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Awareness and readiness of Industry 4.0: The case of Turkish manufacturing industry

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ABSTRACT

The concept Industry 4.0 (I4.0) represents intelligent production processes combining cyber and physical systems through a set of technologies such as internet of things, big data and cloud computing. Transition to Industry 4.0 is expected to cause formidable structural changes, productivity increments and competitiveness in manufacturing industry in all over the world. This study aimed to investigate the general approach to the concept of Industry 4.0 and levels of adoption of the basic Industry 4.0 technologies in manufacturing firms across Turkey. For this purpose, a survey was conducted with 427 firms with various sizes (micro, small, medium and large) operating in six sub-sectors (automotive; electronic; machinery; chemical; food; and textile) of Turkish manufacturing. The paper examined nine I4.0 technologies: autonomous robots, big data applications, cloud computing, cyber security, simulation approaches, additive manufacturing, system integration, internet of things, and augmented reality. The results revealed that, there is a significant correlation between the degrees of importance and implementation of the basic Industry 4.0 technologies. Moreover, I4.0 implementation degree increases as the firm size increases. The top three industries in Turkish manufacturing that use the most basic Industry 4.0 technologies are automotive industry, electrical and electronics, and machinery, respectively. The analyses are aimed to achieve a better understanding of the concept Industry 4.0 by comparing different groups of manufacturers.

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Izvirni znanstveni članek

Ozaveščenost in pripravljenost Industrije 4.0: Primer Turške proizvodne industrije

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POVZETEK

Koncept Industrije 4.0 (I4.0) predstavlja inteligentne proizvodne procese, ki združujejo kibernetske in fizične sisteme prek nabora tehnologij, kot so internet stvari, veliki podatki in računalništvo v oblaku. Prehod na Industrijo 4.0 naj bi povzročil močne strukturne spremembe, povečanje produktivnosti in konkurenčnost proizvodne industrije po vsem svetu. Cilj te študije je bil raziskati splošni pristop h konceptu Industrije 4.0 in stopnje sprejemanja osnovnih tehnologij Industrije 4.0 v proizvodnih podjetjih po Turčiji. V ta namen je bila izvedena raziskava na 427 podjetjih različnih velikosti (mikro, majhna, srednja in velika), ki delujejo v šestih podsektorjih (avtomobilska industrija, elektronika, strojna industrija, kemikalije, hrana in tekstil). Članek je preučil devet tehnologij I4.0: avtonomni roboti, aplikacije za velike podatke, računalništvo v oblaku, kibernetska varnost, simulacijski pristopi, dodajalna tehnologija, sistemska integracija, internet stvari in obogatena resničnost. Rezultati so pokazali, da obstaja pomembna povezava med pomembnostjo in izvajanjem osnovnih tehnologij Industrije 4.0. Poleg tega se stopnja izvajanja I4.0 povečuje s povečevanjem velikosti podjetja. Tri najboljše panoge v turški proizvodnji, ki uporabljajo najosnovnejše tehnologije Industrije 4.0 so avtomobilska industrija, industrija elektronike in elektrotehnike ter strojna industrija. Namen analize je bil doseči boljše razumevanje koncepta Industrije 4.0 s primerjavo različnih skupin proizvajalcev.

PODATKI O ČLANKU

Ključne besede:
Industrija 4.0;
Dodajalna tehnologija;
Avtonomni roboti;
Oblačne tehnologije;
Spletna varnost;
Internet stvari (IoT);
Veliki podatki;
Obogatena resničnost

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