

A Design of an Automated Tool for Manufacturing Company

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ABSTRACT

Use of software tool in business lead to many advantages like it increases time efficiency, ease of use to everyone including admin and operator on a single portal. Conventional process of doing work through paper takes more time, manual effort etc. and there can also be human errors. In today's era, e-business is on peak and each one wants to become part of it.

Our system design an automated tool for organizing inventory data that before was generally stored in hard-copy form or in spreadsheets. The pen assembly needs to be updated and improved to increase productivity and decrease operator strain. Our intended operator is on the threshold of not being able to raw pen barrel container his job correctly due to the unnecessarily high physical demand of his primary tool. Simplicity, safety, ease of use and durability were the key factors of our design. This automated tool can also be used in future by many manufacturing industries to create a work order, bill of materials and other production-related documents.

This system also gives SMS alert, notification of product delivery dates to manufacturer.

Index Keys: automated business tool, process of manufacturing, SMS notification, manufacturing database.

1. INTRODUCTION

Today, automation of industrial companies that provided by a variety of exploited and newly introduced information systems and software often limited, as a rule, to only certain areas of automation and production departments, but not within the production cycle of the company as a whole. However, many production problems are solved (or not solved efficiently) even without data sharing multiple information systems and (or) specialized software[5].

To become part of global economic system, it is need of small scale business also to get automated. Automation definitely will lead down paper work, human efforts and give efficiency. It also helps to owner to take proper decision through various analysis reports. Through this system, we are providing solution to pen manufacturing company.

Our tools helps to do daily transaction of pen sale and generate bills. It also helps to take decision while taking orders from customer according to the raw material available in dead stock. This system give SMS alert of delivering product on time and date.

2. LITERATURE SURVEY

- 1] Patellas-Maliszewska, Justyna, and Irene Krebs. "A concept of a decision support system for the selection of a knowledge management tool for a manufacturing company." *Methods and Models in Automation and Robotics (MMAR)*, 2016 21st International Conference on.IEEE, 2016.

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- 2] Holzmüller-Laue, Silke, Bernd Göde, and Kerstin Thurow. "Model-driven complex workflow automation for laboratories." 2013 IEEE International Conference on Automation Science and Engineering (CASE).
- 3] Sankari, A., and K. Umasankar. "Ensuring Security in Emerging through SMS Alert System." International Journal of Computer Applications Technology and Research 2.4 (2013): 487-meta.
- 4] ANBU, John Paul, and Sridevi JETTY. "Content Alert System Using Short Message Service (SMS): A Testimony of two Collaborative Projects in Africa and Asia."
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3. PROPOSED SYSTEM

This tool gives the efficient results and reduces complexity which would have occurred due to use of manual paper. In this system, we have proposed three modules to work on.

3.1. Maintenance of stock

A database is created with existing available stock of company. Values in database can be updated by admin as per new stock in company.

3.2. Processing

Database created in first phase is processed here. Using SQL query language database is accessed and results are shown to user.

3.3. Billing

Depending on order, final billing is generated here, which also includes VAT and other charges. After this transaction database is updated.

4. SYSTEM ARCHITECTURE

4.1. Modules

4.1.1. Maintenance of stock

In this phase different raw materials which are used for the manufacturing a single pen is stored in the database in the form of total count. Total count of raw material is maintained individually and that count is used for checking if it satisfies customers order or not?

Eg. Suppose a customer having his order of 2000 pens and in database 1900 raw material count is available, then in that case it gives a message that it does not satisfy customers order due to insufficient raw material. If database contain raw material 2000 or more than that then it can be satisfies the customer's order and further processing can be done. As the new stock comes, count of material database will update and this updated count will be used for checking satisfiability of the customer's order. For each type of pen different materials are used and according to customers order only count in that required materials are deducted.

4.1.2. Processing

In this phase of processing, different parts of the pens are assembled to form pens as per the customer's order. There are different types of Pen like Twisted Ball Pen, Tik-Tik Ball Pen etc. For each type of pen

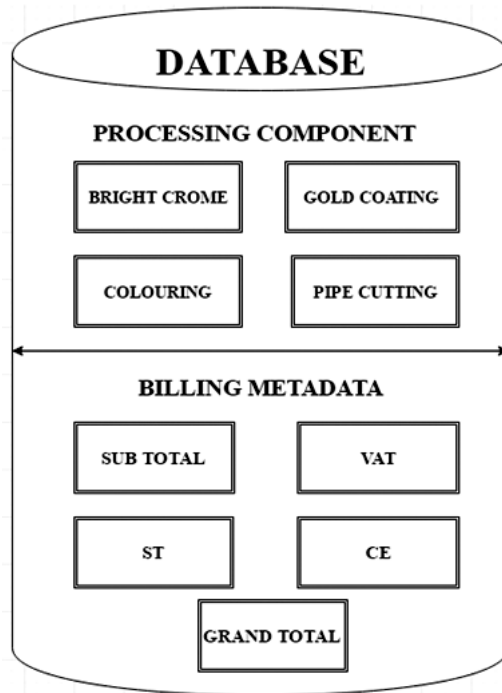


Figure 1: System Architecture diagram

specific no. of parts are required as per the design of the pen. Some customers want additional design as per their requirements which will lead to the further sub-process like gold plating. This sub-process can be done by third party .

a) *Plating sub-process*

Some customers want additional design as per their requirements. Gold plating will done by third party. Admin sends assembled pens for plating sub-process to third parties and the deadline is set (i.e. The date on which that task of plating should be done).[3] The Client –server model is used in this phase.

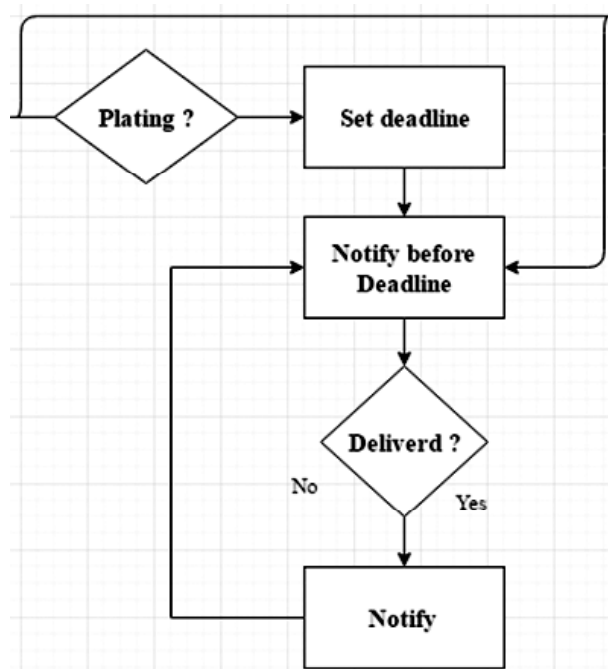


Figure 2: Flow diagram of sub-processing

The deadline is set to 2-3 days before delivery date. Notification regarding delivery of pens is given to the admin as well as third party manufacturer is given through the message so that they should be aware about deadlines.

4.1.3. Billing

In this phase after processing is done, all the amounts which include government taxes, i.e. CST, basic duty, argue cases, etc. Format of the bill contains description of goods, quantity, rate of each item and grand total. The typical format for generating bill is as shown in fig. 4.1.2.

4.2. Working Activity

Activity diagram gives overview idea about working of the system tool, which is going to be done in 3 phases. The database contains raw material count. After that, control goes to order, here customer gives his order. Then checking of customers order satisfies or not.

ABC manufacturing Compa				ORIGINAL FOR BUYER	
		TAX INVOICE CUM CHALLAN			
		Voucher for removal of Excisable goods from Factory			
		of warehouse on removal of duty			
Mobile No.		[Rate 44 of C. Ex. Rules - 2002]			
Email:					
E.C.C. No.					
Name of Excisable Goods		Dull Pen / Roller Pen	Fountain Pen		
Chapter Heading/Sub-heading No.		35081013	35081013		
VAT TIN No. 33630260157		C. Ex. No. 04784/28		CST TIN No. 33630260157	
INVOICE TO:		NAME & ADDRESS OF CONSIGNEE		INVOICE NO. 133	
				Date: 8/30/2016	
				P.O. No.:	
				P.O. Date:	
				Transport: By Courier	
				Vehicle No.:	
CST TIN No. 61745 Dt-8.1.71 C				Date & Time Of Preparation: 8/30/2016 5:46 PM	
VAT TIN No. 33630260157				Date & Time Of Removal: 8/30/2016 6:00 PM	
Sr No	Description Of Goods	No. of Cartons	Quantity	Rate	Amount Rs.
1	Stroke B/p P/J/R Blue Velvet Colour Bright Orange Parts	1	750	21.50	16125.00
	Against Form C			Packing Charge Weight & Transport	300.00
Excise Duty Payable				Sub Total	Rs. 16,425.00
Ed. Case Payable Rs.				Basic Duty @ 2%	Rs. 329.00
S.H. Ed. Case Payable				Ed. Case @ 2%	Rs. 0.00
				S.H. Ed. Case @ 1%	Rs. 0.00
				Sub Total	*****
Invoice Value Rs.				CST 2%	Rs. 335.08
				Roundoff	Rs. -0.08
				TOTAL	*****
Tax Declaration: "I/We hereby certify that my/our Registration certificate under the Maharashtra V					
Form as the date on which the sale of the goods specified in this tax invoice is made by me/on or					
Inception of the sale covered by this tax invoice has been effected by me/on and the whole of					
the turnover of sale while filling of return and the tax, if any, payable on the sale has been p					
Supplier Declaration: We declare to the best of our knowledge and belief that the parties					

Figure 3: Sample Bill

- If customers order satisfies by available material then further processing will do.
- Then, suppressing will be done if required (i.e. Gold plating, etc.)
- After that finishing is done .
- In Billing phase total amount are calculated including taxes like CST, basic duty etc.
- Final delivery of the pens will be done.

5. ADVANTAGES AND DISADVANTAGES

5.1. Advantages

1. Increases throughput or productivity.
2. Improved quality and Increased predictability of quality.
3. Liability of the process or product improved
4. Cost of direct human labor and expenses can be reduced.
5. Performing tasks that are beyond human capabilities of size, weight, speed, endurance, etc.

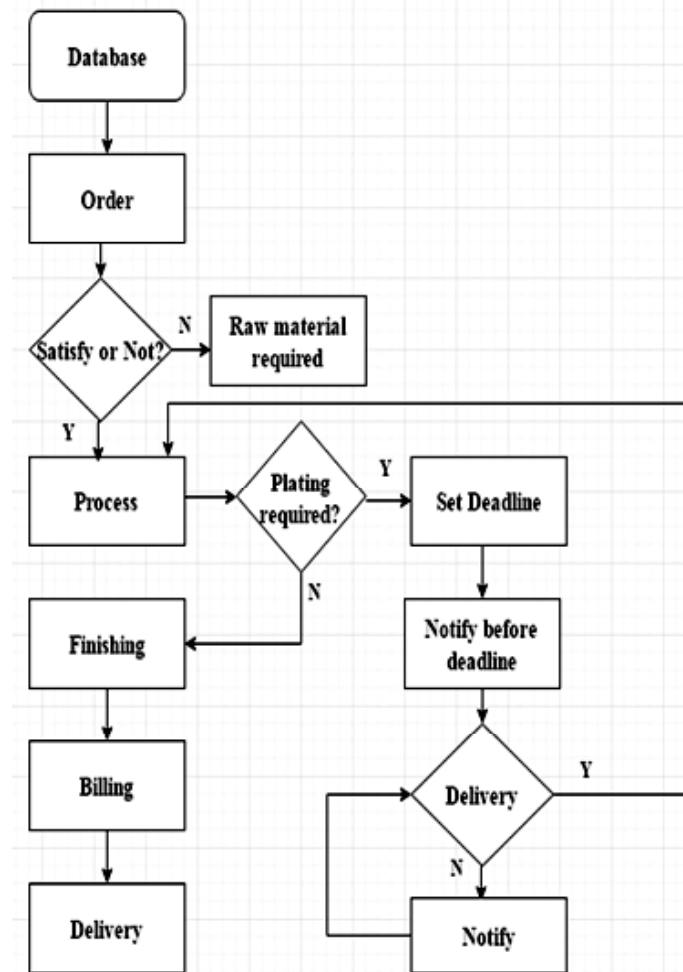


Figure 4: Activity diagram

5.2. Disadvantages

1. Security threats and vulnerability: An automated system may have a limited level of intelligence, and is therefore more susceptible to committing errors outside of its scope of knowledge.
2. Unpredictable/excessive development costs: The research and development cost of automating a process may exceed the cost saved by the automation itself.

6. APPLICATIONS

This automation tool can be used any manufacturing company, in factories from small to large scale. We are also planning for client server application so that this system is used on internet also.

7. CONCLUSION

This tool will come in handy given the current reshaping trend in the manufacturing market, as the right software solution can help businesses streamline core processes and operate more efficiently. It can be used by any manufacturing company for efficient results and efficient operations.

REFERENCES

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- [2] Holzmüller-Laue, Silke, Bernd Göde, and Kerstin Thurow. "Model-driven complex workflow automation for laboratories." *2013 IEEE International Conference on Automation Science and Engineering (CASE)*.
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- [5] Kudinov, Anton, Nikolay Markov, and Vadim Veyber. "Development tools for common information space of distributed industrial company", *2012 7th International Forum on Strategic Technology (IFOST)*, 2012.

