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## ABSTRACTS

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### THE DIGITAL ECOSYSTEM AND ENTREPRENEURIAL MUSIC DISTRIBUTION: A FORCE FIELD PERSPECTIVE

(pages 89-103)

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**Keywords:** digital music distribution, entrepreneurship, electronic distribution, disintermediation, music distribution

**Abstract:** The world of business has evolved from the 19<sup>th</sup> century (steam, rail and electricity) to the 20<sup>th</sup> century (telephone, radio, television and, especially, the computer as the greatest information technology that converts analogue signals into a digital form including binary digits), and the 21<sup>st</sup> century (the fourth industrial revolution (4th IR) – described as the advent of “cyber-physical systems” involving entirely new capabilities for people and machines). Digital entrepreneurship is an emergent phenomenon in which new digital artefacts, platforms and infrastructure are used to pursue innovative and entrepreneurial opportunities, which, to a certain extent calls into questions the relevance and applicability of traditional understandings of entrepreneurship. The study on which this article is based investigated digital entrepreneurship’s impact on the dynamic social networking market in light of the infusion of disruptive and innovative technology. It aimed to determine the entrepreneurship capability and competence that impact on digital music change management; and to examine the extent to which digital music distribution balances the driving forces of digitisation and the restraining forces from disruptive technology. An exploratory research design was adopted using univariate, bivariate and multivariate statistical analysis techniques to analyse the data collected from 217 musicians. The study found that the Internet is capable of reliable delivery of music processes, products and services, thereby enhancing supply chain distribution competence and capability. Digital entrepreneurial innovations enable independent artists to create music according to their tastes and customer demand. Independent music production and creation drive the economic entrepreneurial dimension while technological advancements encourage digital independent music distribution.

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### HAND 3D SCANNING POSSIBILITIES

(pages 105-110)

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**Keywords:** 3D scanning, hand, forearm, grip, grasping

**Abstract:** 3D scanning as an innovative method of obtaining specific substrates for the design of prosthetic-orthotic devices is now becoming increasingly popular. The advantages of this technology over the classic way of taking the dimensional and shape characteristics of parts of the human body are its non-invasiveness, speed, archiving and, more recently, the possibility of using a low-cost 3D scanner, thus reducing economic demands and making the technology available to most orthopaedic technicians. The article offers a comprehensive overview of the correct positioning of the hand and fingers for selected types of gripping as well as possible complications in their scanning, for the achievement of correct digital models applicable to the design of personalized orthotic devices.

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## REDUCTION OF POLLUTANTS IN THE RESIDENTIAL SECTOR BY MIXING HYDROGEN INTO THE NATURAL GAS NETWORK IN HUNGARY

(pages 111-117)

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**Keywords:** hydrogen in natural gas system, renewable energy consumption, GHG reduction, hydrogen-natural gas mixture

**Abstract:** According to some forecasts, hydrogen will play a significant role throughout the world by 2030 as an energy source, the biggest benefits of which include not only being able to come from renewable sources, but thus storing the energy produced, which is not currently solved. The combustion of hydrogen does not produce CO<sub>2</sub>, only negligible amounts of combustion air, unlike methane. This will reduce GHG emissions associated with end-user equipment. In this article, the authors examine the amount of hydrogen that can be fed into the Hungarian natural gas network in accordance with the current gas quality standard, and then carry out a comparative analysis of the methane, the main component that makes up hydrogen and natural gas. The authors will study the exact effect of hydrogen content on natural gas-regulated devices and estimate the theoretical CO<sub>2</sub> emissions available in the Hungarian residential sector at different rates of hydrogen.

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## DCT AND MLP IN THE APPLICATION OF MAGNETIC FLUX LEAKAGE DEFECT DETECTION

(pages 119-122)

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**Keywords:** Non-Destructive Testing (NDT), magnetic Flux Leakage (MFL), Multilayer Perceptron (MLP), discrete cosine transform (DCT)

**Abstract:** Non-Destructive Testing (NDT) is known as a harmless technique for industrial pipeline cyclic inspection. This way tries to find out defected parts of a device used in industry with a test by means of non itself destroying. Many ways are known and employed in NDT procedure. MFL or magnetic Flux Leakage is one of well-known and so efficient ones is widely used to find out defects in metal surface. Emission of magnetic field into device surface and recording reflected

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emission lead to complete a database of defect and no defect for an especial task. Then mathematical equations could help to provide normalization and classification ahead. Defect and non-defect detection are an essential and cost loss technique for analyse data from cyclic inspections. For this purpose a combination of neural networks is designed and trained in the best performance and with optimum accuracy rate. In this model Classification is done via Multilayer Perceptrons (MLP). Two level of classification is applied. First defect categorization and then defect or non-defect detection. In this paper a mathematical function named DCT or Discrete Cosine Transform is applied in pure database for data compression. This function provides a view on database in real component of frequency domain. By composing DCT function with a neural network group, this algorithm provides 97.3 percent accuracy rate in defect detection of MFL signals.

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## STATISTICAL DEVELOPMENT OF TRANSPORT WHICH REFLECTS THE NEED FOR CATALYSTS

(pages 123-127)

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**Keywords:** freight transport, transport forecast, PGMs, catalyst, resources

**Abstract:** This paper deals with the analysis and expected development of freight transport and especially road freight transport in Slovakia and in the European Union. Transport, which ensures the movement of goods, animals and people in all countries around the world, has a significant influence on the development of the national economy. However, this development of transport has a negative impact on the global ecological situation, and therefore devices, that eliminate this impact, are still developing at the same time. These devices include catalytic converters (catalysts) for exhaust systems fitted to all modern propulsion systems of road, rail and water vehicles that use burning petrol or diesel. Based on the development of transport, the need for catalysts is derived, which still use elements of the PGMs (Platinum Group Metals). The result of the article is an analysis and expected predicted development of freight transport and road freight transport in both cases - in Slovakia and in the EU, which will affect the future demand for PGMs.

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