Digitalization of Processes, Value Streams and Equipment Efficiency Analysis

M. Mabkhesh¹, St. Petersburg State University of Aerospace Instrumentation, моаттег1993@yandex.ru

¹ Graduate Student, St. Petersburg, Russia

Citation: Mabkhesh M. Digitalization of Processes, Value Streams and Equipment Efficiency Analysis, Kompetentnost' / Competency (Russia), 2024, no. 3, pp. 42–48. DOI: 10.24412/1993-8780-2024-3-42-48

key words

value stream, quality management, Lean principles, overall equipment efficiency The author analyzes experience and potential of using the value stream mapping method in the digitalization of production processes and OEE analysis. The main problems associated with the applicability of existing approaches are considered. It is noted that the fundamental difference between traditional and digital types of visualization of processes is that graphical analysis can be performed by anyone, while digital analysis requires appropriate training in the field of data collection.

In conclusion, the impact of digitization and retrieval of key data to determine correction actions is shown. Development is possible even with the digital data manual creation by employees using simple production management and maintenance functions (elements of Lean Production and TPM). A method for increasing their efficiency is proposed.

References

1. Rüssmann M., etc. Industry 4.0: the Future of Productivity and Growth in Manufacturing Industries, Boston, *Boston Consulting Group*, *MA*, 2015.

2. McAffe A., Brynjolfsson E., Harward Business Review, 2012, vol. 90, no. 10, pp. 61-67.

3. OCDE Exploring the Key Issues for Greening SMEs and Green Entrepreneurship; https://doi.org/10.1787/bab63915-en.

4. Gallardo-Vázquez M., Sánchez-Hernández I. Structural Analysis of the Strategic Orientation to Environmental Protection in SMEs,

- Business Research Quarterly, 2014. 5. Buer S. V., Strandhagen J. O., Chan F. T. S., International Journal of Production Research, 2018, vol. 56, no. 8, pp. 2924–2940.
- 6. Ciano M. P., Dallasega P., Orzes G., Rossi T., International Journal of Production Research, 2020, pp. 1–25.
- 7. Krynke M., Mielczarek K., MATEC Web of Conferences, 2018, vol. 183, pp. 1-6.

8. Gupta S., Koulamas C., Kyparisis G. J., Production and Operations Management, 2009, no. 18(6), pp. 604-620.

9. Mabkhesh M., Tushavin V.A., Science and Business. Ways of Development, 2022, no. 4(130), pp. 170-174.

10. McManus H. L. Product Development Value Stream Mapping (PDVSM): Manual, Cambridge, Lean Aerospace Initiative (Massachusetts Institute of Technology), 2005.

11. Keyte B., Locher D. The Complete Lean Enterprise — Value Stream Mapping for Administrative and Office Processes, New York, *Productivity Press*, 2014.

12. Ward A. C. Lean Product and Process Development, Cambridge, Lean Enterprise Institute, 2017.

13. Hardcopf R., Liu G. J., Shah R., International Journal of Production Economics, 2021, no. 235(8), p. 108060.

14. Oppenheim B. W. Lean Product Development Flow, Los Angeles, *Department of Mechanical Engineering (Loyola Marymount University)*, 2003.

- 15. Rother M., Shook J. Learning to See: Value Stream Mapping to Add Value and Eliminate Muda, Lean Enterprise Institute, 1999.
- 16. Overall equipment efficiency, Moscow, Institute of Comprehensive Strategic Research, 2017.
- 17. Rauch E., etc., Sustainability, 2020, vol. 12, no. 9, p. 3559.
- 18. Müller J. M., Journal of Manufacturing Technology Management, 2019, vol. 30, no. 8, pp. 1127–1142.

19. Liu Z., Ye Y., Cheng Y., International Journal of Technology Management, 2020, vol. 84, no. 3/4, pp. 211–228.

Как подготовить рекламу для журнала «Компетентность»

Рек офо с ма Для Доп фай

Рекламные статьи редакция оформляет в соответствии с макетом, принятым в журнале для статей этой категории. Допустимые форматы текстовых файлов: TXT, RTF, DOC

Допустимые форматы графических файлов и готовых модулей: логотипы, графики, диаграммы, схемы — Al 8-й версии (EPS, текст переведен в кривые); фотографии — TIFF, JPEG (Grayscale, RGB, CMYK) с разрешением 300 dpi