Available online at: http://jurnal.untirta.ac.id/index.php/jiss

JOURNAL INDUSTRIAL SERVICESS

Industrial Engineering Advance Research & Application

eISSN 2461-0631

Information system improvement (Case study: Noodle Factory X, Purwokerto, Central Java, Indonesia)

Raden Roro Christina*, Vivi Arisandhy, Indah Victoria Sandroto, Khaterine Santika Wijaya

Bachelor Program in Industrial Engineering, Universitas Kristen Maranatha, Jl. Prof. Drg. Surya Sumantri, MPh no. 65, Bandung 40164, Indonesia.

*Corresponding author: christina@eng.maranatha.edu

ARTICLE INFO

Received: 4 Oktober 2021
Revision: 30 Oktober 2021
Accepted: 2 november 2021

Keywords:
Information system
Procedure
Computerized

ABSTRACT

A good information system would increase the company's productivity. One of the most important thing that to be concerned was the procedures. Good and organized procedures would create company standards. Through the research data collection through interview and observation, there were 6 (six) big procedures of Noodle Factory X, Purwokerto, Central Java, Indonesia, which were Material Purchasing Procedure, Material Arrival Procedure, Material Stock Recording Procedure, Finished Good Stock Recording Procedure, Finished Good Shipping Procedure, and Finished Good Selling Procedure. PIECES Analysis were used in this research to analyze the system, including Performance, Information, Economics, Control and Security, Efficiency, and Service. The overall results were material stock counting still used manual system and it could cause human error in doing it, and it was also not real-time count. If the material stock was already real-time count, the material stock recording procedure would not interfere the production process, so it could produce on time. The receipt was still manual, without the company's identity such as logo and name of the company. Information was not real-time produced. Report service for the management was also a bit slow. Some recommendations were given, such as giving the signature/stamp on the receipt as a proof that it was the receipt that was issued by company, try to implement a simple computerized system, improve the Big Book (for writing the stock), separate the book for material stock and finished good stock at office and at the factory.

1. INTRODUCTION

A good information system would increase the company's productivity. One of the most important thing that to be concerned was the procedures. Good and organized procedures would create company standards.

An information system is defined as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making, coordination, and control, information system also help managers and employees analyze problems, visualize complex subjects, and create new products [1]. If there is lack of information, a company would have a disability to control its resource that will lose from its competitors [2].

The purpose of management information system is to be easy to use, the response time to be immediate, to intensively use the graphically information display, to provide real-time access to internal and external databases, to provide information about current facts and expected trends for the key factors, the presentation form of information to be consistent with managers' preferences who are using the system [3]. Information system is an application to support organizations operation in operation, computer maintenance, software, and data [4]. The need for time and cost efficiency causes every business actor feels the need to apply information technology in the work environment [5].

There are some methods to evaluate a system. One of them is PIECES Framework that can evaluate Performance, Information, Economic, Control, Efficiency, and Service of a system [6]. The explanation of PIECES Analysis would be as follow:

1. Performance
   Measuring the current system performance by measuring the output and response time if they reach the target or not.
2. Information

http://dx.doi.org/10.36055/jiss.v7i1.12604

Measuring how the use of current information, by measure the input, output, and how the store the data. Is there any data that difficult to get, repetitive data, out of time data, lack of information, error format information, and error in processing data.

3. Economics
   Measure is the system can save the cost and give benefit for the users.
4. Control and Security
   Measure how the current control and security. Is the system has a security for the data and information if there is fraud. How is the control of the data and information access of the users?
5. Efficiency
   Measure how efficient the information system through human resource, machine, computer , and data processing perspective. Is it a user-friendly system so the employee could do the data processing right and accurately.
6. Service
   Measure how the system can give the current system, and if the system has given the accurate and consistent result, of there is a difficult system to learn.

Noodle factory X at Purwokerto, Central Java, Indonesia was categorized as a small-medium enterprise. Although it was an old factory, but the system and procedures had not been documented well. Other findings were the inefficient, ineffective procedures and unrecorded documents, and also the system was not computerized at all. Through knowledge and technology for information technology and computerized system, small medium enterprises could prepare and face the challenge [7]. Through information system, the tasks will be able to be done faster, more reliable, and more accurate [8]. The use of information system have been widespread and prevalent with the technology advance and the rise of the internet. The construction of smart city [9], human resource management information system based on internet of things (IoT) [10], healthcare [11], agriculture [12], and manufacturing and logistics are example of application of information system technology.

The goals of this research were to identify the weaknesses of the system and give the recommendations of the system in a noodle factory in Purwekerto. The flow diagram is used to describe the procedures easily and to know the person-in-charge for each activity. The flow diagram uses the symbols below [9]. The research contributes to the application of information technology assessment in a large organization, such as a noodle factory.

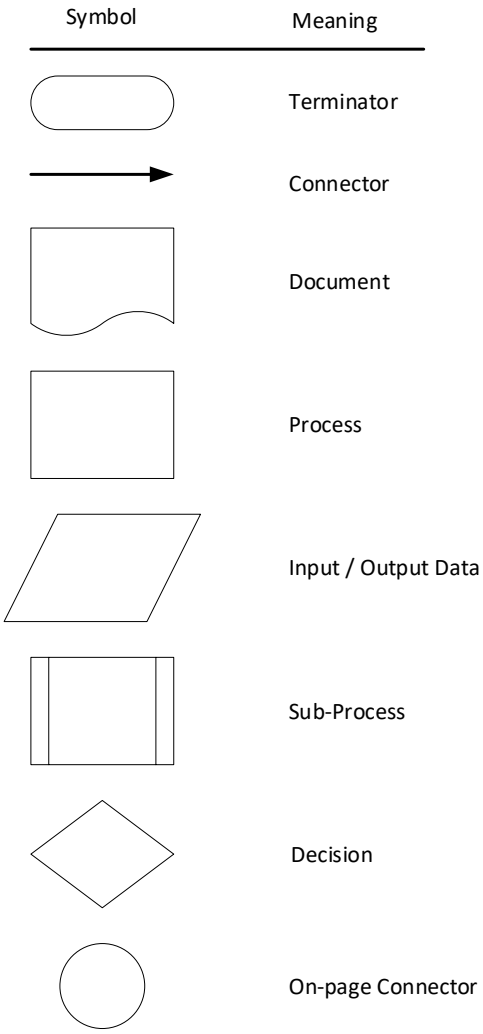

Figure 1. Flow Diagram Symbols

2. RESEARCH METHOD

The research method that was used in this research was explained by the flowchart below.

The materials that were purchased from the suppliers including wheat flour, CMC, and dye. While the finished good was the noodle that was already packed as an uncooked fried noodle in plastic package.

The current location for the factory and the office was at different location, about 30 minutes trip from each location. The office was used for the marketing office.

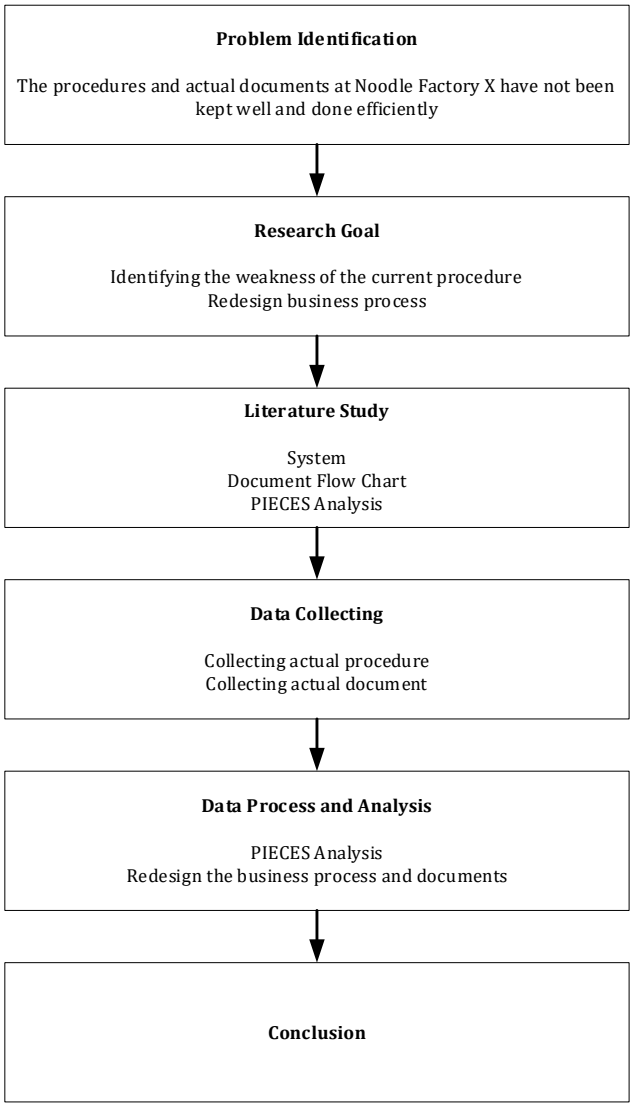

Figure 2. Research Methodology

3. RESULT AND DISCUSSION

Through the research data collection through interview and observation, there were 6 (six) big procedures which were:

- Material Purchasing Procedure
- Material Arrival Procedure
- Material Stock Recording Procedure
- Finished Good Stock Recording Procedure
- Finished Good Shipping Procedure
- Finished Good Selling Procedure

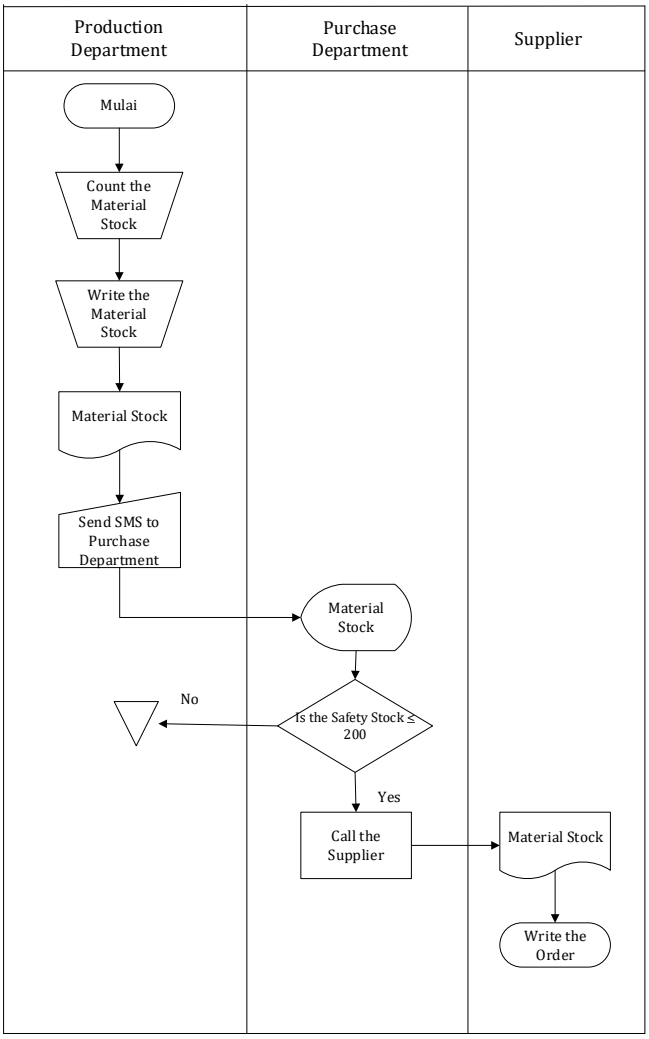

Figure 3. Material Purchasing Procedure Flow Diagram

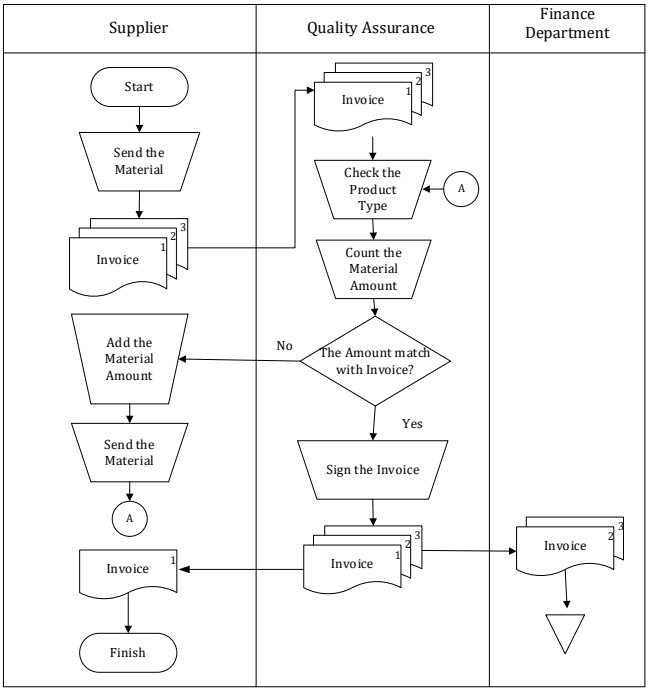

Figure 4. Material Arrival Procedure Flow Diagram

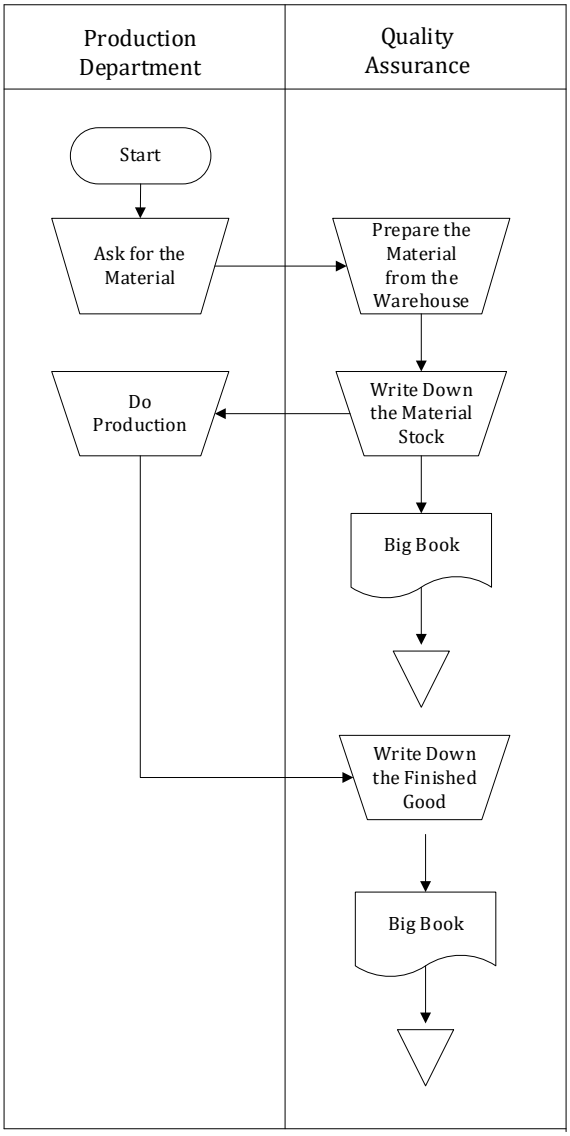

Figure 5. Material Stock Recording Procedure Flow Diagram

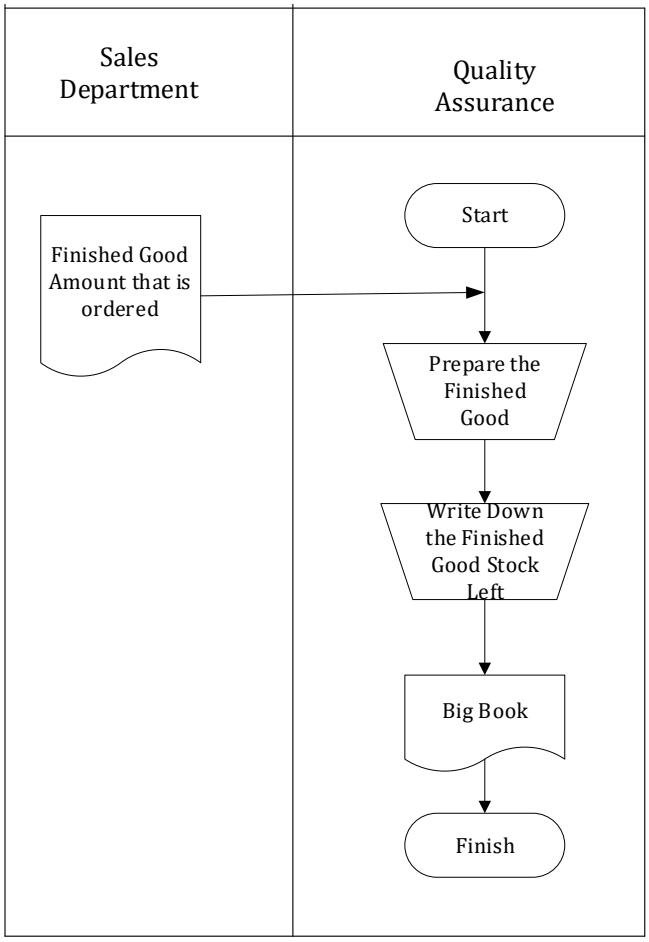

Figure 6. Finished Good Stock Recording at theFactory Procedure Flow Diagram

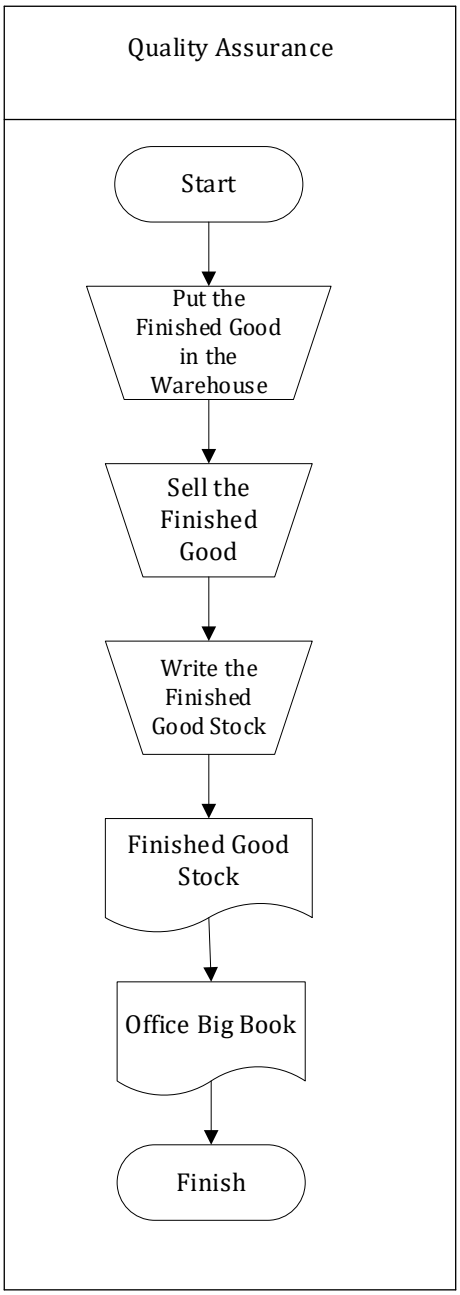

Figure 7. Finished Good Stock Recording at theOffice Procedure Flow Diagram

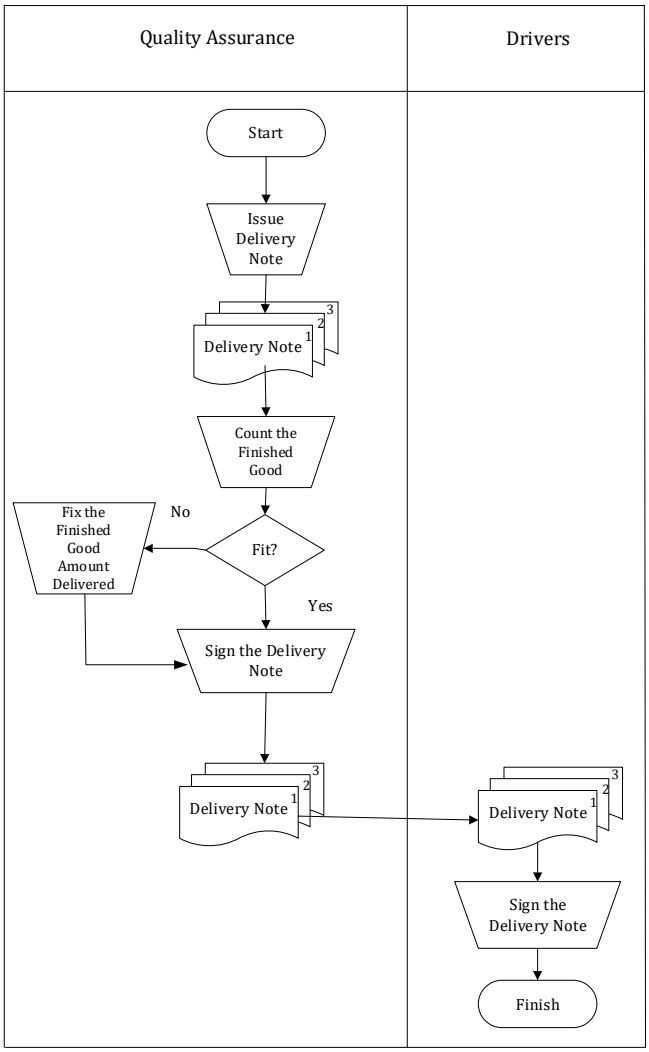

Figure 8. Finished Good Shipping Procedure Flow Diagram

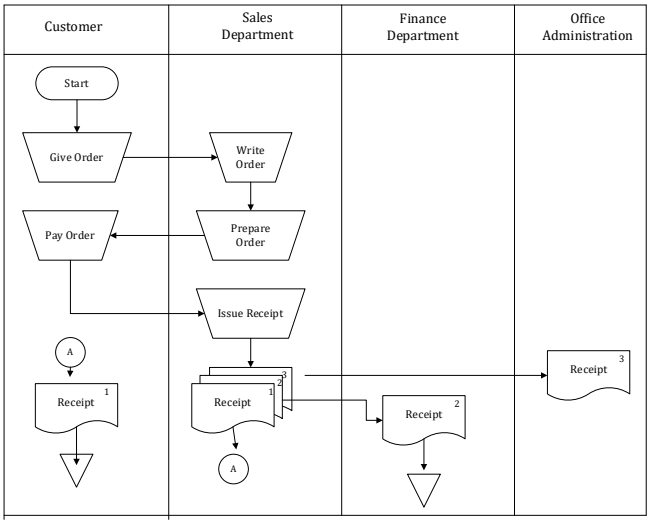

Figure 9. Finished Good Selling at Office Procedure Flow Diagram

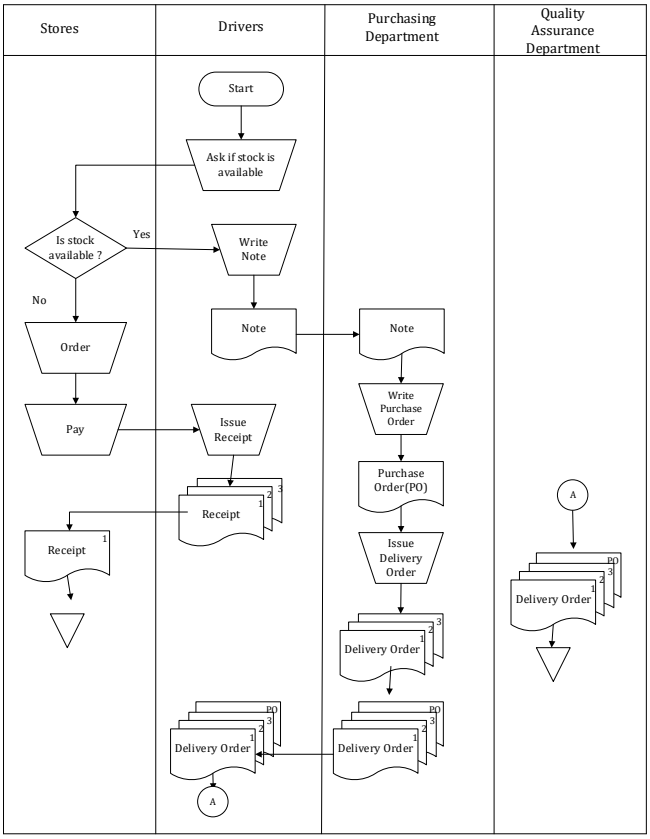

Figure 10. Finished Good Selling by Visiting Stores Procedure Flow Diagram

PIECES (Performance, Information, Economy, Cost and Efficient) analysis was used to analyze each procedure. The overall results were:

- The flow of the activities were good enough for a small medium enterprise company, simple and easy to be practiced.
- Material stock counting still used manual system and it could cause human error in doing it, and it was also not real-time count. If the material stock was already real-time count, the material stock recording procedure would not interfere the production process, so it could produce on time.
- The receipt was still manual, without the company's identity such as logo and name of the company.
- Information was not real-time produced.
- Report service for the management was also a bit slow.

Some recommendations were given, such as giving the signature/stamp on the receipt as a proof that it was the receipt that was issued by Noodle Factory X, if the procedure would still be semi-manual, but if the procedure would be improved to be computerized, the receipt should be printed with the name of the company at top left.

Another recommendation was to improve the Big Book (for writing the stock), better to separate the book for material stock and finished good stock at office and at the factory. It was better to start to computerize all of the system at the company, to make it easier to count the real-time stock, real-time noodle.

For the future research, it was highly recommended to start from a simple computerized system, such as Microsoft Excel system to get the information that was needed by the management easily, even for the past data.

4. CONCLUSION

The results of this research are as follows. The flow of the activities were good enough for a small medium enterprise company, simple and easy to be practiced. Material stock counting still used manual system and it could cause human error in doing it, and it was also not real-time count. If the material stock was already real-time count, the material stock recording procedure would not interfere the production process, so it could produce on time. The receipt was still manual, without the company's identity such as logo and name of the company. Information was not real-time produced. Report service for the management was also a bit slow.

Based on the results found, we suggest some recommendations given were:

- Give the signature/stamp on the receipt as a proof that it was the receipt that was issued by Noodle Factory X, if the procedure would still be semi-manual, but if the procedure would be improved to be computerized, the receipt should be printed with the name of the company at top left.
- Separate the book for material stock and finished good stock at office and at the factory.
- Start to computerize all of the system at the company, to make it easier to count the real-time stock, real-time noodle.

For the future research, it was highly recommended to start from a simple computerized system, such as Microsoft Excel system to get the information that was needed by the management easily, even for the past data. It was considered because businesses use information system technology to gain competitive advantage against their rivals, and in fact many basic business processes were set to increase output, productivity through the use of information system [16].

ACKNOWLEDGEMENT

Thank you to Noodle Factory X and Universitas Kristen Maranatha for the support until the research can be finished.

REFERENCES

[1] K. C. Laudon and J. P. Laudon, *Management Information Systems-Managing the Digital Firm, 16th ed*. Pearson Education, Inc., 2020.

[2] P. E. Sudjiman and L. S. Sudjiman, "Analisis sistem informasi manajemen berbasis komputer dalam proses pengambilan keputusan," *TelKa*, vol. 8, no. 2, pp. 55–66, Oct. 2018, doi: 10.36342/teika.v8i2.2327.

[3] B.-A. Furduescu, "Management Information Systems," *HOLISTICA – Journal of Business and Public Administration*, vol. 8, no. 3, pp. 61–70, Dec. 2017, doi: 10.1515/hjbpa-2017-0024.

[4] X. Ji, M. Swoboda, P.-L. P. Rau, and N. Sun, "Designing a smart information system: the influence of feedback on energy conservation persuasion," *Enterprise Information Systems*, vol. 14,

no. 4, pp. 480–495, Apr. 2020, doi: 10.1080/17517575.2018.1556813.

[5] I. LKS and P. Marbun, "An Analysis of Management Information Procedure in PT. Yamaha Tembung, Medan, Indonesia," *Budapest International Research and Critics Institute (BIRCI-Journal) : Humanities and Social Sciences,* vol. 2, no. 4, pp. 599–608, Nov. 2019, doi: 10.33258/birci.v2i4.661.

[6] A. P. Thenata and A. G. Prabawati, "Evaluasi pemanfaatan teknologi informasi penjadwalan mata pelajaran sekolah menggunakan PIECES framework", *JUTEI*, vol. 2, no. 1, pp. 53–63, Jul. 2018, doi: 10.21460/jutei.2018.21.97.

[7] T. Sagirani and M. E. Diradinata, "PERANCANGAN SISTEM INFORMASI BAGI USAHA MIKRO KECIL DAN MENENGAH DALAM MENINGKATKAN LAYANAN PADA PELANGGAN," *Jurnal Komunika: Jurnal Komunikasi, Media dan Informatika*, vol. 7, no. 1, pp. 18–29, May 2018, doi: 10.31504/komunika.v7i1.1363.

[8] P. N. Marasabessy, K. Falgenti, and A. T.w, "Perancangan sistem informasi penyewaan paket pernikahan dan resepsi di Yulizal Wedding berbasis Java Netbeans," *JUST IT : Jurnal Sistem Informasi, Teknologi Informasi dan Komputer*, vol. 11, no. 2, pp. 56–62, Jan. 2021, doi: 10.24853/justit.11.2.56-62.

[9] D. Jiang, "The construction of smart city information system based on the Internet of Things and cloud computing," *Computer Communications*, vol. 150, pp. 158–166, Jan. 2020, doi: 10.1016/j.comcom.2019.10.035.

[10] H. Li, "Optimization of the Enterprise Human Resource Management Information System Based on the Internet of Things," *Complexity*, vol. 2021, p. e5592850, Mar. 2021, doi: 10.1155/2021/5592850.

[11] M. Javaid and I. H. Khan, "Internet of Things (IoT) enabled healthcare helps to take the challenges of COVID-19 Pandemic," *Journal of Oral Biology and Craniofacial Research*, vol. 11, no. 2, pp. 209–214, Apr. 2021, doi: 10.1016/j.jobcr.2021.01.015.

[12] K. Leng, L. Jin, W. Shi, and I. Van Nieuwenhuyse, "Research on agricultural products supply chain inspection system based on internet of things," *Cluster Computing*, vol. 22, no. 4, pp. 8919–8927, Jul. 2019, doi: 10.1007/s10586-018-2021-6.

[13] J. Erasmus, P. Grefen, I. Vanderfeesten, and K. Traganos, "Smart Hybrid Manufacturing Control Using Cloud Computing and the Internet-of-Things," *Machines*, vol. 6, no. 4, p. 62, Dec. 2018, doi: 10.3390/machines6040062.

[14] X. Tang, "Research on Smart Logistics Model Based on Internet of Things Technology," *IEEE Access*, vol. 8, pp. 151150–151159, 2020, doi: 10.1109/ACCESS.2020.3016330.

[15] A. T. Soemohadiwidjojo, *Mudah Menyusun SOP-Standard Operating Procedure, 1st ed*. Penebar Plus (Penebar Swadaya Grup), 2014.

[16] A. Berisha-Shaqiri, "Management Information System and Decision-Making," *Academic Journal of Interdisciplinary Studies*, vol. 3, no. 2, pp. 19–23, Jun. 2014, doi: 10.5901/ajis.2014.v3n2p19.