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Planning and Implementation Enterprise Resource Planning Module Distribution Management Using the Methods of Distribution Requirement Planning in MSMES UD Adhi Teknik

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ABSTRACT

The integration of computerization in the company allows the groove and access to information in the company can quickly and accurately are reinforced on all fronts. The integration of computerized currently used large companies to compete and develop is enterprise resource planning (ERP). ERP is the integration of all the process of information data on the organization into a system of software and hardware to achieve integration. distribution requirement planning (DRP) is an operating system (production, procurement, atonia material, product distribution) occurs only as a response to the scheduling planning for every operation without taking into account the status of the real-time from the corresponding operation. MSMES of skewer making machine have the name of UD. Adhi teknik of standing since the year 2008 is moving in the field of making the machine as satay. MSMES is located in Terung Kulon, Sidoarjo, East Java. This company does not have a Distribution management system so that the process of distribution of these companies are still experiencing delays and good in the process of production and distribution process company products to customers who cause the swelling production cost, the cost of distribution and becomes dissatisfied by the customer. The method of calculation DRP produce cost savings compared to the method used by the company. Besides that the interval is also more than the previous one. With ERP information system technology also accelerate the flow of information between the department and also the sale and purchase of.

Keywords: Information System, Enterprise Resource Planning Adempiere, Distribution Requirement Planning, MSMES UD Adhi Teknik
JEL Classifications: P4, P42

1. INTRODUCTION

The support of the government in the form of policies that benefit the MSMES in the land cause MSMES continues to experience growth that very quickly. MSMES is also the pillar of the economy of people that contribute to the level of manpower absorption around 80% and contribution to the Gross Domestic (Mulyanto, 2015).

Model of this great directly cause competition has great, when not ready in the face of this competition and within the time will wind mats (Bankruptcy). To face this struggle MSMES must immediately rearrange with modern toward from all sides especially in the side in which the integration of distribution management and computerization to business partners and consumers.

The integration of computerization in the company allows the groove and access to information in the company can quickly and accurately are reinforced on all fronts Noviana et al., (2016). The integration of computerized currently used large companies to compete and develop is enterprise resource planning (ERP). ERP is the integration of all the process of information data on the organization into a system of software and hardware to achieve integration (Eko, 2012).

The industry has a good distribution management and reactive course can control the market. The management of the distribution of a company must be able to provide product quality cheap, until the right time and varied (Pamungkas, 2009). Distribution requirement planning (DRP) is an operating system (production, procurement, atonia material, product distribution) occurs only as a response to the scheduling planning for every operation without taking into account the status of the real-time from the corresponding operation (Nofriandi, 2015).

DRP provide the required information distribution and manufacturing management to increase the effectiveness of the allocation of the preparation and production capacity so that service consumers can be improved and investment preparation (storage cost preparation) can be reduced Suryalena (2013).

MSMES UD Adhi Teknik is small and medium business unit in the making of spare part factory machinery and production expeditious machine. The company stands in the year 2008 and is located in Terung Kulon, Sidoarjo, East Java. This company does not have a Distribution management system so that the process of distribution of these companies are still experiencing delays and in the process of production company wear make model to stock and often happens chaos interaction between lini where demand exceeds the production capacity and vice versa because still there is the integration of each line that cause swelling costs and dissatisfaction by the customer.

To resolve the problem then the company requires a distribution management system and at computerized ERP module distributions management that can be applied and implemented from the material purchased, stock material that is the military are stealing happen often the accumulation and the lack of material as material needed so that the total cost of high supplies that will have an impact on the benefits that will be produced by the company.

To address the problems in the UD. Adhi Teknik of us from the team researchers to do the design and implementation of system Production Forecasts, scheduling production and implement the system at computerized ERP adempiere manufacturing module Barlin (2016).

By doing research that will produce a master schedule, production company business system that is integrated and computerized system would have a great impact on production and corporate earnings.

2. GENERATION OF THE DATA

Prior to the implementation of the first ERP system is to make the calculation using DRP method and then is the implementation of the ERP (Sugianto, 2013).

DRP is an application from a number of logic material requirement planning (MRP). Preparation of bill of materials (BOM) on MRP replaced with bill of distribution on DRP using logic time phased on point to require the procurement on the network (Gaspersz, 2008).

DRP based on demand forecasts at the lowest level in the network that will determine the needs of the preparation on a higher level.

The basic logic DRP is as follows (Kurniawan, 2012).

1. From the results of the local distribution forecasts, count time phased net requirement. Net requirement is identified when supply level (schedule receipt+projected on hand the previous period) met by gross requirement for a period:
   Net requirement=(Gross requirement+safety stock) - (Schedule's +projected on hand previously). The value of net requirement that were numbered (recorded) is the value of the positive value.
2. After that produced a planned order a number of net requirement The size of aspecific lot) in the period.
3. Determined the day where should proceed (planned order release) to reduce the planned terjadwalnya's orders with lead time.
4. Calculated projected on hand in the period. Projected on hand (Projected on hand the previous period+schedule receipt+planned order's) - (Gross requirement).
5. The amount planned order release become gross requirement in the same period to the next level of the distribution network.

ERP implementation is the implementation of company management system with the model of the concept of ERP. Building and designing the system ERP adempiere.

In this stage is done the steps of design as follows (Santoso 2010):

1. Planning

Table 1: Requirements of cutting machine in Pacitan

Project on														
Hand: 1 Lead time: 1														
Lot size: FPR command														
Period	Good past	2017												
	Substantially	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	The number of
Gross requirements Scheduled's		0	0	0	1	1	2	0	2	0	2	0	1	9
Projected on-hand	1	0	0	0	1	1	1	2	1	1	1	1	0	
Net requirements		0		0						2		0		
Planned orders		0		1		3		2		2		1		
Planned order releases	0		0		1		3		3		2			

Source : The results of the analysis

Table 2: Requirements of cutting machine in Sidoarjo

Project on													
Hand: 2 lead time: 1													
Lot size: FPR command													
Period	Good past	2017											
	Substantially	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	The number of
Gross requirements		1	2	1	1	2	0	1	1	1	1	0	0	11
Scheduled's														
Projected on-hand	2	1	1	1	1	0	1	1	1	1	1	0	0	
Net requirements		1		1						1		0		
Planned orders		2		1		0		1		1		1		
Planned order releases		1	3		3		2		2		0			

Source : The results of the analysis

Table 3: Requirements of cutting machine in Kediri

Project on													
Hand: 1 lead time: 1													
Lot size: FPR Command													
Period	Good past	2017											
	Substantially	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	The number of
Gross requirements		0	0	2	0	0	0	1	0	2	0	2	1	8
Scheduled's														
Projected on-hand	1	0	1	2	0	1	2	1	2	1	2	2	0	
Net requirements		0		0						1		0		
Planned order's		0	2	0		1		1	1	1	1	1		
Planned order releases			2				1		2		2	1		

Source : The results of the analysis

Table 4: Requirements of cutting machine in Tulungagung

Project on													
Hand: 1 lead time: 1													
Lot size: FPR command													
Period	Good past	2017											
	Substantially	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	The number of
Gross requirements		1	2	0	1	2	1	0	1	0	2	1	0	11
Scheduled's														
Projected on-hand	1	2	1	2	2	1	1	2	2	2	1	0	0	
Net requirements		0		0								0		
Planned order's		2	1	1	1	1	1	1	0	1	0			
Planned order releases	1	2		1	2	1		1	2	2	1	0		

Source : The results of the analysis

Table 5: Requirements of cutting machine in Surabaya

Project on													
Hand: 1 lead time: 1													
Lot size: FPR command													
Period	Good past	2017											
	Substantially	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	The number of
Gross requirements		1	2	0	1	2	1	0	1	0	2	1	0	11
Scheduled's														
Projected on-hand	1	2	1	2	2	1	1	2	2	2	1	0	0	
Net requirements		0		0								0		
Planned order's		2	1	1	1	1	1	1	0	1	0			
Planned order releases	1	2		1	2	1		1	2	2	1	0		

Source : The results of the analysis

Table 6: Cost with DRP

The engine	Pacitan	Sidoarjo	Kediri	Tulungagung	Surabaya	Banyuwangi	Nganjuk	Lamongan	Jember	Gresik	Jombang	Pandaan
Cut	Rp. 4.116.000	Rp. 1.671.000	Rp. 2.656.000	Rp. 3.761.000	Rp. 1.932.000	Rp. 6.396.000	Rp.3.516.000	Rp. 2.706.000	Rp. 5.916.000	Rp. 2.186.000	Rp. 2.406.000	Rp. 2.151.000
Print	Rp. 9.516.000	Rp. 1.926.000	Rp. 5.336.000	Rp. 6.761.000	Rp. 2.518.000	Rp. 11.016.000	Rp. 4.566.000	Rp. 4.826.000	Rp. 7.716.000	Rp. 2.226.000	Rp. 3.216.000	Rp. 3.091.000
Polishing	Rp. 12.216.000	Rp. 2.166.000	Rp. 6.436.000	Rp. 9.106.000	Rp. 2.964.000	Rp. 20.996.000	Rp. 5.616.000	Rp. 4.736.000	Rp. 8.916.000	Rp. 3.686.000	Rp. 4.146.000	Rp. 4.596.000
Peruncing	Rp. 5.616.000	Rp. 1.836.000	Rp. 3.616.000	Rp. 3.761.000	Rp. 1.898.000	Rp. 6.756.000	Rp. 3.186.000	Rp. 2.706.000	Rp.5.016.000	Rp. 2.916.000	Rp. 2.346.000	Rp. 2.151.000
The total	Rp. 31.464.000	Rp. 7.599.000	Rp. 18.044.000	Rp. 23.389.000	Rp. 9.312.000	Rp. 45.164.000	Rp. 16.884.000	Rp. 14.974.000	Rp. 27.564.000	Rp. 11.014.000	Rp. 12.114.000	Rp. 11.989.000

Planning any module from the system information enterprise to suit will be used in solving the problems in the company.

2. Analysis
   Analyze the election of the module ERP to adjusted with the system information ERP which used to be implemented in overseas.
3. Design
   Designing business processes and adjust system module Information Enterprise which will be used in solving the problem.
4. Implementation
   In the implementation phase is to integrate the module that is used in the open source ERP system to the real problem in the company.
5. Testing
   After the stage was done, then the test is done program that aims to evaluate the program that has been created with a test usage. If there is still an error, and it will be done with debugging until the program can be used.

3. THE RESULTS AND DISCUSSION

3.1. The Calculation Using DRP Method

The planning and scheduling of distribution is done on this research aims to be able to plan and control the distribution system from the company to the warehouse Akbar and Perdamaian (2015). So will anticipate stock out and over stock on inventory and optimize the distribution system product. Recapitulation comparison product distribution 2017 presented in the Table 7.

3.2. ERP System Design

3.2.1. The installation of software adempiere

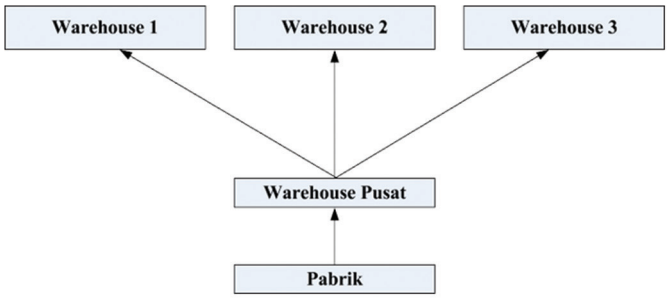
Adempiere ERP software installation is quite complicated because in the installation of adempiere there are 3 software in order to adempiere it can walk namely java and posgre SQL.

1. Prepare the installation file for the Java JDK latest version
2. Prepare the instalasi postgre SQL files for the latest version
3. Prepare the installation file A Dempiere

3.2.2. Module planning

On the use of modules, implementation software adempiere be synergized and have the nexus between one module and the next module (integrated) Azhari (2015). To clarify the relationship

Figure 1: Distribution requirement planning



Source: Principle Inventory and Material Management, Richard J. Tersine, 1998

Table 7: Comparison of product distribution in 2017

The criteria	The company method	DRP method	The difference
Shipping (times)	576	192	384
Delivery interval	Less regularly	More regularly	-
Distribution costs	Rp. 365.447.000	Rp. 229.511.000	Rp. 135.936.000

Table 8: Relationship of enterprise resource planning adempiere at MSMES Adhi Teknik

Number	MSMES Adhi Teknik	Software adempiere
1	The raw material messages	Purchasing
2	The production process	Product and pricing system
3	Marketing	Sales
4	Warehousing	Warehouse management
5	The data supplier, customer, workers	Business partners
6	Material flow	Material management
7	Production management, engine management and PPIC	Manufacturing management

Table 9: Analysis of difference between the company and the proposed adempiere system

The process	The system of the company	The system of the proposed adempiere
Purchasing	No	Yes
Sales order	No	Yes
Sales Account	No	Yes
Manufacturing orders	No	Yes
Component check (material requirement planning)	No	Yes
CRP	No	Yes
BOMs costing	No	Yes
Cost collector manufacturing	No	Yes
The acceptance of production orders to the warehouse	No	Yes
The proposal purchase (requisition)	No	Yes
Material receipt	No	Yes

CRP: Capacity requirement planning, BOMs: The bill of materials

Table 10: Proposed process system of raw material handling and distribution

Number	The initial system company	The system proposed by adempiere
1	There is no planning	Planning needs to take into account the structured clean, lead time and BOMs from the structure of the product
2	Purchase request is done every time there is a demand for raw materials that could not be completed because the lack of supplies	The process of minimization of purchase request is done only on every early period based on production schedule
3	A long time for the process Purchase request raw material which can lead to delays in the production process	Delays in the production process can be avoided by the existence of planning of the coming of the raw materials in planning needs of raw materials
4	Distribution lists are not regularly and many interval	The distribution of the more regularly and more efficient interval
5	The cost of raw materials and large distribution	The cost of raw materials and distribution more efficient

Source: The results of the analysis. BOMs: Bill of materials, Marsetiya, U. (2011)

model adempiere module can be described in the Table 8 Ridho and Liansari (2015).

On the implementation of each module does not stand alone, some module is integrated to each other. Where the data is processed into information or data output as the input data for the next process.

4. DISCUSSION

Analysis of the difference business process of handling of purchase, sales, manufacturing (goods and raw materials before the company does not have then the proposed system of impermanent adjusted with adempiere is can be seen the following Table 9.

In the table above seen that the difference between the company and the system differences with adempiere proposal. From the manufacturing system design and planning needs of the ingredients and the production capacity of the module manufacturing management started making production order and then done a check the availability of material and production capacity on each work center, where planning must consider the availability of raw materials and the capacity of the company. While the proposed system for the handling of raw materials with a focus on controlling raw materials described in the following table Nur, (2010).

The planning needs of the ingredients arranged requires inputs in the form of production schedule, amalgamation of products and BOM, as well as the report preparation. Using the planning needs

of the expected would happen performance improvements can be obtained due to the improvement in the purchase plan which was based on the lead time from each item can be known the greatness of material needs at each level of the ingredients in the structure of the products, preparation state automatically in database will continue to be monitored, because in drawing up plans to buy always see on the amount of preparation that owned, so that can reduce the possibility of lack of preparation and counting usage of raw material is more accurate, because it can be known dirty needs and the needs of the clean, not only on the end item, but also on each component or item on the low level.

On the install process software adempiere needs some order that must be running, if passed none will also not walk properly Suhendi (2016). The implementation of the module that is expected to facilitate the performance of a business. On the implementation of this module data entered in a state of complete until the output can be easily read and can become the input for the process of daily transaction enlistment next. Besides that if the data to be instruction is not included then the next process will also hampered.

5. CONCLUSION AND SUGGESTIONS

In the final report of this we can conclude that the research has ended and produce results of the priorities as follows:

1. Has been implemented and impermanent production forecasts and production scheduling with multiple regression method and linier linier method programming in MSMES UD adhi engineering.
2. Distribution system planning with DRP method produce distribution cost savings some Rp. 135.936.000, from earlier with the method used by the company of Rp. 365.447.000 and after processing by the method of DRP obtained the cost some Rp. 229.511 1,540,000 and distribution flow more regularly.
3. Has the distribution planning impermanent down there in the company.
4. Has impermanent computerisasi system ERP adempiere module distribution management in MSMES UD Adi Engineering.

For further research should be applied also other module ERP system to MSMES of skewer making machine can be developed and have a good system such as the system on a large companies that use SAP ERP.

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