Design of administrative management information systems delivery of production results to buyers at PT catingan timber celebes

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ABSTRACT

PT.KTC is an industry engaged in plywood processing. The company still uses the Microsoft Excel number processing program to input shipping data, which causes several problems. This research aims to identify sub-systems related to the administrative management information system for sending goods to buyers and to design an administrative management information system for delivering production results as an evaluation and monitoring tool. The design of the information system for delivering production results uses a prototype approach which focuses on presenting input and output forms through the conceptual system design stage in the management information system. The results of this research show that there are five inputs and four outputs based on determining the objective system set in the production delivery information system which is a monitoring tool in the delivery process. The results of the management information system design model obtained are (1) using Website-based software, (2) All data from related sections can be accessed by admins who need reports related to the delivery of production results, (3) Inputting data using SIM can save time, (4) Data and documents will be saved on the website after inputting, making it easier for users to search for past documents, (5) Difficult to implement because employees need to adapt to the software, (6) Requires data input time of around 15 minutes, (7) The process of processing one data requires archive documents from related sections around 15 minutes, (8) No possibility of data loss.

Keywords: Management Information System, Delivery of Production Results, Set System Objective, Prototype.

1. INTRODUCTION

Information technology has become the main facilitator for business activities, both in manufacturing companies and service companies (Kunath & Winkler, 2019; Liew, 2019; Tummers et al., 2019). Manufacturing companies are companies that carry out production activities from raw materials to finished goods that can be used by consumers. To support activities in manufacturing companies, fast, accurate and efficient data and information are needed so that decisions can be made, as well as the process of sending goods to buyers. In order for the goods delivery process to run well, a system is needed that can regulate goods delivery activities based on buyers' requests according to orders and according to a predetermined schedule.

The development of information systems throughout the world has made human life easier. Especially since the creation of the internet, communication has become increasingly unlimited and without barriers, whether geographical barriers or time barriers. We can communicate with family/friends/business colleagues in various parts of the world directly via the internet network. The benefits of developing this information system are very beneficial for many parties, especially companies or business sectors (Gebre-Mariam & Bygstad, 2019; Ito et al., 2019; Martins et al., 2019). So now many companies use information systems to support their company activities (Rozental & White, 2019; J. Xu et al., 2019). Because information systems themselves can make it easier to manage company activities, especially web-based information systems (Cai et al., 2019; Muczyński et al., 2019; Stvilia et al., 2019; C. Xu et al., 2019).

For manufacturing companies with a fairly large scale of demand, using a manual delivery information system no longer meets the requirements of being fast, accurate and efficient (Ahmadi et

al., 2019). Various problems arise, such as unclear stock of goods in the warehouse to be sent, data access is difficult, there is no goods delivery monitoring system, staff find it difficult to obtain delivery information, uncertain transportation management, and delivery delays.

PT. Katingan Timber Celebes (PT. KTC) is a company engaged in the plywood processing industry with product sales exported to several countries such as Japan, Germany and several other countries. With so many products that have to be sent to buyers, there is also a lot of data and information that has to be processed quickly and accurately. The shipping information system used at PT.KTC still uses Microsoft Excel to input shipping information data, which causes various kinds of problems.

Several problems that occur continuously at PT. KTC is (1) compiling information on delivery and product demand from consumers, (2) analysis of operations that is still not accurate, (3) determining the delivery of production results is still not consistently scheduled, (4) data collection on delivery of production results has not been maximally recapitulated, (5) routine reports are still made manually, (6) product stock and transportation availability data often experience errors, (6) decisions on production results for distribution are still made manually.

Based on the problems that occurred at PT. KTC, researchers aim to build an appropriate information system to ensure that the system being built is effective and efficient by identifying sub-systems related to the administrative management information system for sending goods to buyers as well as designing a delivery strategy for production results as an evaluation and monitoring tool. What is new in this research is the use of management information system design analysis methods which are still very rarely used in manufacturing companies.

2. METHOD

The subjects in this research were (1) Production Manager, (2) Sales Manager, (3) Warehouse Manager, (4) Personnel Manager, (5) Supplier Manager, and (6) HR Manager. Meanwhile, the object of this research is the administrative management information system for sending production results to buyers.

Data Processing Methods

Data processing method is carried out after the data has been collected through the data collection stage. The primary data and secondary data that have been collected are then processed using various methods, the first is identifying users using observation and interview methods, to find out the conceptual system design and define the problem, then designing a prototype using the Information System Design Analysis (APSI) method to find out the system set objective and establish system constraints, then determine whether the prototype is acceptable or not to find out information needs. The last is to use the prototype to obtain or determine accurate sources of information.

3. RESULTS AND DISCUSSION

Information system design is the development of a new system from an existing old system, where the problems that occur in the old system are expected to have been resolved in the new system. Information system design consists of several stages, namely strategic project planning, conceptual system design and detail design.

3.1 Strategic / Project Planning SIM

Project Planning is used to describe the basic design objectives, in this case the design of the business to be carried out, the design objectives, and the determination of the main activities to be carried out.

3.2 Management Information System Design Objectives

Designing a management information system as a basis for providing information regarding problems that exist in the production delivery process, such as information on production product identity data, product demand and delivery, product stock, and transportation availability data.

3.3 Determination of Main Activities/Time

Table 1. Schedule of Activities

No	Activities	Week			
		1	2	3	4
1	Compilation of the necessary information	√			
2	Operational analysis of the selected design		√		
3	Defining sub systems			√	
4	Develop database			√	
5	Recognize system constraints			√	
6	Designing a SIM				√

3.4 *Conceptual System Design*

Conceptual System Design consists of several stages, namely Define the Problem, Set System Objective, Establish System Constrains, Information Need, determine Information Sources and Reporting.

3.4.1 Define the Problem

How can information on identity data on production results, product demand and delivery, product stock, and transportation availability data be available... So that decisions can be made regarding the delivery of production results in accordance with existing machine problems. Objective: Speed up decision making in sending production results with the criteria, (a) Product sent, (b) Reschedule. Next Determine the personal activities of the operations implementer with stages (1) Designing a production product delivery information system, (2) Identifying a production product delivery information system, (3) Receiving routine reports, (4) Scheduling and recording production product delivery, (5) Recording information requests and deliveries, product stock and transportation availability data, (6) Editing delivery information data, (7) Making decisions regarding delivery of production results.

3.4.2 Set System Objective

There are five criteria in the administrative management information system for sending production results to make decisions, namely, (1) Production identity data, production identity data relating to production results such as production type, product size and product type. This data is input by the warehouse admin which is the lower level in the management information system level, (2) Initial inventory data, initial inventory data relates to initial product data in the warehouse section before the product enters from the production section (finished goods warehouse). This data is input by the warehouse admin which is the lower level in the management information system level. (3) Incoming inventory data, incoming inventory data relates to production data that enters the warehouse from the production section. These data are input by the warehouse admin which is the lower level in the management information system level, (4) Outgoing inventory data, data Outgoing inventory relates to product data that has been sent, whether exported or sent locally. This data is input by the warehouse admin which is the lower level in the management information system level, (5) Final inventory data, final inventory data relates to data on remaining stock of production results in the finished goods warehouse after delivery to the buyer. This data is input by the warehouse admin which is the lower level in the management information system level.

3.4.3 Design Details

At the detailed design stage, the information that has been obtained from the business design stages and the system design stages is then designed into the system that will be created. The stages in detailed design are determining the initial system conditions, identifying users, describing the system

flow (use case diagram, activity diagram and general flow system) and describing the input and output forms.

3.4.4 Initial System Conditions

An overview of the initial system conditions is needed to determine whether the information system design that will be created will be better than the previous system. The following is the initial system condition at the PT company. Katingan Timber Celebes is in accordance with the integrated pattern of production delivery systems. the process of delivering production results starting from Marketing, warehouse, PPIC and production. Marketing receives the buyer's request then conveys it to the warehouse section which is tasked with preparing the shipping plan. After preparing the shipping plan, it is continued by the PPIC section which prepares the production plan and then becomes a reference for the production section to carry out the production process according to the buyer's request. After the production process is carried out, the product will be taken to the finished goods warehouse to be stored temporarily and wait to be sent. . If the stock of finished goods matches the demand, marketing will determine the transportation for the product. If transportation is available, the warehouse department will make decisions regarding the delivery of production results.

3.4.5 General Sistem Flow

After determining the number user, the next step is to explain the system flow, where in system design the main thing is to determine the source of information, then the information obtained in the form of data is processed into a database system to produce data output resulting from decisions regarding the state of the machine.

3.4.6 Form Input dan Output

3.4.6.1 Form Input Login

The following is an illustration of the login input where the user is an employee and head of the finished goods warehouse (warehouse). This login input form has a username and password display, the user will be free to choose their own password.

Table 2. Form Input For Login

Form Input Login		
NO	**Username**	**Password**
1	Andi_Arninah	04Feb1995
2	Ilyas	00005555
3	Ramlah	1112131415
4	Mytha	Des022017

Figure 1. Form Login SIM Delivery of Production Results to Buyer

Figure 2. Admin Panel View

3.4.6.2 Input Form Data on the identity of the product being sent

The product identity data form contains data in the form of thickness, width, length, type, grade, contents/crates. The following is the product identity data input form that is sent

Table 3. Form to input data on the identity of the product being sent

Thick(mm)	Wide (mm)	Long (mm)	*Type*	*Grade*	*Isi/crats*
2.40	920	1.830	T2F ☆☆☆	G1PS	250

Makassar,.....2023
Admin *warehouse*

(Ramlah)

Figure 3. Submitted Identity Data Form

Figure 4. Initial Stock Data Input Form

3.4.6.3 Initial Inventory Data Input Form

The initial inventory data form contains product data/pcs, size (M3), initial number of products. The following is the initial stock data input form:

Table 4. Form Input Data Stok Awal

First Stock		Quantity/Crats
Pcs	m3	
330	1.33	2

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Admin *Warehouse*
(Ilyas)

Figure 5. Initial Inventory Data Form

Figure 6. Initial Stock Data Input Form

3.4.6.4 Form Input Data Inventory (in)

The inventory input form (in) contains data on incoming products/day (today), product size (M3), products received (ACC), product size (M3) and the amount of incoming inventory. The following is the inventory data input form:

Table 5. Form Input Inventory In

In				
Today/pcs	m3	ACC	m3	Quantity/Crats
1980	8,0005	2,640	10,67	8

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Admin *Warehouse*
(Ramlah)

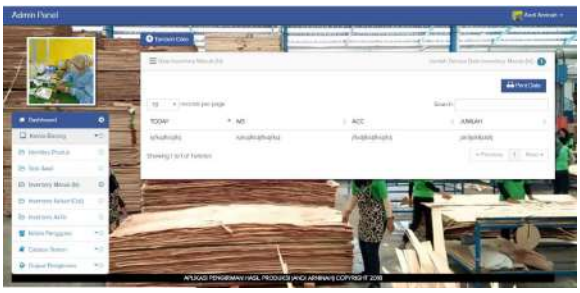

Figure 7. Form Input Inventory In

Figure 8. Form Input Stock Inventory In

3.4.6.5 Form Input Data Inventory (Out)

The Inventory (Out) data input form contains data on export products and local products. Exported products and locally marketed products contain data on the number of requests/day (Today), size (m3), products issued (ACC), product size (m3) and number of products issued. The following is the Inventory out input form.

Table 6.Form Input Inventory (Out)

Out								Quantity/crats
Eksport				Local				
Today/pcs	m3	Acc	m3	Today	m3	Acc	m3	
1000	4.04	1000	4.04	-	-	-	-	4

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Admin *Warehouse*
(Ilyas)

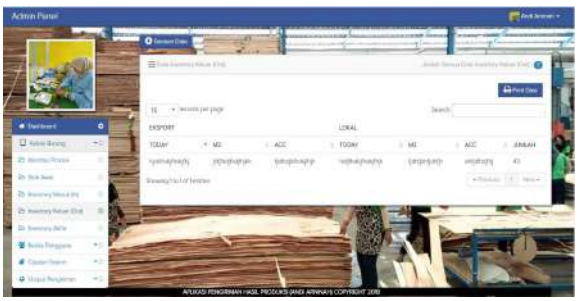

Figure 9. Form Input Inventory Out

Figure 10. Form Input Stock Inventory Out

3.4.6.6 Final Inventory Form

Final Inventory input form, contains remaining product data (SC) in the form of remaining stock/day (today), remaining product size (m3), product meets standards (Acc), product size (m3), total crates, final total pcs. The following is the final inventory input form.

Table 7. Form Input Final Inventory

SC				Ttl crats ((crats First+crats In)- crats Out))	Pcs Final=Today/pcs	m3
Today ((pcs First+pcs In)- Pcs out))	m3 ((m3 First +m3 In)-m3 out)	ACC= Today/pcs	m3			
1310	5.29	1310	5.29	1310	6	5.29

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Admin *Warehouse*
(Ramlah)

Figure 11. Form Input Final Inventory

Figure 12. Form Input Final Inventory Stock

3.4.6.7 Production Results Delivery Output Form

The output form contains data relating to the finished goods warehouse and documents. The data is in the form of product size (thickness, width, length, type, grade), contents of crates, initial stock (pcs, m3, quantity), incoming inventory (today, m3, acc, quantity), outgoing inventory (export and local), as well as remaining stock in the finished goods warehouse. The following displays the production delivery output form:

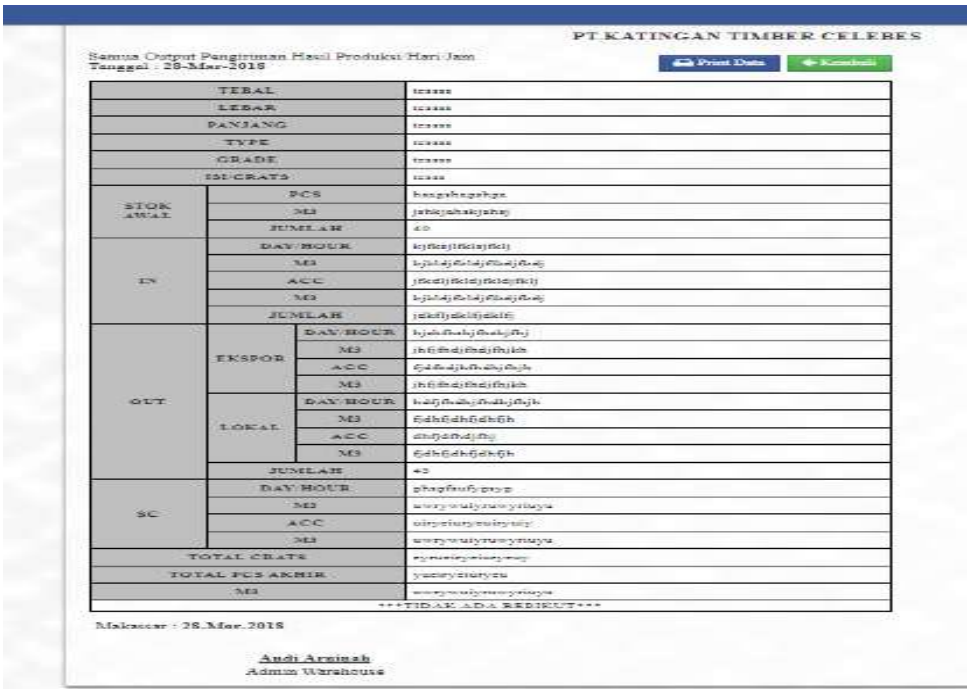
Table 8. Production Results Delivery Output Form/Day/Hour

Thick		2.4
Wide		920
Long		1.83
Type		T2F
Grade		G1PS
Fill/*crats*		250
First Stock	Pcs	330
	m3	1.33
	Quantity	2
In	*Day/hour*	1980
	m3	8,0005

	Acc		*2,640*
	m3		*10,67*
	Quanity		*8*
Out	*Ekspor*	*Day/hour*	1000
		m3	4.04
		Acc	1000
		m3	4.04
	Local	*Day/hour*	-
		m3	-
		Acc	1000
		m3	4.04
	Quantity		4
SC	*Day/hour* ((pcs first+pcs in)-Pcs out))		1310
	m3 ((m3 first +m3 in)-m3 out)		5.29
	Acc (ACC= Today/pcs)		1310
	m3		5.29
Ttl crats ((first crats+crats in)-crats Out))			6
Pcs Final= Today/pcs			1310
m3			5.29

Makassar,.....2023
Admin *Warehouse*

(Ramlah)


PT KATINGAN TIMBER CELEBES

Rincian Output Pengiriman Hasil Produksi Hari Jam
Tanggal : 28-Mar-2018

TEBAL			
LEBAR			
PANJANG			
TYPE			
GRADE			
ISI/CRATS			
STOK AWAL	PCS		
	M3		
	JUMLAH		40
IN	DAY/HOUR		
	M3		
	ACC		
	M3		
	JUMLAH		
OUT	EKSPOR	DAY/HOUR	
		M3	
		ACC	
		M3	
	LOKAL	DAY/HOUR	
		M3	
		ACC	
		M3	
	JUMLAH		40
SC	DAY/HOUR		
	M3		
	ACC		
	M3		
TOTAL CRATS			
TOTAL PCS AKHIR			
M3			

+++TIDAK ADA BERIKUT+++

Makassar : 28.Mar.2018

Andi Arminah
Admin Warehouse

Figure 13. Delivery Output Form/Day

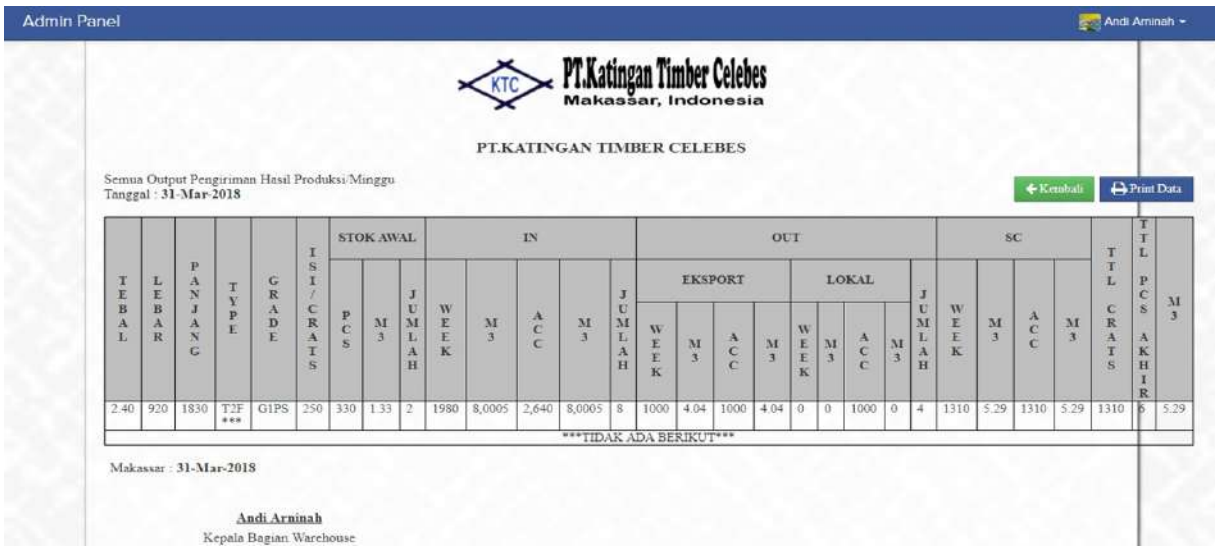


Figure 14. Delivery/Week Output Form

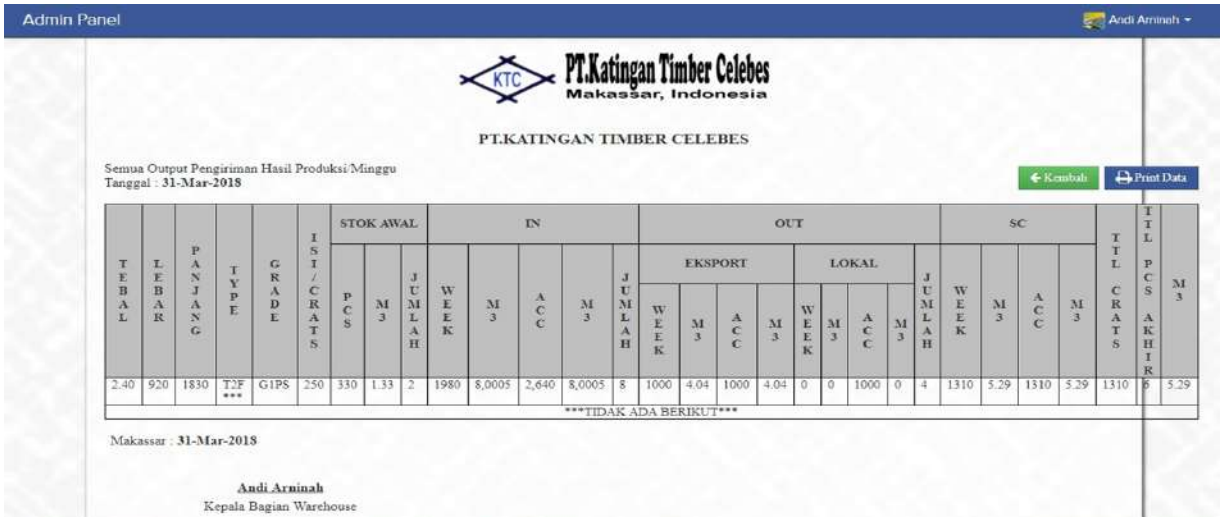


Figure 15. Delivery/Month Output Form

Figure 16. Delivery/Year Output Form

3.4.6.8 Management Information System Model View

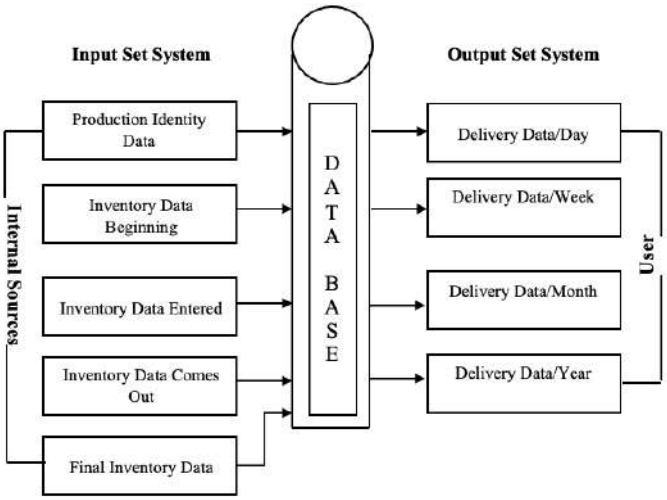


Figure 17. Display of the Production Delivery Management Information System Model

3.4.6.9 Comparison of Initial System Conditions and Production Result Delivery Administration SIM Design

To assist the company in taking decisions regarding the delivery of production results, a SIM design for administration of delivery of production results was carried out at PT Katingan Timber Celebes in terms of initial system conditions. The SIM design aims to make it easier to control and monitor production delivery activities. There are several differences between the initial system conditions and the SIM design in the following table:

Tabel 9. Comparison of Initial System Conditions and SIM Design

Initial System Condition (1)	Driving license design (2)
Still using Microsoft Excel in data input	Using Website-based Software
Difficulty accessing data in each related section (Marketing, Warehouse, PPIC, Section Production)	All data from related sections can be accessed by admins who need reports related to the delivery of production results
Manually inputting data takes a long time	Inputting data using SIM can save time
Storing data in the form of Microsoft Excel files takes a long time to access past data or documents and can have fatal consequences in the form of data loss.	Data and documents will be stored on the website after input, making it easier for users to search for documents past.
Easy to apply because it is commonly used by PT.KTC employees	Difficult to implement because employees need to adapt to the software
Requires data input time of around 30 minutes	Requires data input time of around 15 minutes
The process of processing one piece of data that requires document archives from the relevant department takes around 45 minutes	The process of working on data that requires document archives from related part about 15 minutes
The possibility of losing data in one month is ±3 times	There is no possibility of data loss

4. CONCLUSIONS AND RECOMMENDATIONS

From the results of the design of the management information system for the delivery of production results, it can be concluded that:

1. In the production delivery administration management information system, there are five sub-systems in the system design, namely, product identity data, initial inventory data, incoming inventory data, outgoing inventory data and final inventory data.
2. The production product delivery information system can make it easier for warehouse heads and employees to find out and detect problems that exist in the production product delivery process. Delivery of production results using a system is better than delivery using a manual system. Several things are helped by the implementation of a production delivery administration management information system, namely the availability of routine delivery process data such as demand data, warehouse stock availability data for finished goods and delivery data. This helps companies in collecting data and documentation in the process of servicing requests and delivering production results. Apart from that, the shipping information system is also a tool for monitoring the delivery of production results, namely controlling and monitoring warehouse stock inventory of finished goods from the report output produced by the system.

   The suggestions from researchers for further research are as follows:

1. There needs to be good cooperation and reciprocal relationships between parts of the company so that work can be completed and obtain maximum, accurate and up to date results
2. Uncertainty in information creates obstacles for companies in accessing data related to shipping, so it is necessary to implement a management information system for the delivery of production results.
3. System maintenance and updates must continue to be carried out so that it is in accordance with company policies and developments so that it can function as desired.
4. There is a need to develop a barcode-based information system.

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