

# Evaluation of Indonesian MSMEs Challenges in Cyber Physical Systems Era

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## Abstract

Cyber physical systems era is an industry eras that indirectly makes changes to the most of country in this entire world. For examples is Indonesian country that affected by cyber physical systems era in most of its existing aspects. One of the important aspects in Indonesia that must keep up with the changes in this era is micro, small and medium enterprises (MSMEs). This is meant because micro, small and medium enterprises (MSMEs) are one of the most important aspects of economic growth in Indonesia. Referring to this situation, it is important to conduct research to evaluation regarding the trend of cyber physical systems era challenges for Indonesian MSMEs, to help improve the sustainability of Indonesian MSMEs lifecycle. The purpose of the research is to evaluate the challenges for Indonesian MSMEs based on five main pillars in cyber physical systems era formulated with focus group discussions (FGD) and COWCLUS algorithm approach. Five main pillars in cyber physical systems era are internet of things, big data, artificial intelligence, cloud computing, and additive manufacturing. The focus group discussions (FGD) conducted together with Indonesian experts in the field of technology and MSMEs. For COWCLUS algorithm approach consist of several phase namely initial population, selection phase, mating phase, mutation phase, criteria meet, and final population. The evaluation findings results of the challenges that obtained namely online demand market, global market competition, predatory pricing, bad review scamming, customer hijacking, and illegal e-commerce. Meanwhile, several recommended actions that can be optimized to overcome these challenges are digital promotion, digital payments, online customer relationship management, e-menus, and positive digital social awareness. All of the findings and recommendations are to help Indonesian MSMEs to take action in carrying out and improve their business systems life cycle.

*Keywords:* evaluation, challenges, cyber, physical, era

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