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# Engineering-to-order manufacturing: A criticality analysis of key challenges and solutions based on literature review

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**A B S T R A C T**

Engineer-to-Order (ETO) manufacturing companies involve customised production products based on specific customer requirements, and face a significant challenge. Some of those challenges are related with this type of company's activities in production scheduling, planning and control, efficiency improvement and lead time reduction. The present study was conducted with a systematic literature review and a survey from ETO firms to identify the most frequent and critical problems. Among the most critical issues identified is the difficulty in optimising production performance (P3), with a GCI value of 16, implying that both time and cost share the same critical level. An analysis using a proposed Criticality Matrix was then performed enabling companies to prioritise decision-making and resource allocation. The results highlight the importance of adopting mass customisation strategies, innovative approaches and workflow optimisation. Continuous monitoring and analysis of criticality levels can also help ETO companies identify emerging issues and improve informed decisions. Effective communication and collaboration among stakeholders were also identified as vital. Future research could be done expanding further the study sample and developing decision-support tools for ETO manufacturing companies. This study contributes to the field by providing a new criticality matrix for ETO companies to understand better and address their production challenges, aiding in decision-making and resource allocation.

**A R T I C L E   I N F O**

*Keywords:*
Communication and collaboration;
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Decision-making;
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