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BUSINESS PROCESS MANAGEMENT MATERIAL TRANSFER SYSTEM WAREHOUSE DEPARTMENT PT. XYZ

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Abstract. This study aims to improve the business processes of the warehouse department of PT. XYZ. The business process needs to be improved because the company feels there is inefficiency in the material transfer process in the warehouse department. The researcher uses the business process management life cycle guide in the analysis process. Warehouse staff are involved in the data collection process. Business process improvement is modeled in the form of a business process modeling and notation (BPMN) language. The results of this study are in the form of a business process model resulting from a business process redesign. This modeling can be tested by the company for the company, as a consideration for business process improvement.

Keywords: *Business Process Management (BPM), BPM Life Cycle, BPMN*

1. INTRODUCTION

The performance of an organization can be improved through proper management. In the organization there are business processes that run by generating value for its customers. Business processes consist of elements of activities, events, and decision points that involve actors and objects and produce at least one value, which means positive or negative for the customer (Dumas et al., 2013). Business processes can always be improved in order to achieve good performance and the right value for customers. Good business processes, by no means, cannot be improved in performance. Through business process management (BPM), good business processes can be improved for the better. This business process improvement can be in the form of reducing costs (cost), reducing processing time (time), increasing product or service quality (quality), and business process resilience in conducting varied transactions (flexibility) (Dumas et al., 2013). PT. XYZ, is a manufacturing company engaged in packaging, has a warehouse department that functions in managing inventory records. In the process management of the warehouse department, it was revealed that there were many delays in the material transfer process. This encourages researchers to conduct studies in order to analyze the current process in the warehouse department and redesign the process to improve business process performance. Some researchers reveal that business process improvement can be done by managing business processes. Tools, methods that can be used to carry out these business processes can use a business process management approach (Ko, 2009)(Ko et al., 2009)(Viriyasitavat et al., 2020)(Reijers, 2006)(Hernaus et al., 2012) This study aims to analyze the performance improvement of existing business processes in the warehouse department of PT. XYZ uses a business process management approach. The procedure used in order to perform process performance, researchers adopted the phases in the BPM Life

Cycle (Morais & Costa, 2014). The results of this study are expected to provide a redesign process proposal for PT. XYZ which can be implemented to improve the performance of the warehouse department.

2. LITERATURE REVIEW

2.1 Business Process

Business process is a series of processes or activities carried out by the company to achieve the goals that have been set (Rumdiana, 2020). According to Paul Harmon, in his book "Business Process Change" (2003), the definition of a business process is a series of activities carried out by a business which includes the initiation of input, transformation of information, and producing output. The output can be of value to the customer, business or market, it can also be of value to other processes (within the organization). A business process can be broken down into several sub-processes, each of which has its own attributes that contribute to achieving the goals of the parent process. Sub-processes can be further broken down into activities, namely the smallest sub-processes that can consist of one or more steps (steps) that must be included in the business process (Nurhayati & Setiadi, 2017).

2.2 Business Process Management

Business process management (BPM) is basically an organizational management idea (Reijers, 2021). According to Reijers, organizations perform better when they pay explicit attention to their business processes from start to finish. BPM according to (Fischer et al., 2020) can be a strategy in implementing a company's digital transformation. In addition (Ramadhani & Mahendrawathi, 2019) revealed that BPM and knowledge management (KM) can help organizations improve their capabilities through better use of individual knowledge resources and organizational collective knowledge. In the context of measurable quality management processes, complex information technology (IT) systems are needed, therefore many companies are getting interested in implementing BPM tools that refer to process management through IT tools (Waszkowski & Nowicki, 2020). Using IT tools, allows managers to monitor the implementation of processes to produce better results, because every business process management and BPM can be applied in all processes. Research conducted by (Nurmadewi & Mahendrawathi, 2019) found that there is a link between BPM capabilities and IT needs for industry.

2.3 BPM Life Cyle

BPM is a cross-disciplinary subject of theory and practice with many views, definitions and perspectives. To understand the terminology and features of BPM effectively, we can start by appreciating the BPM life cycle. There are many views about the BPM life cycle in general, Van der Aalst et.al in (Ko et al., 2009) explains the BPM life cycle in a concise and relevant way. The following is the BPM life cycle according to Van der Aalst et.al:

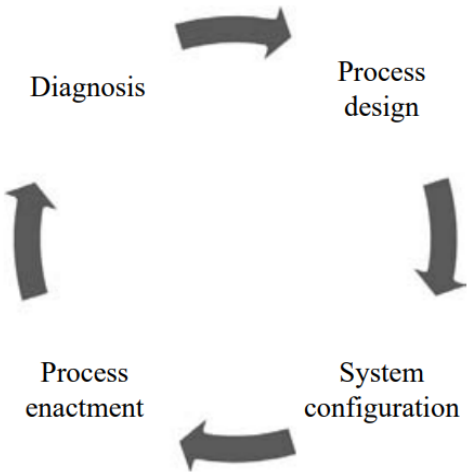

Figure 1. BPM life cycle Van der Aalst et.al's

- Process design. At this stage, paper-based business processes are modeled electronically into BPMS (Business Process Management System).
- system configuration. This stage configures the BPMS and the underlying system infrastructure (for example, synchronizing roles and organizational charts of employees in the company's active directory). This stage is difficult to standardize because of the different IT architectures of different companies.
- Process enactment. Electronically modeled business processes are deployed on the BPMS engine. Execution standards dominate this stage.
- Diagnosis. With the right analysis and monitoring tools, BPM analysts can identify and fix bottlenecks and potential fraud loopholes in business processes. The tools to do this are embodied in diagnostic standards.

Meanwhile, according to Dumas, the BPM life cycle is described as follows:

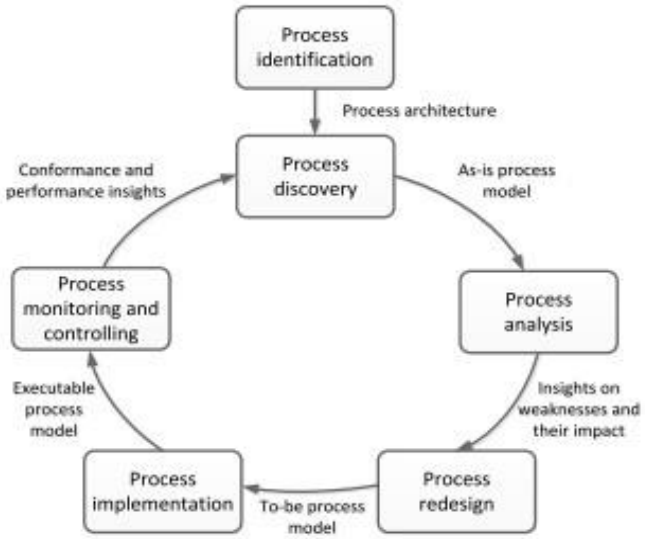

Figure 2. BPM life cycle
Source: (Dumas et al., 2013)

According to Dumas, the BPM life cycle consists of several stages including process identification, process discovery, process analysis, process redesign, process implementation, process monitoring and controlling.

BPMN is a standard for modeling business processes and web services processes. BPMN provides a notation that can be easily understood by all business users, including the business analyst who creates the initial draft of the process to the technical developer who is responsible for implementing the technology used to run these processes (Krisantoso et al., 2015).

The BPMN diagram consists of elements. These elements are divided into four categories, namely Flow Objects, Connecting Objects, Swimlanes, and Artifacts (Setiawan et al., 2019).

a. Flow Object
   1) The event is represented in the form of a circle and describes what happened at that time. There are three types of events, namely start, intermediate, and end.

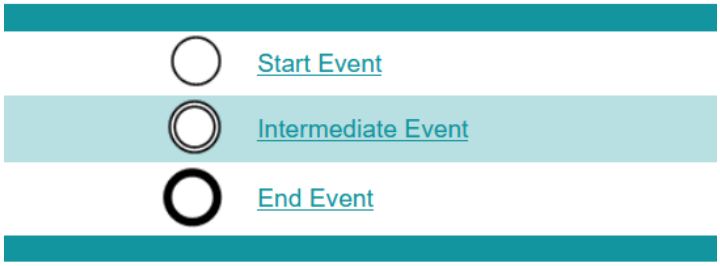

Figure 3. Event Element

2) Activity represents work (task) that must be completed. There are three kinds of activity, namely task, sub process and call activity.

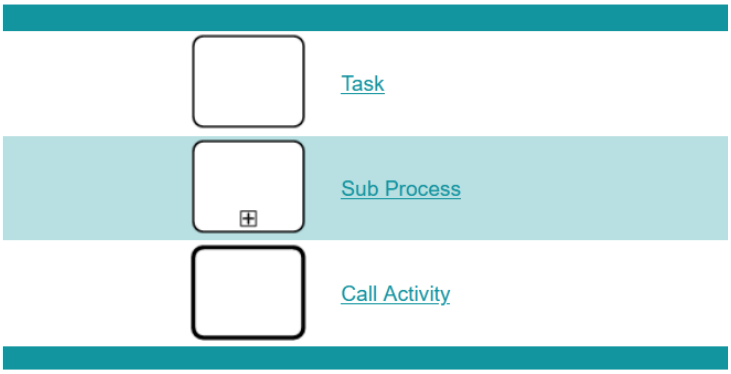

Figure 4. Activity Element

b. Connecting Object
Connecting object is the flow of messages between processes where one event with another event is interconnected and represents the relationship. There are 4 types of symbols or images in writing connecting objects, namely sequence flow, message flow, association and data association.

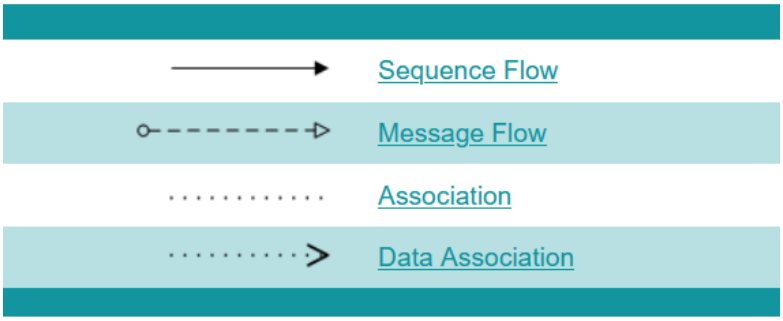

Figure 5. Connecting Object Elemen Elements

c. Swimlanes
This element is used to visually categorize all elements in the diagram. There are two types of swimlanes, namely pool and lane. The difference is that lanes are located on the inside of the pool to categorize the elements in the pool to be more specific.

Figure 6. Elements of Swimlanes

d. Artifact
This element is used to provide explanations in the diagram. This element consists of a group and a text annotation.

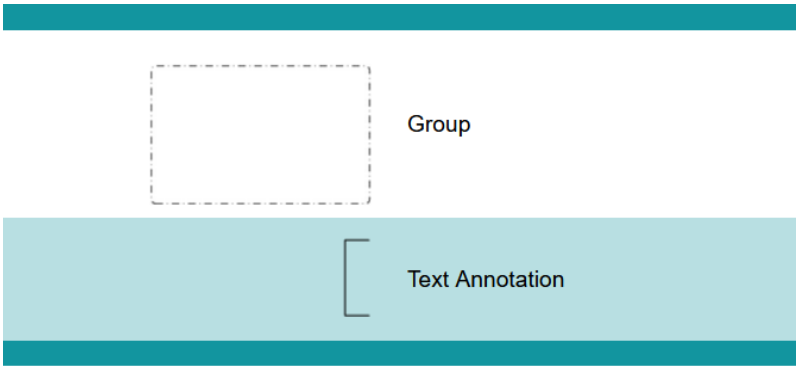

Figure 7. Elements of Artifact

3. RESEARCH METHODS/METHODOLOGY

The procedure in this study begins with collecting data through the warehouse department staff of PT. XYZ. The results of data collection are then analyzed to determine the scope of the process to be redesigned. After the determination is made, the process continues on the as-is business process modeling process using BPMN (Business process modeling notation). Based on the as-is business process modeling, an analysis is carried out in order to improve the existing business processes, so as to get a better process. The results of the analysis then become a reference for compiling the to-be process business. The following are the procedures carried out in this study:

Figure 8. Research procedure

4. RESULTS AND DISCUSSION

4.1 Business Process Identification

In the identification of business processes, based on the results of data collection, the researcher describes the existing business processes at PT. XYZ related to the Warehouse department as follows:

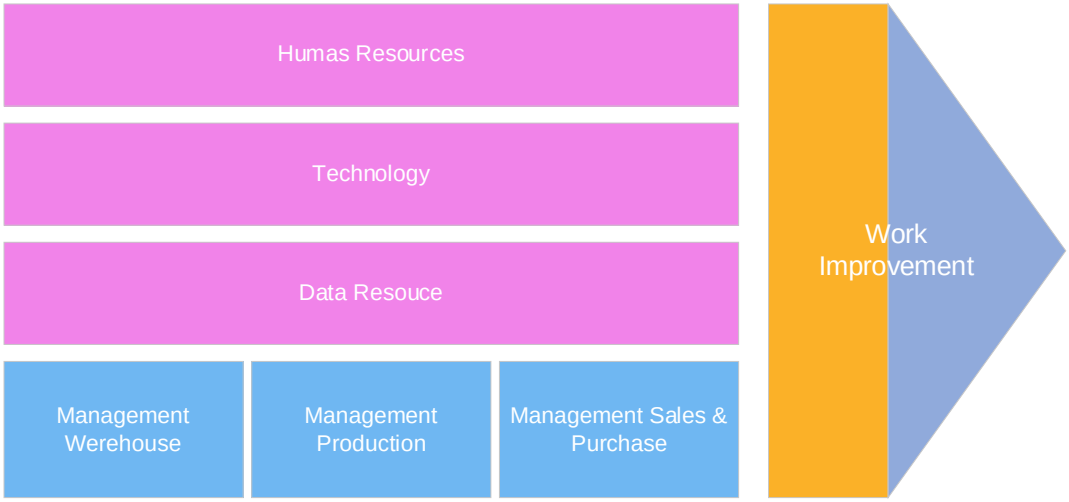

Figure 9. Value Chain

Based on Figure 9, it shows that there are main processes of warehouse management, production management, sales and purchase management. While in the supporting process there are human resources, technology and data resources. The main processes and supporting processes aim to improve performance.

4.2 Business Process Modelling As-Is in Warehouse Department

The business processes in the Warehouse Department can be modeled as follows:

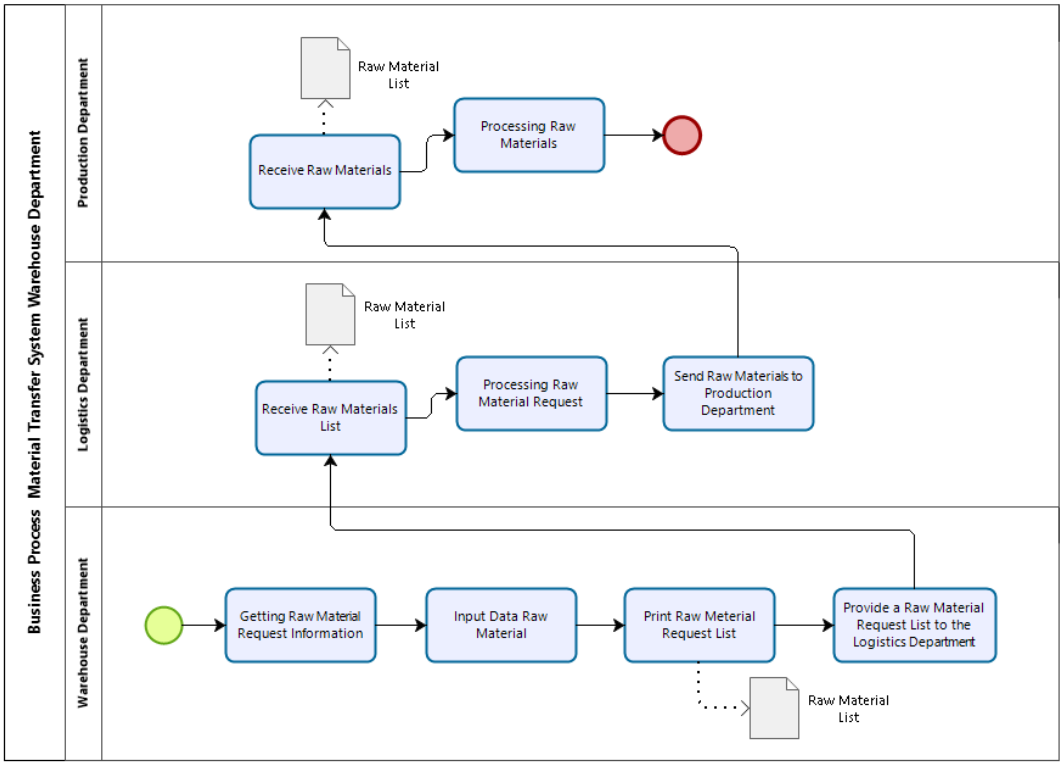

Figure 10. *Business Process Modelling As-Is in Warehouse Department*

The current business process of material transfer involves three departments of warehouse, logistics and production.

- The Warehouse Department gets information on the demand for raw materials, then the warehouse department staff makes a request for goods according to the information that has been given previously, then prints the request form which is then given to the logistics department.
- The logistics department processes and prepares requests for raw materials, prints a list of raw materials, then delivers the raw materials to the production department.
- The production department receives raw materials from the logistics department, and

processes these raw materials.

4.3 Business Process Analysis As-Is in Warehouse Department

Based on the current business process of the warehouse department material transfer system, there are still processes that can be improved to be more effective and efficient, some of the problems in it include the following:

- Many activities are still carried out manually by visiting the department directly related to the material transfer process.
- The manual process takes a long time. The long material transfer process time is caused by waiting for information between the relevant staff involved in the material transfer process.
- Documents are not well-documented and prone to loss because archiving still uses plain printing paper.

4.4 Business Process Analysis To-be

After knowing the running business processes and the problems that exist in the material transfer process of the warehouse department system, the researcher makes a proposed business process model to improve the existing business processes. The business process modeling of the proposed material transfer process for the warehouse department system can be seen in the image below.

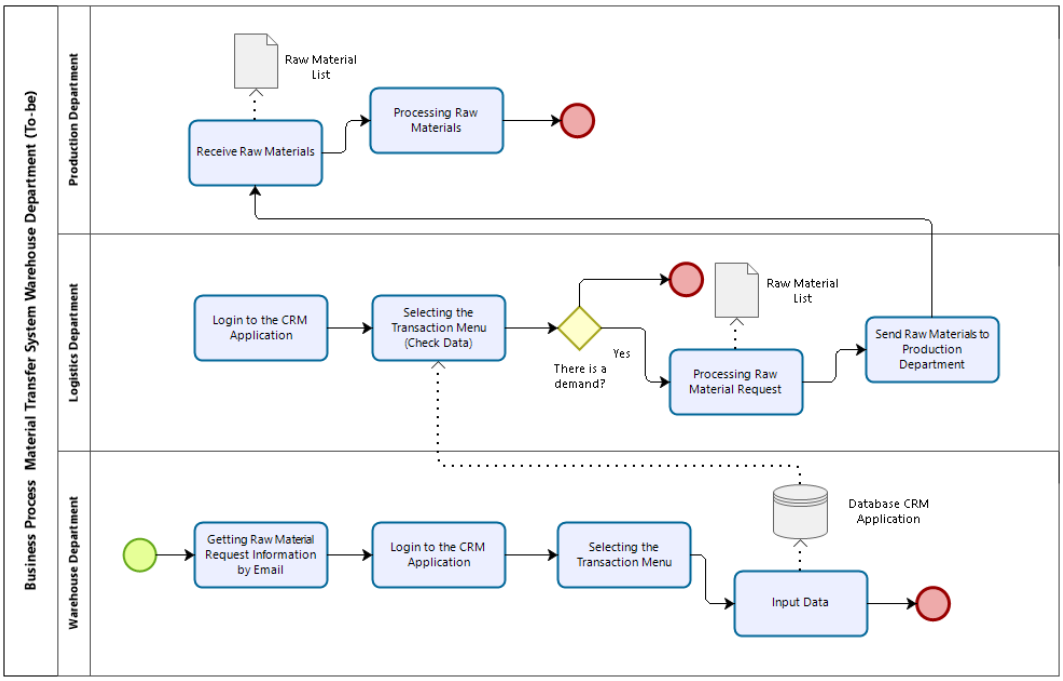

Figure 11. *Business Process Analysis To-be*

CONCLUSION

Based on the results of data collection that has been carried out, the business processes running on the material transfer system in the warehouse department still have several problems, including many activities that are still carried out manually, the material transfer process takes a lot of time and the documents involved are not well documented. Based on these problems, the researcher redesigned the material transfer system business process using a business process management (BPM) and business process modeling notation (BPMN) approach to model the business process. This redesign process is carried out with the hope that it can help improve the performance of business processes in the warehouse department of PT. XYZ.

REFERENCES

Dumas, M., La Rosa, M., Mendling, J., & Reijers, H. A. (2013). Fundamentals of Business Process Management. In *Fundamentals of Business Process Management*.

https://doi.org/10.1007/978-3-642-33143-5

Fischer, M., Imgrund, F., Janiesch, C., & Winkelmann, A. (2020). Strategy archetypes for digital transformation: Defining meta objectives using business process management. *Information and Management*, *57*(5), 103262. https://doi.org/10.1016/j.im.2019.103262

Hernaus, T., Bach, M. P., & Vuksic, V. B. (2012). Influence of strategic approach to BPM on financial and non-financial performance. *Baltic Journal of Management*, *7*(4), 376–396.

Ko, R. K. L. (2009). A computer scientist's introductory guide to business process management (BPM). *XRDS: Crossroads, The ACM Magazine for Students*, *15*(4), 11–18. https://doi.org/10.1145/1558897.1558901

Ko, R. K. L., Lee, S. S. G., & Lee, E. W. (2009). Business process management (BPM) standards: A survey. In *Business Process Management Journal* (Vol. 15, Issue 5). https://doi.org/10.1108/14637150910987937

Krisantoso, G., Ap, I., Fajar, M., & Kharisma Makassar, S. (2015). Penerapan Business Process Modeling Notation (Bpmn) Untuk Memodelkan Kebutuhan Sistem Proses Penyuntingan Tulisan Pada Website Jurnal Jtriste. *Seminar Nasional Forum Dosen Indonesia*, *August 2015*, 2460–5271.

Morais, R. M. De, & Costa, L. (2014). An analysis of BPM lifecycles : from a literature review to a framework proposal. *Business Process Management Journal*, *20*(3), 412–432. https://doi.org/10.1108/BPMJ-03-2013-0035

Nurhayati, L., & Setiadi, D. (2017). Pemodelan Proses Bisnis (Studi Kasus PD. Simpati Sumedang). *Jurnal Ilmu-Ilmu Informatika Dan Manajemen*, *11*(1), 40–50. https://doi.org/10.33481/infomans.v11i1.20

Nurmadewi, D., & Mahendrawathi, E. R. (2019). Analyzing linkage between business process management (BPM) capability and information technology: A case study in garment SMEs. *Procedia Computer Science*, *161*, 935–942. https://doi.org/10.1016/j.procs.2019.11.202

Ramadhani, F., & Mahendrawathi, E. R. (2019). A conceptual model for the use of social software in business process management and knowledge management. *Procedia Computer Science*, *161*, 1131–1138. https://doi.org/10.1016/j.procs.2019.11.225

Reijers, H. A. (2006). Implementing BPM systems: The role of process orientation. *Business Process Management Journal*, *12*(4), 389–409. https://doi.org/10.1108/14637150610678041

Reijers, H. A. (2021). Business Process Management: The evolution of a discipline. *Computers in Industry*, *126*, 103404. https://doi.org/10.1016/j.compind.2021.103404

Rumdiana, Y. (2020). Pemodelan Proses Bisnis Pada Departemen Procurement Di Pt . Adhi Luhung Wicaksana. *Ensains*, *3*(2), 112–121.

Setiawan, E., Husin, S., & Sumaga, M. (2019). Pemodelan Proses Bisnis Sistem Akademik Menggunakan Pendekatan Business Process Modelling Notation (BPMN). *Jurnal Informasi*, *2*, 80–87.

Viriyasitavat, W., Da Xu, L., Bi, Z., & Sapsomboon, A. (2020). Blockchain-based business process management (BPM) framework for service composition in industry 4.0. *Journal of Intelligent Manufacturing*, *31*(7), 1737–1748. https://doi.org/10.1007/s10845-018-1422-y

Waszkowski, R., & Nowicki, T. (2020). Efficiency investigation and optimization of contract management business processes in a workwear rental and laundry service company. *Procedia Manufacturing*, *44*(2019), 551–558. https://doi.org/10.1016/j.promfg.2020.02.256