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Production Planning Redesign Through Enterprise Engineering- A Case of Printing Company

Jaruwit Kanitthum[1], Kelwalin Eiamkuekool[1], Hemvitee Suttinont[1], Jing Tang[2,*[0000-0002-4835-1016]], Natt Leelawat[1,3[0000-0001-5181-2584]]

[1] Department of Industrial Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok 10330 Thailand
[2] International School of Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok 10330 Thailand
[3] Disaster and Risk Management Information Systems Research Group, Chulalongkorn University, Bangkok 10330 Thailand
*Corresponding author; yolanda.ttjing@gmail.com

Abstract. In the present, many industries in Thailand confront with the ineffective production planning system and business process management. Companies that suffer from these problems may lose the opportunities to make profits and credits and cannot deliver work on-time. The printing company is a case study of this research. The research objective is to redesign the production planning system and business process of the printing company that serves media content packaging design, food packaging, paper packaging, hangtags, label stickers, catalogs, brochures, etc. This study applies the Design & Engineering Methodology for Organizations (DEMO) and Business Process Model and Notation (BPMN) as methodologies. The results are expected to enhance communication in the production planning system; to compare the business process between as-is and to-be system by applying DEMO and BPMN and illustrated in simulation; and to reduce the overdue works.

Keywords: Business Process Model and Notation, Design and Engineering Methodology for Organizations, Printing Company, Production Planning.

1 Introduction

A printing company, which is located in Thailand, was chosen to be a case study of this project. Its main product is product packaging. Generally, the production process contains seven stations, which are Production Planning, Cutting, Ink Mixing, Off Set, Die Cut, Tearing, and Packaging. As a small and unsteady company, it suffers from the inefficient production planning system due to lack of proper communication among managers. It contributes to many drawbacks in the company. For instance, loss of opportunities and reputation to make profits and credits, and overdue work up to 25%.

The Design and Engineering Methodology for Organizations (DEMO) [1] and the Business Process Model and Notation (BPMN) were applied to improve the ineffi-

cient production planning system of the company. DEMO was developed based on PSI Theory integrated with other theories, frameworks, and formal models. DEMO was applied in this research because it is an efficient methodology to overview the business process of an organization and enables to summarize overall process into 1 or 2 pages. Furthermore, this model presents the relationship between departments and the theories of DEMO are able to find problems in the organization and improve the business process. BPMN was applied in this study because it could help easily creating Process Model (PM) which is one of the DEMO models. Furthermore, a process model created in BPMN form could be used to simulate the business process and enable to get necessary results.

2 Research Design, Methodology, and Results

This study gathered the primary and secondary data of production planning and business process from the company by semi-structured interviews, surveys, gathering directly from a company database, and sending an email. The examples of data were production process, the accepted percentage of overdue works, Customer orders from January 2018 to March 2018 including production lead time and expected a delivery lead time of each order.

Next, the DEMO construction model was developed at the ontological level, in order to overview and check the completeness of the business process system in the company. Based on it, the business process was redesigned by implementing transactions or reducing unproductive and redundant transactions to reduce the percentage of overdue work. For the evaluation and implementation, a DEMO process model was created. As there is a lack of DEMO simulation software, the DEMO process model was translated into a BPMN model. A BPMN simulation software, Bizagi, was used to evaluate our redesign. The results show that the DEMO based redesign reduces the number of overdue works from 23.4% to 9.9%.

3 Conclusion

This research not only enhances the business process in the printing company but also contributes to being a pioneer case study of DEMO implementation in Thailand. Therefore, this research can be beneficial for companies confronting with the inefficient production planning system, communication issues, or even the companies that have a similar business process. Following the suggestion, it is possible to reduce the number of overdue works. However, more considerations are still required in practice such as the standard, procedure, as well as safety of work process.

References

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