

Mass customization in practice: Strategic implementation and insights from Polish small and medium sized enterprises

Patalas-Maliszewska, J.^{a,*}, Kowalczevska, K.^b, Pajak, G.^a

^aInstitute of Mechanical Engineering, University of Zielona Góra, Zielona Góra, Poland

^bDoctoral School of Exact and Technical Sciences, University of Zielona Góra, Zielona Góra, Poland

ABSTRACT

Implementing a mass customization (MC) strategy in manufacturing enterprises presents an ongoing challenge for both managers and researchers. To remain competitive, managers must consider adopting advanced technologies associated with Industry 4.0 and 5.0 (I4.0/5.0). This study seeks to identify solutions that support strategic decision-making aimed at enhancing the level of MC implementation. The paper begins with a literature review focused on the adoption of MC strategies within European manufacturing enterprises. It then presents findings from a questionnaire-based survey conducted among more than 100 small and medium-sized enterprises (SMEs) in Poland's automotive sector. Statistical analysis, including correlation coefficients, was used to evaluate the data. The results indicate that consumer participation in the product design process is the key driver of successful MC strategy implementation in the surveyed SMEs. Furthermore, managers recognized strong correlations between the adoption of I4.0/5.0 technologies—such as automated machinery and real-time data usage—and higher levels of MC capability. The benefits of implementing MC strategies, including increased production flexibility and waste reduction, were also highlighted. The findings offer general insights applicable to SMEs in the automotive industry.

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*Corresponding author:

J.Patalas-Maliszewska@iim.uz.zgora.pl
(Patalas-Maliszewska, J.)

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Prilagojena množična proizvodnja v praksi: strateška uvedba in spoznanja iz poljskih malih in srednje velikih podjetij

Patalas-Maliszewska, J.^{a,*}, Kowalczevska, K.^b, Pajak, G.^a

^aInstitute of Mechanical Engineering, University of Zielona Góra, Zielona Góra, Poland

^bDoctoral School of Exact and Technical Sciences, University of Zielona Góra, Zielona Góra, Poland

POVZETEK

Uvajanje strategije prilagojene množične proizvodnje (PMP) v proizvodna podjetja predstavlja trajen izziv tako za menedžerje kot tudi raziskovalce. Za ohranjanje konkurenčnosti morajo menedžerji razmisliti o uvedbi naprednih tehnologij, povezanih s konceptoma Industrije 4.0 in 5.0 (I4.0/5.0). Namen raziskave je prepoznati rešitve, ki podpirajo strateško odločanje z namenom povečanja ravni izvajanja strategije PMP. Prispevek se začne s pregledom literature, osredotočenim na uvajanje strategij PMP v evropskih proizvodnih podjetjih, nato pa predstavi rezultate anketne raziskave, izvedene med več kot 100 malimi in srednje velikimi podjetji (MSP) v poljskem avtomobilskem sektorju. Za obdelavo podatkov je bila uporabljena statistična analiza, vključno z izračunom korelacijskih koeficientov. Rezultati kažejo, da je sodelovanje potrošnikov v procesu načrtovanja izdelka ključni dejavnik uspešne uvedbe strategije PMP v analiziranih MSP. Poleg tega so menedžerji prepoznali močne povezave med uvedbo tehnologij I4.0/5.0 – kot sta avtomatizirana proizvodnja in uporaba podatkov v realnem času – ter višjo stopnjo zmožnosti PMP. Med glavnimi koristmi uvedbe strategije PMP so bile izpostavljene večja prilagodljivost proizvodnje in zmanjšanje količine odpadkov. Ugotovitve ponujajo splošne usmeritve, uporabne za MSP v avtomobilski industriji.

PODATKI O ČLANKU

Ključne besede:

Strategija prilagojene množične proizvodnje;
Mala in srednje velika proizvodna podjetja;
Sodelovanje potrošnikov;
Prilagodljivost proizvodnje;
Tehnologije Industrije 4.0/5.0;
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*Kontaktna oseba:

J.Patalas-Maliszewska@iim.uz.zgora.pl
(Patalas-Maliszewska, J.)

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