Workload control order release with controllable processing time policies: an assessment by simulation

P. Renna

Università degli Studi della Basilicata, School of Engineering, Potenza, Italy

References

[1]   N. O. Fernandes, S. Carmo-Silva, "Workload control under continuous order release," International Journal of Production Economics, vol. 131, no. 1, pp. 257-262, May 2011, doi: 10.1016/j.ijpe.2010.09.026.

[2]   J.W.M. Bertrand, H.P.G. Van Ooijen, "Workload based order release and productivity: a missing link," Production Planning and Control, vol. 13, no. 7, pp. 665–678, 2002, doi: 10.1080/0953728021000026276.

[3]   H. Missbauer, "Models of the transient behaviour of production units to optimize the aggregate material flow," International Journal of Production Economics, vol. 118, no. 2, pp. 387–397, April 2009, doi:10.1016/j.ijpe.2008.11.014.

[4]   E. Goldratt, R. E. Cox, The Goal. Great Barrington, MA: North River Press, 1986.

[5]   J. P. Womack, D.T. Jones, D. Ross, The machine that changed the world. Harper Perennial, New York, 1990.

[6]   M. G. Godinho Filho, R. Uzsoy, "Assessing the impact of alternative continuous improvement programs in a flow shop using system dynamics," International Journal of Production Research, vol. 52, no. 10, pp. 3014-3031, 2014, doi: 10.1080/00207543.2013.860249.

[7]   Z. Huang, J. Kim, "Industry 4.0: Development of a multi-agent system for dynamic value stream mapping in SMEs," Journal of Manufacturing Systems, vol. 52, pp. 1–12, July 2019, doi: 10.1016/j.jmsy.2019.05.001.

[8]   S. Kamble, A. Gunasekaran, "Industry 4.0 and lean manufacturing practices for sustainable organizational performance in Indian manufacturing companies," International Journal of Production Research, vol.58, no. 5, pp. 1–19, 2019, doi: 10.1080/00207543.2019.1630772

[9]   Afonso T., Alves A. C., Carneiro P. Vieira A. (2021). "Simulation Pulled by the Need To Reduce Wastes and Human Effort in an Intralogistics Project," International Journal of Industrial Engineering and Management, vol. 12, no. 4, pp. 274-285.

[10] Pattanaik L. N. (2021). "Simulation Optimization of Manufacturing Takt Time for a Leagile Supply Chain with a De-coupling Point," International Journal of Industrial Engineering and Management, vol. 12, no. 2, pp. 102-114.

[11] Akturk MS, Ghoshb JB, Kayana RK (2007). "Scheduling with tool changes to minimize total completion time under controllable machining conditions," Computers and Operational Research, vol. 34, pp. 2130–2146

[12] Uruk Z, Gultekin H, Selim Akturk MS (2013). "Two-machine flowshop scheduling with flexible operations and controllable processing times," Computers and Operational Research, vol. 40, no. 2, pp. 639–653

[13] B. J. Oosterman, M. J. Land, G.J.C. Gaalman, "The influence of shop characteristics on workload control," International Journal of Production Economics, vol. 68, no. 1, pp. 107–119, October 2000, doi: 10.1016/S0925-5273(99)00141-3.

[14] N. O. Fernandes, M. Thürer, C. Silva, and S. Carmo-Silva, "Improving Workload Control Order Release: Incorporating a Starvation Avoidance Trigger Into Continuous Release, " International Journal of Production Economics, vo. 194, pp. 181–189, December 2017, doi: doi.org/10.1016/j.ijpe.2016.12.029.

[15] N. O. Fernandes, M. Thürer, M. Stevenson, "Direct Workload Control: simplifying continuous order release," International Journal of Production Research, in press, DOI: 10.1080/00207543.2020.1857451

[16] M. Thürer, M. Stevenson, P. Renna, "Workload control in dual-resource constrained high-variety shops: an assessment by simulation," International Journal of Production Research, vol. 57, no. 3, pp. 931-947, 2019, doi: 10.1080/00207543.2018.1497313.

[17] D. Mezzogori, G. Romagnoli, F. Zammori, "Defining accurate delivery dates in make to order job-shops managed by workload control," Flexible Services and Manufacturing Journal, vol., 33, pp. 956-991, 2021, doi:10.1007/s10696-020-09396-2.

[18] M. Thürer, C. Silva, M. Stevenson, "Optimising workload norms: The influence of shop floor characteristics on setting workload norms for the workload control concept," International Journal of Production Research, vol. 49, no. 4, pp. 1151-1171, 2011, doi: 10.1080/00207541003604836.

[19] P. Renna, "Workload control policies under continuous order release," Production Engineering Research & Development, vol. 9, pp. 655-664, 2015, doi: 0.1007/s11740-015-0639-2.

[20] P. Renna, "A Dynamic Adjusted Aggregate Load Method to Support Workload Control Policies, " Applied Sciences, vol. 10, no. (10), pp. 3497, 2020, doi:10.3390/app10103497.

[21] M. Thürer, M. Lin, M. Stevenson, "Workload Control order release in general and pure flow shops with limited buffer size induced blocking: an assessment by simulation," International Journal of Production Research, vol. 59, no. 8, pp. 2558-2569, 2021, doi: 10.1080/00207543.2020.1735667.

[22] M. Thürer, M. Stevenson, M.J. Land, "On the integration of input and output control: Workload Control order release," International Journal of Production Economics, vol. 174, pp. 43-53, April 2016, doi: 10.1016/j.ijpe.2016.01.005.

[23] G. C. Hadjinicola, A. C. Soteriou, "Reducing the cost of defects in multistage production systems: a budget allocation perspective," European Journal of Operational Research, vol. 145, no. 3, pp. 621–634, March 2003, doi: 10.1016/S0377-2217(02)00216-3.

[24] A. Noroozi, H. Mokhtari, M. Bagherpour, S.J. Sadjadi, "A probabilistic portfolio budget allocation problem with CPI index under risk," Journal of Industrial and Production Engineering, vol. 33, no. 4, pp. 236–246, 2016, doi: /10.1080/21681015.2015.1136897.

[25] I. Moon, S. Lee, M. Shin, K. Ryu, (2014). "Evolutionary resource assignment for workload-based production scheduling,". Journal of Intelligent Manufacturing, vol. 27, pp. 375-388, 2014, doi: 10.1007/s10845-014-0870-2.

[26] P. Renna, (2017). "Allocation improvement policies to reduce process time based on workload evaluation in job shop manufacturing systems," International Journal of Industrial Engineering Computations, vol. 8, no. 3, pp. 373–384, 2017, doi: 10.5267/j.ijiec.2016.12.001.

[27] S. Luo, L. Zhang, Y. Fan, "Energy-efficient scheduling for multi-objective flexible job shops with variable processing speeds by grey wolf optimization," Journal of Cleaner Production, vol. 234, pp.1365-1384, October 2019, doi: 10.1016/j.jclepro.2019.06.151.

[28] T. Meng, Q. K. Pan, H. Y. Sang, "A Hybrid Artificial bee Colony Algorithm for a Flexible job Shop Scheduling Problem with Overlapping in Operations," International Journal of Production Research, vol. 56, no. 16, pp. 5278–5292, 2018, doi: 10.1080/00207543.2018.1467575.

[29] A. Shioura, N. V. Shakhlevich, V. A. Strusevich, "Scheduling problems with controllable processing times and a common deadline to minimize maximum compression cost.", Journal of Global Optimization, vol. 76, pp. 471–490, 2020, doi: https://doi.org/10.1007/s10898-018-0686-2.

[30] Gao S., Daaboul J., Le Duigou J. (2021). Layout and scheduling optimization problem for a reconfigurable manufacturing system. International Journal of Industrial Engineering and Management, vol. 12, no. 3, pp. 174-186.

[31] L. Martins, M.L.R. Varela, N. O. Fernandes, S. Carmo–Silva, J. Machado, "Literature review on autonomous production control methods," Enterprise Information Systems, vol. 14, no. 8, pp. 1219-1231, 2020, doi:10.1080/17517575.2020.1731611.

[32] S. A. Melnyk, G.L. Ragatz, "Order review/release: research issues and perspectives," International Journal of Production Research, vol. 27, no. 7, pp. 1081–1096, 1989, doi: 10.1080/00207548908942609.

[33] L. D. Fredendall, O. Divesh, J. W.Patterson, "Concerning the theory of workload control," European Journal of Operational Research, vol. 201, no. 1, pp. 99–111, 2010, doi: 10.1016/j.ejor.2009.02.003.

[34] M. J. Land, G.J.C. Gaalman, "Workload control concepts in job shops: a critical assessment," International Journal of Production Economics, vol. 46–47, pp. 535–538, 1996, doi: 10.1016/S0925-5273(96)00088-6.

[35] M. Thu¨rer, C. Silva, M. Stevenson, M. J. Land, "Improving the applicability of workload control: the influence of sequence dependent set-up times on workload-controlled job shops," International Journal of Production Research, vol. 50, no. 22, pp. 6419–6430, 2012, doi: 10.1080/00207543.2011.648275.

[36] M. Thu¨rer, M. Stevenson, C. Silva, M. J. Land, D. Fredendall, "Workload control (WLC) and order release: a lean solution for make-to-order companies," Production and Operation Management, vol. 21, no. 5, pp. 939–953, 2012, doi: 10.1111/j.1937-5956.2011.01307.x.

[37] P. Renna, "Peak Electricity Demand Control of Manufacturing Systems by Gale-Shapley Algorithm with Discussion on Open Innovation Engineering," Journal of open innovation: technology, market, and complexity, vol. 6, no., 2, pp. 1-29, 2020, doi: 10.3390/joitmc6020029.

[38] Y-D. Zhou, Jeong-Hoon Shin, Dong-Ho Lee, "Loading and scheduling for flexible manufacturing systems with controllable processing times," Engineering Optimization, vol. 51, no. 3, pp. 412-426,2018, doi: 10.1080/0305215X.2018.1469134.

[39] M . Thürer, T. Qu, M. Stevenson, T. Maschek, M. Godinho Filho, "Continuous workload control order release revisited: an assessment by simulation," International Journal of Production Research, vol. 52, no. 22, pp. 6664-6680, 2014, doi: 10.1080/00207543.2014.907514.

[40] M. Thürer, C. Silva, M. Stevenson, "Controlled order release: a performance assessment in job shops with sequence dependent set-up times," Production Planning & Control, vol. 25, no. 7, pp. 603–615, 2014, doi: 10.1080/09537287.2012.735801.