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4th International Conference on
Advancement in Engineering and Management (AEM-2021)

Jun 10-11, 2021

International Research &
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About Conference

International Conference on Advancement in Engineering and Management (AEM-2021)

During the worldwide lockdown due to COVID 19 pandemic, a lot of important activities have come to a halt. However, when we look at the brighter side, all of us have more time for adding to our knowledge and insights.

With this aim, to keep contributing to learning and motivation International research and development Center for publication is going to organize a two-day International Conference with the title "**International Conference on Advancement in Engineering and Management (AEM-2021)**" on Jun 10-11, 2021 through online mode.

We hope, this online mode of the conference in COVID-19 pandemic will be an appreciable step in promoting the research activities and new information between researchers, developers, students, academicians and practitioners working in and around the world by keeping the social distance in view to stop the spread of COVID-19 disease. This conference aims is to present the current researches being carried out in the field of social science and education development around the globe.

Prospective authors from academia as well as industry are invited to submit their abstracts that illustrate original/unpublished works and industrial applications describing advances and significant innovations in the field.

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Message

I am extremely pleased to share that International Research and Development Center for Publication (IRDCP) is organizing a two days International Conference on **Advancement in Engineering and Management (AEM-2021)** on Jun 10-11, 2021.

I am sure the state of art lectures from the invited experts and the research findings of researchers, academicians, utility engineers will enrich the knowledge of all the participants. It will provide an excellent opportunity for students to learn new ideas.

I offer my best wishes to the whole team of the organizing committee, the participants, and volunteers for the grand success of the conference.

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Dr. Kiran
Convenor AEM-2021

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<u>Message</u>

I am happy to know that International Research and Development Center for Publication (IRDCP) is organizing a two days International Conference on **Advancement in Engineering and Management (AEM-2021)** on Jun 10-11, 2021. I am sure that, this conference would provide an ideal platform for the academicians, scholars and experts to present and exchange their research findings and Ideas.

I wish the conference a great success.

Dr. Ahmed Ansari

Abstract of

AEM-2021

Design of MEMS Biosensor for Pathogenic Bacterial Disease Detection

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Abstract— In situations of a critical disease outbreak, any time delay in identifying the pathogen can prove to be risky and has its far-reaching effects on public health systems. There is a need for pathogenic bacteria detection at the point-of-care (POC) using a fast, sensitive, inexpensive, and easy-to-use method that does not require complex infrastructure and well-trained technicians. For instance, detection of pneumonia, tuberculosis at acute infection stage has been challenging, since current antibody-based POC technologies are not effective due to low concentration of antibodies. In this study, we demonstrated for the first time a label-free electrical sensing method that can detect pathogenic bacteria, through MEMS cantilever technology. The presented method offers a rapid and portable tool that is MEMS biosensor, can be used as a bacteria detection technology at the hospital and primary care settings.

Keywords— Biosensor, Micro-cantilever, pathogen, MEMS

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Impact of Innovation on Projects Performance Towards Successful Implementation of Oman Vision 2040

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Abstract— The incorporation of the innovation and modern technologies into the models of projects management and performance is critical to promoting the effectiveness of Orginsations. Projects Management (PM) has been the norm in the modern businesses environment. The main objective of this study is to focus on analyzing the impact of innovation (digitalization, digitization and data transformation) and the modern technologies into the projects management methodologies (Agile, Lean, Kanban and Scrum) on the overall projects performance along with the effective implementation approach in case of Oman Vision 2040 and the way it can prove to be a key element in the economic growth of Oman. Quantitative research methodologies with structural online questioners' survey and Structural Equation Model (SEM) and Smart PLS tool will be applied to test the relationships between independent, moderating and dependent variables and to analyze the collected data from all projects management professionals and practitioners of projects stakeholders (Clients, Contractors, Consultants and materials manfucutering and suppliers) in an attempt to answer the research questions. At the end, the conclusions and recommendations will be developed based on the findings. These findings will help the projects management professionals, practitioners, and Oman policies and decisions makers to develop strategies to utilize the new technologies and innovation to improve the projects performance that will help to accelerate the Oman economic growth by implementing the Oman Vision 2040 projects and investments opportunities effectively.

Keywords— Economic Growth, Innovation Practices, Oman Vision 2040, Projects Management Applications.

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An investigation into effectiveness of assessment tools for engineering apprenticeship: Action research in advanced manufacturing course

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Abstract— The City and Guilds qualification is an integral part of the UK vocational qualification framework. The Advanced and Higher apprenticeship is the backbone of vocational qualification where the new generation of engineers get trained in the Further Education colleges by pursuing Level 3 qualification after completing the secondary education. Mathematics plays an essential role within the education and engineering profession, which is used as an investigation tool in current research. This study aims to investigate the impact of various assessments, including diagnostic assessment conducted before starting a training program. It is a first attempt to set up the framework through the action research methodology to identify the underpinning issues that negatively affect the students' performance in the apprenticeship program. Level 3 advanced engineering apprenticeship students were assigned a generic task to solve simple engineering math problems with three categories of questions, "General," "Mixed," and "Subject-specific" type, in two-phase tests. The results revealed that general math questions were found to be familiar to the participants while more industry-specific questions took longer or some learners failed to resolve them. Based on the results obtained, it is identified that the specific engineering calculations are found to be difficult for students to solve, where the math application is not clearly taught as part of the general education in schools. Therefore, introducing these topics as "Masterclasses" before the actual apprenticeship training begins will benefit the learners throughout the education and engineering career, until the education board take the specific issues into consideration and update the national curriculum.

Keywords— Action research; assessment methods; diagnostic test; engineering math; master classes; vocational training.

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Study of Public Transportation of the city of Campinas, using the smart city concept, and specific Equipment, for the accurate data collection, and improving this Segment in the Ergonomic Concept

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Abstract— The focus of the analysis is the public transport of the municipality, specifically the bus line No. 330, (Central Corridor / Central Terminal / Unicamp by Bus)., can be replicated to other city lines, other municipalities of the MRC (Metropolitan Region of Campinas) and even other national and international municipalities. To achieve the objective of this work, a descriptive and comparative analysis method was used, taking taking into account the perspective of the city's public sector. With this, it is intended to take the reflection to the public management of the city, to obtain public transport in an intelligent way, it is necessary to achieve its sustainable and more qualified, efficient and comfortable development for its customers and third parties.

Keywords— **Smart Cities, Government, Sustainable Development, Quality of Life, Revolution, Public Transport, Predictions, Transport Quality.**

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Improvement of the effectiveness and efficiency of the School by mobilizing digital tools

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Abstract— The School culture tends to be deeply conservative, reproducing, to a certain extent and in a general way, the artifacts, behaviours and values that shape it. This presentation, which builds on recent studies carried out by the author, as well as on a bibliographic collection, aims to expose the main challenges that emerge when trying to improve the effectiveness and efficiency of the School through the mobilization of digital tools. It is concluded, in a word, that the diffusion of digital literacy by students – but also by the School's teachers and staff – is crucial for this process, which seems to us unstoppable for a School to be successful.

Keywords— School, effectiveness, efficiency, school culture, digital literacy, digital media tools

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Design of InGaAs/GaAsSb quantum well structure for the NIR applications

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Abstract— In this work, we have designed InGaAs/GaAsSb nanoscale heterostructure and analyses have been modeled on the GaAs substrate at room temperature 300 K. In this structure InGaAs is a quantum well material and GaAsSb is the barrier material. The designed structure is modeled using the 6 band k.p. method to find the energy wave functions and optical gain. An optical gain of 6750/cm is obtained at 1520 nm wavelength. A high gain is needed in order to increase output power. To compute the optical gain the carrier internment and their localities are calculated. The designed structure is able to emit to radiation of NIR wavelength, so can be used for different NIR applications.

Keywords— InGaAs, GaAsSb, Heterostructure, NIR, Quantum well.

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Sociology of Organizations, challenges and opportunities

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Abstract— Sociology of Organizations lives. This is, to us, a basic assumption, at a time of someblurriness and reduction of its public recognition. In this presentation, we will discuss this situation, highlighting some of the challenges that arise.For this purpose we will discuss aspects such as: the object of Sociology, the specificities of Sociology of Organizations, the importance of classic authors due to their potential heuristic capacity to the analysis of organizations. It culminates in the indication of some challenges and opportunities of Sociology of Organizations.

Keywords— Sociology of Organizations, organizational studies, organizational theories, heuristic capacity

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Determinants of SME´s financing and capital structure: new evidence of the Portuguese market

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Abstract— This paper studies the financial practices of SMEs in Portugal, their preferences in financing and capital structure´s decisions. It analyses relations between debt levels and the determinants that explain it, using indicators based on book values. The methodology consists in the estimation of the multiple linear regression model using the least squares method for fixed effects and the generalized moment estimator (GMM). The sample consists of annual data from two panels - "PME Líder" and "PME Excelência" - representative of the various sectors of activity, in a four-year time observation (2013 to 2016).

Our study shows that SMEs tend to use short-term debt. Moreover, the evidence confirms that debt patterns can be explained by specific corporate characteristics. Profitability, liquidity and tangibility are relevant determinants of SME's capital structure. Other factors that have shown significant statistical associations with debt options are company´s size and growth. Age was weakly associated with the total indebtedness of the SMEs studied. Cross-date with the main sectors of economic activity do not identify significant statistically differences in debt levels across sectors. Similarly, no significant differences between SMEs were observed in the three main Portuguese regions.

Keywords— Indebtedness, capital structure, SMEs, Portugal.

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Intangible assets that add tangible value and their relationship to the economic efficiency and financial performance of a Cuban enterprise

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Abstract— An empirical study was conducted at a Cuban financial institution. We study the national and international theoretical models of intangible assets in the modern enterprise and its importance to generate value in the organization based on the premise that if you can't measure intellectual capital you can't manage it which is determine whether intangible assets are adding or destroying value in the organization. The results of the metrics applied were triangulated, and revealed that there is no significant relationship between the economic performance of the bank branch and the perception of the management of intangible assets by the leaders, the average scores denote low management of intangibles so in the short term they deserve to generate alerts to avoid in the long term contractions in

Keywords— Economic performance 1, Intangible assets 2, Tangibles assets 3, human capital indices 4.

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Short-term Load Forecasting Using Combined Weather Stations

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Abstract— In order to schedule the load generation and distribution, operators of energy markets rely on short-term load forecasts (STLF), specially those made for the next few hours. Since it is not feasible to store a large energy volume for compensating unbalances between supply and demand, what lacks or remains must be exchanged with an interconnected system for last time price quotation. Transactions like these raise the costs not only for the operator, but for the whole supply chain; for which reason STLF has been a major concern for practicioners and researchers for years. The behavior of load series is well-known (mostly influenced by weather variables), and a wide range of techniques, from statistical time series models to neural networks, have proven capable to produce accurate forecasts. Regardless, STLF remains a widely discussed topic, seeing that minimal improvement may lead to great cost decrease, and also that new practical issues have been emerging from the replacement of old systems by smart technologies. One of the new interests in this field is the hierarchical load forecasting. The latest smart grid systems made possible to monitor real-time load at various levels of aggregation, from households to the whole system, bringing the interest towards forecasting not only the load for the whole system, but also for all levels. Some levels may comprise large geographical zones, on which more than one weather station may be located, and that raises a question: how to combine data from more than one weather station to use as input for load forecasting models? On this paper, we combine weather stations by giving more weight to those closer to the centroid of the load zone. We experiment on data from a load zone in the state of New York and 11 weather stations spread throughout the state, using the combined data as input for neural networks. For our data, the proposed combinations lead to better results than those from neural networks that use of any of the 11 stations individually. Also, the proposed method outperforms several statistical time series benchmarks.

Keywords— load forecasting, weather variables combination, neural networks, time series, hierachical load forecasting.

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