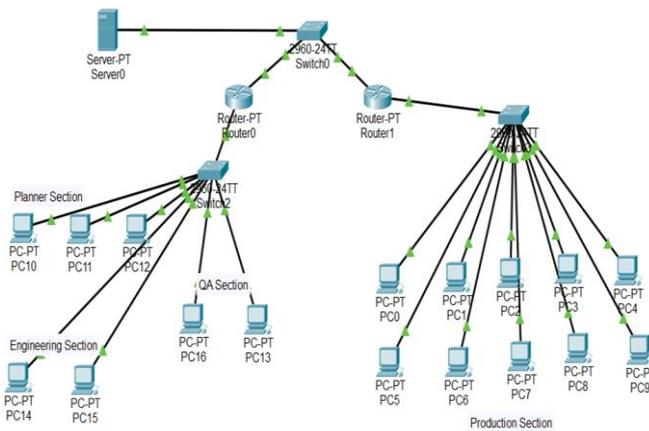

Figure 2: Hardware Interface

Figure 2 above shows the network connectivity of each devices. There is only one server that caters all the system and 2 routers to reach some of the computer to be use for our project. There are currently 7 personal computers that will be using router 0 and 10 personal computer on our router 1.
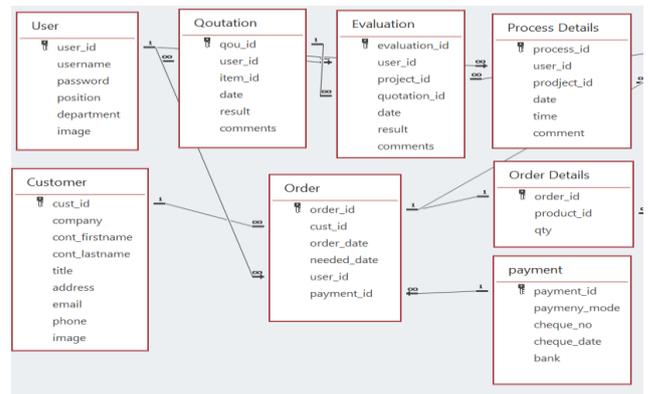

Figure 3: Database Schema

Figure 3 shows the database design of the proposed system. The researchers come up with a cloud based storage for the generation of voucher code for less cost with higher and enhanced storage functionality of the system
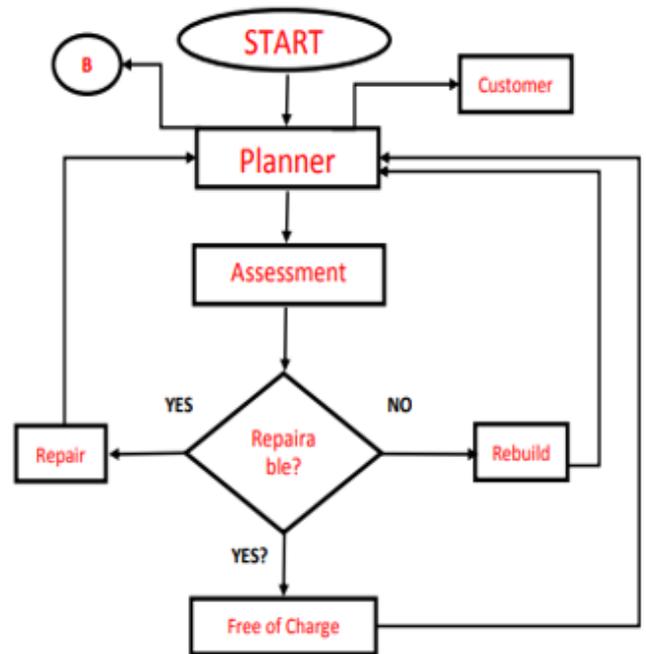
A. FLOWCHART

Figure 4: Planning Incoming Probe Card Module

Figure 4 shows the customer's probe card to the planner, the planner sends the probe card to quality assurance for evaluation, and the assessed probe card is returned to the planner with the outcome. While waiting for the purchase order, the planner sends the probe card to the engineering department for safekeeping.
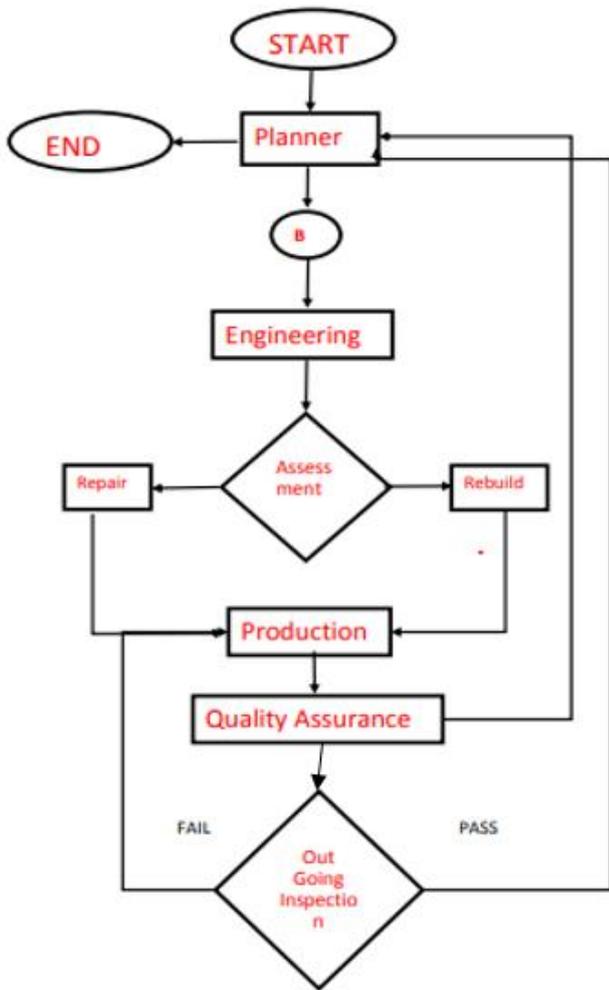
Figure 5: Planning Management Module

Figure 5 show the planner sends the probe card to the engineering department for safekeeping while waiting for the purchase order; after the purchase order arrives, engineering workers assign the probe card to its project ID and send it to production. Based on the results of the probe card, it will be sent to production. After the probe card has been completed, it will be delivered to quality assurance for OGI. To check for flaws, quality assurance will run the probe card through the PRVX machine. If there are any problems, it will be returned to production; if there are none, it will be sent to the planning and logistics department.
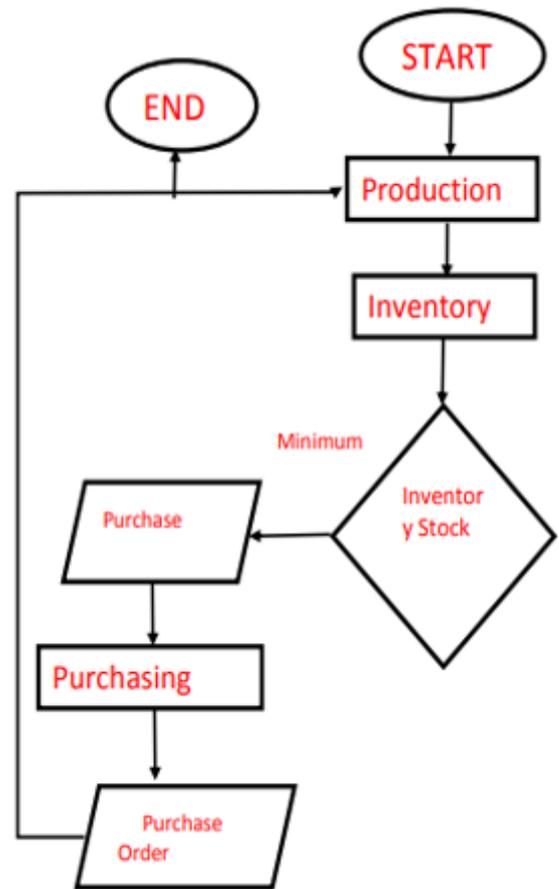

Figure 6: Material Inventory Module

Figure 6 shows the production is in charge of raw material inventories and withdrawal if an order is placed. Every month, production employees conduct a physical inventory and make purchase requests to purchasing if stock falls below the maintenance level. When the materials arrive, the purchaser writes a purchase order based on the PR from production and forwards the stock to production. The purchaser also updates the system after the order has been received.

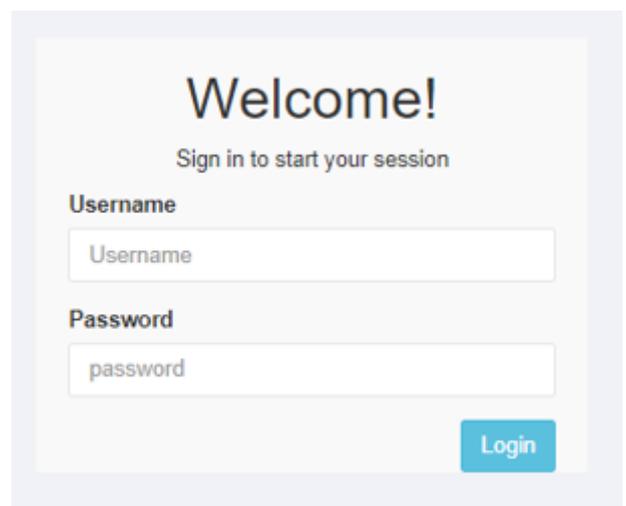## IV.   RESULTS AND DISCUSSION

Figure 7: Log-in page

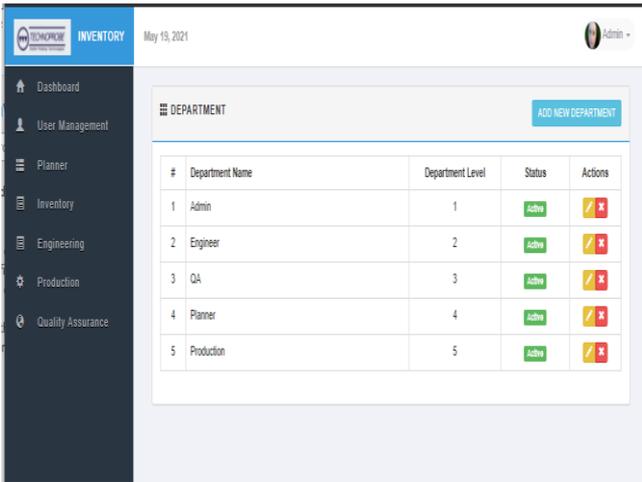Figure 7 shows actual screenshot of the system login page to verify the user level.

Figure 8: Registration

Figure 8 shows every employee who intends to use the system that involves the replication of probe cards must request a credential login from the administrator or the corporate IT. To give constraints, each account was created expressly for the department to which the employee was assigned.
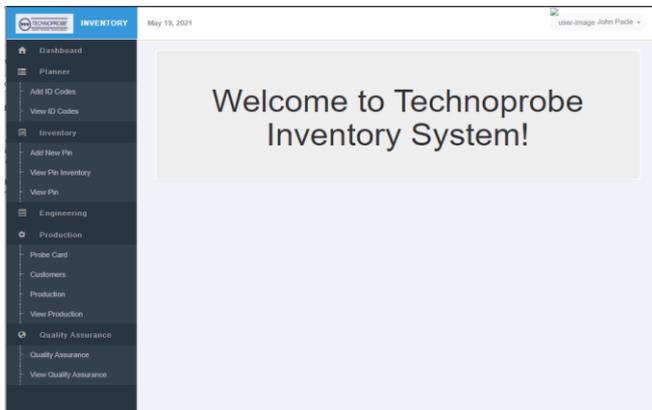

Figure 9: Planner Access control window

Figure 9 shows the planner window, which has complete control over all of the system's functions, has a dashboard to browse all of its controls.
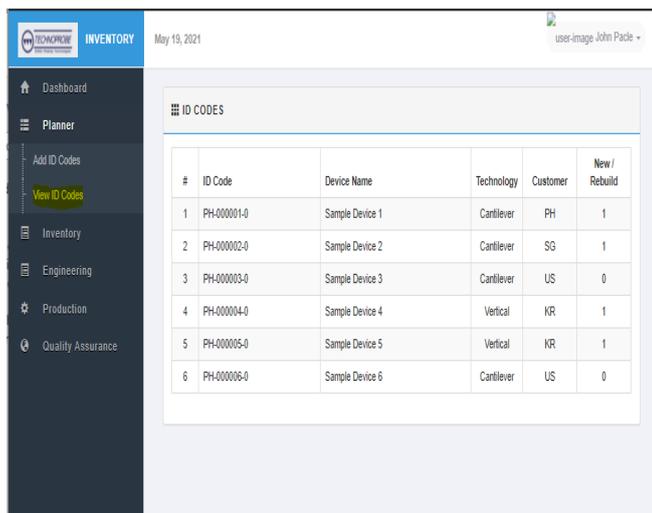

Figure 10: Planner ID codes Archive

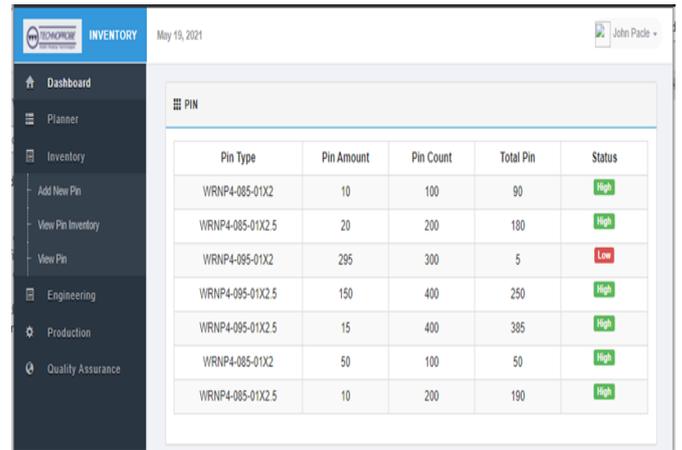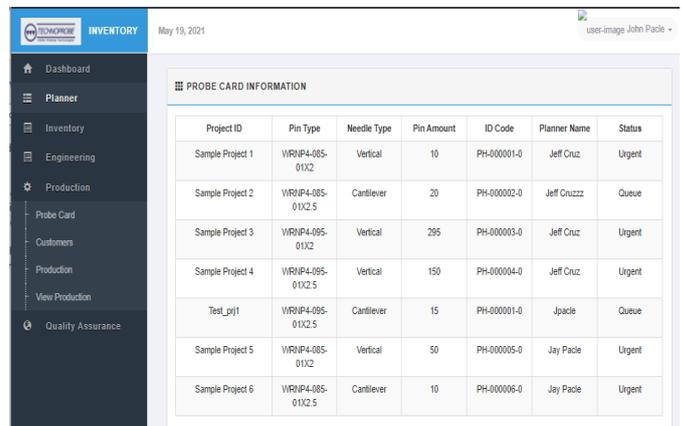Figure 10 shows all of the ID codes that assigned to every projects.

Figure 11: Planner Inventory Control

Figure 11 shows each card has a varied specification based on the model, and each model has a different set of pins. Every probe cards assembly requires pins, and this window assists the planner in anticipating shipments in

probe cards assembly.

Figure 12: Planner Control in Production Processes

Figure 12 shows how a planner can anticipate all running probe cards within the system/company, from adding new customers to production operations, and how a planner can also handle cards. Next to admin, it has the most power in the system.
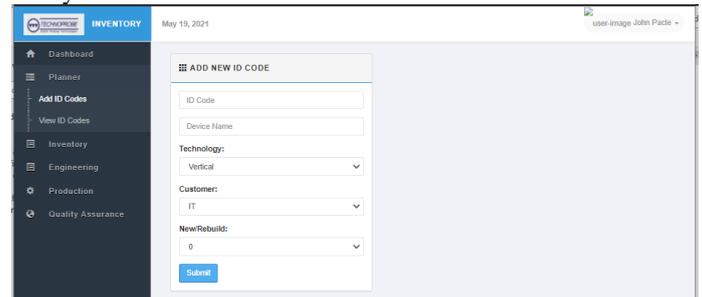

Figure 13: Probe Card registration

Figure 13 shows the beginning process of every probe cards, the planner is going to register them first, it has an order type field to know whether the cards are new order, rebuild, re-order, repair or (FOC) free of charge and also a status type line to identify if it is in normal process or urgent process, a technology line to what suits best for the category of the probe card.
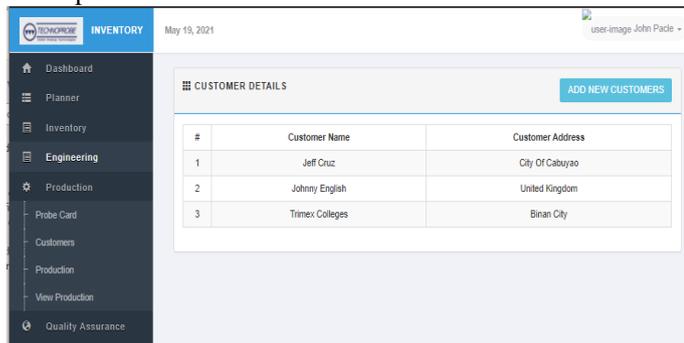

Figure 14: Customer Details

Figure 14 shows the customer details information log, every probe cards that has been received from specific customer are need to be logged, for Technoprobe's archive purposes.
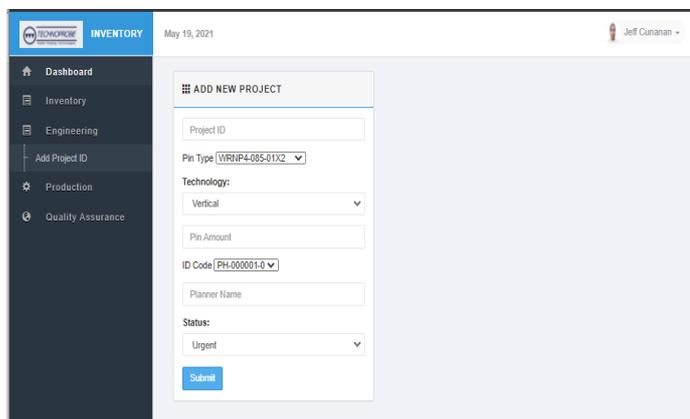

Figure 15: Engineering Module

Figure 15 shows the capability of an engineer to assign a Project ID before every processes proceeds to production floor; this is the key ID to locate in the system.
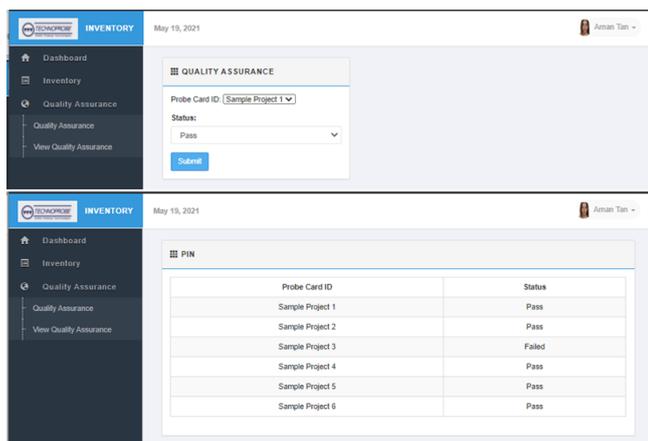

Figure 16: Quality Assurance Module

Figure 16 shows the quality assurance module, this is to ensure the quality of each card following a series of physical

and technological inspections by QA personnel, who will stamp each Project ID as PASS or FAIL. Everything will be archived, and those who passed will be provided to the customer, while those who failed will be sent back to the planner for re-assessment. The process will then be repeated in its entirety.

A. SUMMARY OF SOFTWARE EVALUATION OVERALL MEAN SCORE

Table 1- Summary of Software Evaluation Overall Mean Score

Criterion	Mean	Interpretation
A. Functionality	3.92	Acceptable
B. Reliability	3.55	Neutral
C. Usability	3.73	Acceptable
D. Efficiency	3.69	Acceptable
E. Maintainability	3.70	Acceptable
OVERALL MEAN	**3.71**	**Acceptable**

Table 1 indicates that the outcome of the test points out that the highest average is that the system's parameters are versatile due to the fact that even the admin can access it anywhere, while the performance criteria have a drop off average. In general, the software yielded a total weighted mean of approximately 3.71 from the respondents. Among 25 respondents, more than 20 respondents agreed about the system which fall on the acceptable in the Likert scale. Conclusions

BASED ON THE AIMS OF THE STUDY AND THE RESULTS OF THE EVALUATION THE FOLLOWING CONCLUSIONS WERE DRAWN;

1. By creating the probe cards incoming **MODULE,** it is now more easily for the planner to execute its job and allow them to navigate from process to process, the planner has now more control over every process, they can now see which team are getting hard time processing and which part of the process are causing delays, it shows also the time in motion of cards from the time and date it was entered to the system and create assessment to what time and date it supposed to have an output.

2. The web-based browser really helps almost every company especially if they had an onshore counterpart, the real time tracker will greatly an advancement to their process. Problems encountered during processes are common and sometimes can't be avoided, short comings and out of stocks are usual problems in production, it such a great help for the company to those issue are can now be predicted for them to prepare necessary actions and lessen production loss and save time. Web-based application is tending to be less maintenance especially in archiving documents. The faster the internet you had the better service you may cater. Administrator can generate and validate the voucher of the user using the system

3. For the company that relied their business generally in the number of produced products to generate profit, it is an advantage for them to have a reliable inventory system. Having a reliable inventory system will greatly

help the management to commit to customer's deliverables and also forecast its own resources.

4.   Inventory is much more useful if you can use its maximum capabilities such as analytics, predictive analysis can provide the company an edge, on today's era business related to deliveries are one of the most in demand, if your system can forecast its own and inform its owner what actions needed to maintain the stock balance of inventory this can help the business to cater more customer at a specific time according to the capacity volume of your resources.

V.   ACKNOWLEDGMENT

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VI.   REFERENCES

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