

Implementing Management Information System

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Implementing Management Information System for the Printing Industry for Managing Efficiency and Effectivity in Processes – an Applied Research Case Study of PT. Suara Merdeka Network (Masscom Graphy), Semarang

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Abstract

Technology in Information system was growth very fast and significant develop into any industries. Digitalism in any department line also well developed, like ERP, MRP, MIS, MCS, etc. Today the impact of digitalism in any section, industry culture and system, many industries change their production line into automation in order to achieve efficiency and effectivity in processing. Investment on technology was invested although it took very high cost but in the next it will give good efficiency in cost and effectivity in time.

Transition from conventional to digitalism always facing many companies as big problem. Cultural Gap and Low knowledge in this area is high. The benefit using technology as big data and control system is very powerful in useful. This research was held in PT. Suara Merdeka Press, it is newspaper publisher company since 1950, family business model which still using conventional management. The problem occurs since technology enter all industries. Previously this company has difficulties in many functions, such as coordination and controlling, trace ability function, waste control in production, material resources planning and income outcome control.

This Electronic Data Processing (EDP) was introduce in this company with target is efficiency and effectivity in all departments related with production processing. In the beginning investment on software and peripheral was big problem in this company because costly, after two years running, efficiency was occurring in human resources, paperless and operational cost. This paper will be explaining EDP and ERP process in this company.

Well educated human resources in IT is a must to be considered in Industry, this company and academic.

Finally, the target will achievement total in next 3 years running, operational cost and efficiency will completely clear.

Keywords: MIS, ERP, EDP, Technology, Printing, Publishing System.

1. Management Information System (MIS) of Suara Merdeka's Production

Management information system (MIS) is a computerized database of financial information, which is organized and programmed to produce a regular reports on operations for every section or process in a production,

daily, weekly, monthly and yearly. Managers usually

3 MIS

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Within this CPI also well performed to each individual on production.

The MIS receives data from pre-press, press and post-press. Some of the data are collected automatically from estimation software that are key in the MIS. Routine reports or daily reports are pre-programmed in order to make sure the production hit their monthly and year's target. So this way will make the production keep running and of course, it will reduce company's debts and will also solve all the problems. In each section of production, special software top management

The MISs in printing industry are quite different from others type of industry. They are divided into several parts which include;

- Trace ability
- Database
 - a) Data or job's files
 - b) Job docket (Job Order Form)
- Controlling
 - a) Product Planning Inventory Control (PPIC)

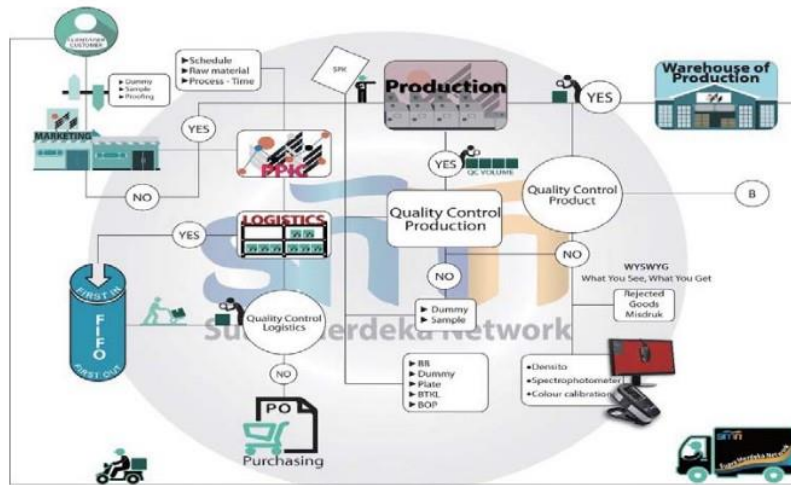


Fig.1 Common MIS in printing process workflow from the beginning in marketing department to the warehouse and delivery sections.

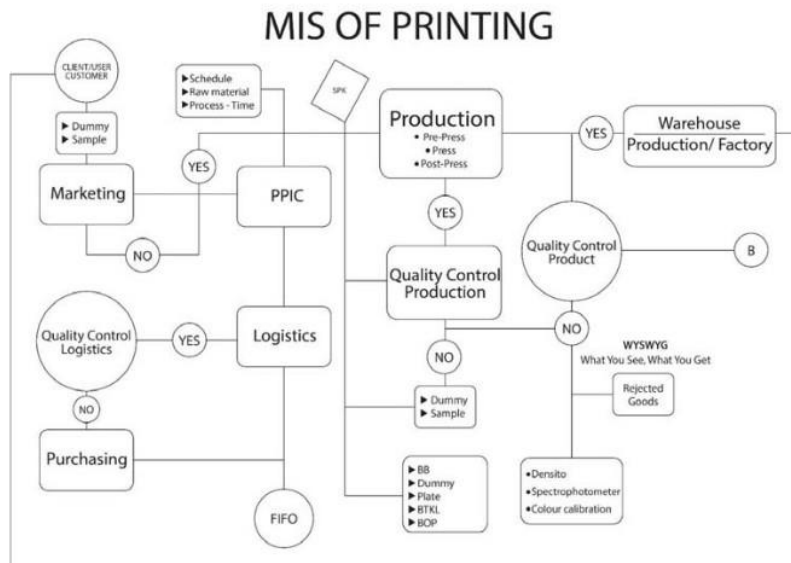


Fig.2 Management information systems (MIS) in printing process workflow from the beginning, the marketing department, to the warehouse and delivery sections.

- b) Quality Control (QC)
- c) Inventory including MRP
- **Managing**
 - a) Production
 - b) Pre-press
 - c) Press
 - d) Post-press

In the flowchart as shown in Fig.1, the system in printing industry is complicated and integrated, so many decision making stages need approval from other department in order to create best coordination and trace ability function. Current system in PT. Suara Merdeka Press is the company as subject of this applied research was totally conventional. The weaknesses are significant. No synergy data between and among department, losing data record because they are not still in data storage, and no trace ability function so when the problem occurred it took long time consuming to investigate. Then error rate is also high, corruption could not be traced although they have routine internal audit. This system was solving those problems. All become stored in one big data and have strict authorization.

Fig.2 shows the blue print that the MIS System (EDP) will implement in this company. Each sections need authority from each leader (managerial level). In the system everybody has authorization to make change because of only handwriting authorization. It is dangerous, fake working paper and job order seems like wild. It makes the company loss in income. This system was developed to eliminate that activities.

2. Management Information Systems (MIS) in production arranged and scheduled by PPIC.

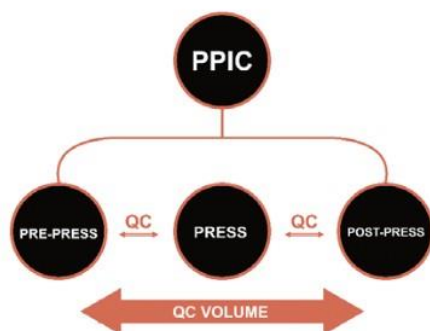


Fig.3 Workflow Process Production MIS

For development of database, we create a new software that is in line with the advanced technologies. As we know, a database of company is a serious and important matters that needs to be secured especially in printing industries which this systems can be used by manager to detect and repair some troubleshoot from collected information from database that was used in

every sections in printing companies.

The study and research of database systems in this company was led to develop new effective strategies and systems that were also in line with the advanced technologies. This application could be implemented in this company which consists of

company's database of this company consists product calibration data, waste analysis, production process monitoring and production results, purchase order, production order, internal material order and job order. The development of systems

From my observation, I would recommend PPIC of Suara Merdeka to operate and handled the operating systems for all database from all sections in this company. The purpose of this trend is to;

- Achieve greater efficiency to minimize and optimize the cost
- Workflow of database transactions between the sections with the main server becoming more effective and productive
- Database and trace ability of company becoming more secured

Database

Database is an organized collection of data from the beginning process until the finishing section. scheduling, it was used in printing industries for over a decades. Some of printing industries might finds it as a waste for producing a database which doesn't give any of advantages to them except just a few paper with some information of production, the wastage analysis, processing information and so on.

This is a several database that collected in Suara



Fig.4 MIS database

Merdeka and it was used in each sections to deliver the useful information, order specification, analysis of wastage in production, the order of material, the quality of material and processing monitoring with the results.

3. Marketing and Sales Department MIS

This process where we used to evaluate the financial impact of potential orders on a printing company. Usually, the printing company has to appoint a person that specialize in financial in order to ensure everything is going well. The estimators are people within a company who determine the job costs from all aspects. Nowadays, there are a system based on estimation which we can put or key in all the job specs in order to have a faster and accurate quotation. This system is integrated with finance, production and accounting department. All data was collected in one big data.

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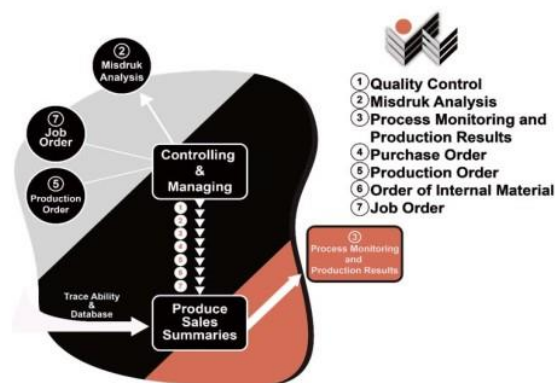


Fig.5 Sales and Marketing MIS

4. Development for Marketing and Sales

Marketing must be clever and brilliant in order to attract customers in any way. As a marketing which is the planner of a production, we must be ready in any circumstances and situation of economy because the flow of production will start in this section first.

Concept

There are printing companies that are located in Malaysia which

b. What is a 'One-Stop Printing Centre'?

A one-stop shop is a company or a location that offers a multitude of services to a client or a customer.

The idea is to provide convenient and efficient service and also to create the opportunity for the company to sell more products to clients and customers. This concept consists of the following:

A. Direct Designer Consultants

Able to guide customers who doesn't know much about their design concept or theme in order to fulfil their requirements.

Directly re-design the original design from customers if they do not impress with their design quality. Pre-flight will be more easier because they confront their customers directly so if there are a files or image/pictures that doesn't meet the requirements, the consultant are able to repair in front of their customers.

This concept are suitable with customers that live in low-grade and non-developed areas.

a. Packaging

b. Printing consultant

They are able to consult you to print in media that is suitable with a low cost such as for wedding ceremonies, shop opening ceremonies, and other ceremonies. Able to consult you in shop advertising's media suitable in this Semarang which is there are lot of shop or restaurants that need to be advertised with low cost. They also are

able to advise you in all type of printing media.

B. Direct printing operator

- I. It will ease the customers when they want to print at the store with professional guides so it will provide a good feedback by high quality of service.
- II. This concept is very suitable with the residents or people that do not know much about printing.
- III. By the guides and help from printing operator the customers can be very satisfied and they are sure to come back for their next project.

Compared to visiting a separate institution for each area of need, the "one-stop shop" saves a lot of time and effort of the consumer. These businesses believe that their clients are the only reason that they exist and use every means at their disposal to keep the client happy and satisfied.

Online marketing

Marketing is [redacted] that we are [redacted]. Marketing staff are [redacted] their [redacted] customer [redacted] this [redacted] that we [redacted].

For [redacted] development and improvement of this section, I've find the attractive ways to get and reach the most potential customers with online marketing in printing industry which is;

- a) Optimizing Suara Merdeka Network website which is being aggressive and responsive website in order to attract customers. After that we can apply a pay-per-click advertising which is the latest method of company's additional incomes that has been used by other company out there.
- b) Create engaging content and media that ranks well above the expected or target level. This method will make the customers keep wondering about this company's product and this method is suitable for printing industry.
- c) Create a social media profile for company, which is the most effective and efficient ways to get in touch with customers. Nowadays, most of company has established their own social media to keep updated about their product and their ability to produce and print a high quality product. Another purpose of this method is to make it easy for potential customers to contact our company, Suara Merdeka.

5. Leading B2C strategies and tactics

- One way to characterize a B2C strategy is to focus on benefits being pursued in terms of the value-chain activities and cost/ differentiation strategies of the

business, as described at the beginning of the flow.

- Internets offer new channels for marketing, sales and customer service that can provide cost savings and new kinds of service differentiation opportunities, such as customizing responses to repeat website visitors.
- A major challenge of dot-coms that sells tangible products and services is the development of offline systems to complete the order fulfillment process.

6. IT strategies and tactics

- Competitive advantage is likely to be sustainable if the IT application is designed to leverage a unique competitive capability or strength of the application owner that could be difficult to replicate
- Implementing a new type of IT application does not necessarily gain a sustainable competitive advantage, although there is often an early-mover advantage.

a) Is this necessary?

- Website maintenance [redacted] affordable price tags
- It is caused by business and technologies associated with the customer facing aspects of a website that becoming visible after the site were launched, innovations can also be rapidly imitated and improved upon

b) What is B2C application?

- Business TO Customer (B2C) is e-commerce in forecast to grow rapidly as more household which has internet access and consumer concerns about transaction security and privacy overcome

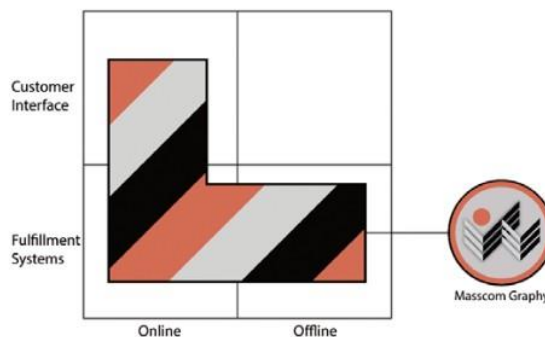


Fig.6 MIS on Sales and Marketing Online Based

Can be useful in thinking about online, offline, and hybrid integration strategies for two types of business activities that must be well executed which is the customer interface and the fulfilment systems. There are a few strong factors that influence this strategy to be implemented in the company which is;

- ✓ Delivery
- ✓ Inventory, stock and warehouse
- ✓ Whole production is able to complete the process

Still other companies have contributed some basic framework for designing and assessing a web site. There are functional and aesthetic characteristics that might support a model or a viable B2C web which needs to address 3 Cs;

- a) Content
 - Information content.
 - b) Community
 - Community building aspects of the site.
 - c) Commerce
 - Commerce capability (capability of online ordering).
 - Personal customization capabilities.
- Furthermore, [redacted]

[redacted] several years of technology innovations and experimentation with B2B applications based on Internet technologies before businesses were willing to begin to invest in these newer technologies to either complement or replace the early proprietary systems. The major benefits from extending the reach of IT to suppliers and customers are;

- a) Reduced cycle's times and cost while doing business.
 - The reach of IT between distributor and customer increases
 - Transaction cost between distributor and customer decreases
 - Cost savings for [redacted]
- b) The creation of new marketplaces for buyers and sellers that has no geographic boundaries.
 - Global reach which is enabling huge increase in number of trading partner
- c) Low-cost entry and potentially lower on going operational costs.
- d) Improved communications and coordination between suppliers and customer.

7. Managing IT in an E-World for Suara Merdeka, Masscom Graphy and for Printing Industry

As it entered the new millennium, the printing industry and world's news media was focused on not only gala celebrations across the globe, but also whether systems in every section in printing industry which is the production itself and then it goes by flow by flow from the beginning process until the finishing section.

Production manager expect to have access not only to data about company's internal operations but also to computer displays that quickly tell them about how their operation flows and also their links with inventory or logistics which is very important for an effective workflow and their business flows which that handled and controlled by marketing department which is how their business doing in the marketplace and as I said before, the warehouses of all trace ability and database which consists the company's sensitive data that couldn't

be exposed easily to anyone.

a) Printing Industry Competing in E-World

The IT developments have described based on my observation in our environments and it have ushered in an internet age that has already has a major impacts on printing industry recently especially in Malaysia and Indonesia. As you know, by competing in E-World, it got some traditional ways itself which some of industries especially printing industry [redacted]

- [redacted] major [redacted] manufactured or production [redacted] printed product [redacted] services.
- [redacted] producing [redacted] services processing, [redacted]

In the process of creating an effective workflow, this might be useful as the computers have been used to automate any transaction processing, shorten cycle times and provide all the data that consists three ability with controlling authority and database of production and the main purposes of it is to ease the decision making.

As we know, this strategies could led this industry into a better stage of businesses competing because of this changes and updated, in future we will see some of major ways that printing industry will completely change the way they compete in order to leverage the IT capabilities of this important strategies (Internet). It can be used to illustrate how the internet enables new ways to compete which is;

- Cost efficiencies
- Mass/ product customization
- Global reach

In other words, IT enables printing industries to efficiently producing and manufacturing with not just the same printed product in large quantities but customized printed products which could be implemented in Masscom Graphy, there are some supportive reasons which they have a huge warehouse that could produces a large quantities of product and at the same time they even can keep a large quantities of variable materials. So by that, if they received the customizable order from clients, they already have the material and they even can sub to other companies if they couldn't process it or produces but only the changes of printing but with their own material. So all the connection and communication can easily be done by this strategies and it also could reduce production time.

b) E-World of Printing Industries

The advantages of technologies might be the advanced of communications between all department in printing organization. Advances in IT have also enables new linkages across organizational boundaries, including linkages to create virtual production work teams which is consists the communication between operator to operator, manager of department with each other's and

also not satisfied others section.

- The quality of some raw materials that being held in inventory or stock for a long time does not meet the requirements and specifications when needed.
- Complaint from others production or section and also from customers.
- The changes of raw material's prices which consistently and suddenly.
- The quality of raw material and end product.
- The connection with QC product amount which is in production between Pre-Press, Press and Post-Press, the amount of product that being produced have to multiplied in order to avoid troublesome.

9. Logistic of Suara Merdeka and Masscom Graphy

This main

For Material Requirement Planning (MRP), Suara Merdeka's production has applied the FIFO system in their inventory or logistics system. The marketing team with contact the inventory or logistics production to ensure that the stock are available, in a good condition and being able to process. After had a confirmation on their stock, the production will give an answer about Quality Control of logistics and their stock will be tested for preparation to process.

Other than that, Suara Merdeka has use a make-to-stock principle since long time ago and its proven that this principle are suitable for their logistics production. This study aims to identify the types of MRP that suitable with Suara Merdeka's inventory systems with an effectively and efficiently in their workflow and their mass productions. There are several of MRP strategy

Table 1 Material Requirement Planning

Category	Material	Good characteristics	Damaged characteristics
Primary material	Paper	<ul style="list-style-type: none"> • Clean and nice • Solid colour of paper • Strong fibbers • There are no differences on texture which is flat texture 	<ul style="list-style-type: none"> • Eaten by insect • There are hole on paper • The changes of actual colour • Bloated
	Ink	<ul style="list-style-type: none"> • Solid colour • Consistency, stiffness and softness • Consists a good pigment • Glossy 	<ul style="list-style-type: none"> • The changing of actual colour • Hard textures • Fungus and molded • Smelly and dry • Separated and dead of pigment • Scumming • Cause hickies in press section
	Plate (raw)	<ul style="list-style-type: none"> • Solid color • Consistency and flexible • Clean and flat surface 	<ul style="list-style-type: none"> • The actual color are faded • Different color of plate are clearly seen • Scratches on the plate surface
Secondary material (Main)	Fountain	<ul style="list-style-type: none"> • Solid color • Clean and nice • Glossy 	<ul style="list-style-type: none"> • Smelly • The changing of actual color from white to yellow • Oily and greasy
	Developer	<ul style="list-style-type: none"> • Solid color • Clean and nice • Easier to handled 	<ul style="list-style-type: none"> • Smelly • Doesn't effect on plate which is cleaning effect
	Machines powder	<ul style="list-style-type: none"> • Clean and nice • Easily handled • Softness textures 	<ul style="list-style-type: none"> • The changing of actual color • Lumpy mixtures
	Plate gum	<ul style="list-style-type: none"> • Unshakable and got solid textures • Compact physical 	<ul style="list-style-type: none"> • Smelly • Produces smell that attract cockroaches and ants

that could be applied on SM companies which is;

A. Make-To-Stock

- a) Make to stock
- b) Production by
- c) Planning with final assembly
- d) Planning at assembly level

B. Make-To-Order

- a) Make to order to production
- b) Planning without final assembly

Actually, the FIFO principles is belong to Make-To-Stock category which is more specifically in production

lot size. This method refers to the quantity of an item
size, production
ordered for manufacturing. Other than that, the planned independent requirements are not consumed by sales orders. So, this method is being used or applied since long time ago but the method are slightly different but in a positive ways in order to keep updating with the economy growth. There are several troubleshoots in this section which is;

Table 2 Materials used in printing process

Materials	Pre-press	Press	Post-press
Plate Paper ink Developer Replenish Gom Fountain UV Varnish Spiral Paper Cutting Dye-cut Perforating OPP Wire Glue	Plate Developer Replenish Gom	Paper Security ink Sublimation ink Offset ink Fountain Powder OPP (food grade) OPP (color metal) OPP (standard) Washdify Spare Part	Wire Yellow Glue White Glue Bio Plastic UV Synthetic Plastic UV Varnish Spiral Steel Spiral Plastic Paper Cutting Dye-cut Perforating
Check Sheet	Check Sheet	Check Sheet	Check Sheet
Date Received Project Quality Date delivery Deflect (5%)	File received File name Ripping (Arkitex) Plate Expose Duration	- type of paper - type of ink, suitable plate code - Page order, folds according to the folding & elbow marks - no stains - text, raster, picture intact - print register result - ink flatness is stable on every page	- order of katern is correct - binding is not easy to loose, elbow suitable to size - pieces not broken, elbow suitable to size - position of sewing wire in the middle, harmonize top and down - clean final result, not dull, suitable to order
	Tools	Tools	Tools
	Spectrophotometer Densitometer Colorimeter Magnifying Plate Punch	Densitometer Tack Meter Conductivity meter Colorimeter pH Meter Viscometer Ruler Hardness Meter Caliper Micrometer Meter Rubber Hardness Cozen Key	Infrared Thermometer Hardness Tester Caliper Micrometer Measuring Tape

- The changes of raw material's prices which consistently and suddenly.
- Stock (primary and secondary material) cut down, decreased and drop.

10. Production of Suara Merdeka and Masscom Graphy

Newspaper has always been an important part of our daily life and also in the industry. Since the world war I, the newspaper industry has become a significant economic force in the advanced industrial nations and also has been as the first ways to deliver or spread the news all over the world. The concept of newsprint layout design is inherently multi-dimensional, incorporating multiple elements such as text, shape, graphics, design, logo, size, colors, illustrations, material, construction, and so on, even though the technologies keep updated and more advance than newspaper.

In conducting this study, the research process started once the area of interest had been decided. For this study, the topic of interest started from the beginning of printing process which is the Pre-Press or journalism namely part that in responsible in obtain news that attract reader's attention.

2 beginning of workflow

current

Suara Merdeka Company, they have organized their workflow really well by their systematic organization from the beginning until the last process although it still conventional. For pre-press section, their working time is usually started at 4.00 p.m. until night depends on the day. From my observation, the pre-press team has been given different location such as in Kota Lama for reporter and editorial to collect all the information in order to create a perfect article including the images as well and

another one is in their main office or factory which is in Masscom Graphy that located at Kaligawe. To create a perfect article, they have to do a field work which is usually started from early in the morning until late afternoon and it also depends on their jobs that already arranged by their manager.

11. Conclusion

Conclusion for the establishment of development in every section in Suara Merdeka could be success if a problem that can be overcome if one of the parties tries to cope with not put profits solely in the production of print products. There is no problem to Suara Merdeka Group to do our best to print newspapers if they put their product quality and quality as readers and bet on their company's bottom line. Technology become important controller in each section. Conventional system couldn't be facing all problems in each department.

Since technology enter in all industries, many companies change their purpose become efficient and effective in all sectors. In this case Suara Merdeka changes all become digitalism and build big data for all company data. Conventional system has so many weaknesses and time consuming. Today industry and academic should be synergy for technology adoption and implementation.

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