4th INTERNATIONAL CONFERENCE ON
Emerging Trends on Engineering Science,
Technology and Management

26th - 27th December 2020 | Jakarta, Indonesia

ICETESTM-2020

ORGANIZED BY
INSTITUTE FOR ENGINEERING RESEARCH AND PUBLICATION (IFERP)

IN ASSOCIATION WITH
PT.DRAF SOLUSI INDONESIA

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4th International Conference on Emerging Trends on Engineering Science, Technology and Management

(ICETESTM –2020)

Jakarta, Indonesia

26th-27th December, 2020

Organized By

Institute For Engineering Research and Publication (IFERP)

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in Association with

PT.DRAF SOLUSI INDONESIA
Editorial:

We cordially invite you to attend the 4th International Conference On Emerging Trends on Engineering Science, Technology And Management (ICETESTM-20) which will be held at Jakarta, Indonesia on December 26th - 27th, 2020. The main objective of ICETESTM 2020 is to provide a platform for researchers, students, academicians as well as industrial professionals from all over the world to present their research results and development activities in relevant fields of Recent Challenges in Science and Technology. This conference will provide opportunities for the delegates to exchange new ideas and experience face to face, to establish business or research relationship and to find global partners for future collaboration.

These proceedings collect the up-to-date, comprehensive and worldwide state-of-art knowledge on cutting edge development of academia as well as industries. All accepted papers were subjected to strict peer-reviewing by a panel of expert referees. The papers have been selected for these proceedings because of their quality and the relevance to the conference. We hope these proceedings will not only provide the readers a broad overview of the latest research results but also will provide the readers a valuable summary and reference in these fields.

The conference is supported by many universities, research institutes and colleges. Many professors played an important role in the successful holding of the conference, so we would like to take this opportunity to express our sincere gratitude and highest respects to them. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra help in there view process, and to the authors for contributing their research result to the conference.

Since October 2020, the Organizing Committees have received more than 112 manuscript papers, and the papers cover all the aspects in Science and Technology. Finally, after review, about 33 papers were included to the proceedings of ICETESTM -2020.

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of ICETESTM -2020 We would like to thank the keynote and individual speakers and all participating authors for their hard work and time. We also sincerely appreciate the work by the technical program committee and all reviewers, whose contributions made this conference possible. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard work.
Acknowledgement

IFERP is hosting the 4th International Conference on Emerging Trends on Engineering Science, Technology and Management (ICETESTM -2020) this year in the month of December. The main objective of ICETESTM is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader.

I express my gratitude to all my colleagues, staffs, professors, reviewers and members of organizing committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to travel such a long distance to attend this conference.

Rudra Bhanu Satpathy
Chief Executive Officer
Institute for Engineering Research and Publication (IFERP)
Conference Chair Message

Dr. Bambang Sugiyono AP
Associate Professor, State Polytechnics of Malang, Indonesia

It is a big pleasure to me on behalf of the Organizing Committee of a two days of 4th International Conference On Emerging Trends On Engineering Science Technology And Management (ICETESTM 2020) to welcome all the delegates and participants of this conference held in Jakarta city – the capitol city of Indonesia.

As stated in the title, the scope of the conference covers about Applied Science, Engineering and Technology, Business Management Studies, and Education and Technology as a whole and united field.

We are whole-heartedly knowledgeable that differs from academic fields and industry professionals, this conference may also give opportunities to under and post graduate students and researchers alike to take an active part and present research papers.

By doing so, they will not only gain greater insight into their discipline, but also contribute to the existing body of knowledge in that domain.

I am certain that the conference will prove to be a healthy point of academic interaction and so the students and faculty members will not only give but also benefit and draw inspiration from the talks and presentations from the distinguished guests.

I would like to express my deep appreciation to keynote speakers for the efforts to present the ideas and methods in a lively and accessible way.

I would like to thank those who have responded to our call to take part and to contribute to this conference. We have a big hope that all of you enjoy, and get more knowledge and fruitful experience through the conference.

Finally, but not least, support and efforts from the conference organizing committee – IFERP as a host was absolutely essential to this conference.

Malang, 26th December, 2020

ICETESTM Conference Chair,

Dr. Ir. Bambang Sugiyono Agus Purwono, MSc
Keynote Speakers

**Dr. Moch. Jasin, MM., MH**  
Assistant Professor, Universitas Islam Negeri Syarif Hidayatullah, Indonesia

**Dr. Macario G. Gayeta**  
Professor, University of the East Caloocan Metro Manila, Philippines

**Vesna Lavtizar**  
Policy Researcher, Institute for Global Environmental Strategies, Japan

**Dr. Jovito B. Madeja**  
Research Director, Eastern Samar State University, Philippines

**Prof. Ts. Dr. Intan Zaurah Mat Darus**  
Professor, School of Mechanical Engineering, Universiti Teknologi Malaysia, Johor, Malaysia

**Dr. M.V. Reddy**  
Senior Researcher, Institute of Research Hydro-Québec, CETEES, Canada
**ICETESTM -2020**

4th International Conference on Emerging Trends on Engineering Science, Technology and Management

Jakarta, Indonesia

26th-27th December, 2020

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ICETESTM-20

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Jakarta, Indonesia
26th-27th December, 2020

ABSTRACTS

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Law Construction for ADIZ Implementation beyond the Airspace Sovereignty from the Perspective of Defense Strategy

Lidia Rina Dyahtryani, Indonesia Defense University (IDU)
Lilly S. Wasitova, Indonesia Defense University (IDU)
Arif Mustofa, Indonesia Defense University (IDU)
Agus Sudarya, Indonesia Defense University (IDU)

Abstract:
A sovereign state in international law is a political entity that is represented by one centralized government that has sovereignty over a geographic area. International law defines sovereign states as having a permanent population, defined territory, one government and the capacity to enter into relations with other sovereign states. The components of the defined area or territory of a state are the terrestrial, fluvial, maritime and aerial domains. This leads to the larger scope of defense for a nation that includes the defense of its Land, Water and Airspace. One of the system used for the Airspace Defense is Air Defense Identification Zone (ADIZ) that is developed during the 1950s. ADIZ is used in the Korean War in 1951, to aid military forces in positive identification, location, and control of civil aircraft of non-hostile civil aircraft. In the modern world it is very important to have such system as part of a defense strategy, especially for a Country like Indonesia, with its huge aerial zone. However, until now there is no regulation by any international body nor any international treaty for the use of ADIZ in the airspace over land or water, or in regards of the Airspace Sovereignty.

Index Terms
Defense Strategy, International Regulation, Airspace, Sovereignty, International Law
ASEAN Open Sky Policy and Air Freedom Rights from the Perspective of Defense Strategy and the Airspace Sovereignty

Lilly S. Wasitova, Indonesia Defense University (IDU)
Arif Mustofa, Indonesia Defense University (IDU)
Lidia Rina Dyahrtaryani, Indonesia Defense University (IDU)
Koesnadi Kardi, Indonesia Defense University (IDU)

Abstract:-- The Association of Southeast Asian Nations (ASEAN) has signed the Multilateral Agreement on Air Services (MAAS) on May 20, 2009 in Manila, Philippines, intended to liberalize market access and ownership and control requirements for air carriers in the region. This ASEAN MAAS regional policy, or so called an open air space or open sky policy, shall be implemented in stages that are determined in the protocols contained in the ASEAN MAAS and came into effect on January 1st, 2015. The realization of ASEAN Open Sky in Indonesia is stipulated in Law Number 1 Year 2009 on Aviation, and the realization of MAAS stipulated in President Regulation Number 74 Year 2011 on Verification of MAAS. From the perspective of the Chicago Convention from 1944 that stated that every country has complete and exclusive sovereignty over the airspace above its territory, and there is no recognition of the right of peaceful passage, a set of regulation of commercial aviation rights granting a country's airlines the privilege to enter and land in another country's airspace has been introduced called the Freedoms of the Air. The freedoms of the air are the fundamental building blocks of the international commercial aviation route network. From the perspective of States Sovereignty that states are in complete and exclusive control of all the people and property within its territory, the freedoms of the air has a potential threat especially in the defense sector and requires a proper strategy for maintaining the unity and integrity and also sovereignty of the Republic of Indonesia.

Keyterms:-- Defense Strategy, ICAO Regulation, Airspace, Sovereignty, Freedom of the Air
The Use of Drones: From the Perspective of Regulation and National Defense and Security

Arif Mustofa, Indonesia Defense University (IDU)
Lilly S. Wasitova, Indonesia Defense University (IDU)
Lidia Rina Dyahandyari, Indonesia Defense University (IDU)
Resmanto Widodo, Indonesia Defense University (IDU)

Abstract:--
Aerospace technology is developing very rapidly, especially in the field of drone technology. The term drone usually refers to an unmanned aircraft, or in other words referred to an Unmanned Aerial Vehicle (UAV). Nowadays, drones can perform an impressive range of tasks, from military operations up to helping human life, and as of size, drone can be as big as an airplane or even as small as the palm of your hand. This growing use of drones requires an arrangement for their operation. It is also necessary to have clarity about the Ministries or Government Institutions given the clear authority in granting permits and supervision for drone operations so that there is no ambiguity and overlapping of authority. For this reason, regulations or statutory regulations are needed to ensure the interests of aviation safety and state defense and security. This paper will review the drone arrangements for the interest of both civilian and military purposes. The method used is mapping regulation, namely by studying the laws and regulations related to drones and literature study for the theory and expert opinion published in books, journals, and other sources; and a resume of the results of the implementation of a focus group discussion involving experts in the field of drone technology. The existing statutory regulations to the subject of drones seems not to have accommodated the public interest as well as the interests of defense and security. Drone settings are still limited to flight safety aspects with the aim of drone flights not endangering the safety of civil aviation. The substance that needs to be considered in drone settings is that the use of drones must also consider aspects of welfare and aspects of national defense and security.

Keywords:
History of Drone, Operational of Drone, Regulation of Drone, National Defense and Security
Tourism Development and Fees Policies at Nusa Penida: A Legal Perspective Review

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A.A. Istri Agung Maheswari, Faculty of Law and Social Science, Universitas Pendidikan Nasional

Abstract:
This research discusses the tourism fees policy imposed on foreign tourists while visiting Nusa Penida. The main focus to be studied is related to the meaning of tourism fees for the development of tourism objects in Nusa Penida based on regional financial law perspective. Furthermore, it will also explain about tourism development strategies that can be carried out in Nusa Penida by utilizing the results of these tourist fees. This research is a cross-sectional study between law and tourism, so it uses mixed research methods. The research will be preceded by the existence of quantitative data that shows the results of tourism fees income that will used to analyze regional financial management to help develop tourism in Nusa Penida. The results of the research presented descriptively and analytically show that the imposition of tourism fees aims to increase local revenue, which can be used to build tourism by supporting facilities and infrastructure. However, the local government does not yet have a financial management of tourism fees which are deemed sufficient to develop tourism in Nusa Penida. In addition, tourism charges show discrimination because they are only imposed on foreign tourists, and can have an adverse effect on tourism promotion in Nusa Penida. Thus it is suggested that tourism levies be imposed on every tourist visiting Nusa Penida, and that there is an appropriate distribution of results between the district government and Nusa Penida tourism manager.

Keywords:
Finances, Nusa Penida, Tourist Fees
The Regulatory Reconstruction of *BAITUL MAAL WA TAMWIL* (BMT) Towards Efforts to Protect the Community

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**Jamal Wiwoho**, Faculty of Law, Universitas Sebelas Maret Universitas Sebelas Maret, Surakarta, Indonesia  
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**Abstract:**
This research examines and answers the problem of the unalignment of the Baitul Maal wa Tamwil (BMT) regulations with the sharia principles towards providing community protection and how the reconstruction model fixes this. The results concluded that the BMT regulation was unharmonized with these principles and the causative factors were a shift in function and meaning, the existence of a legal vacuum, as well as the absence of specific regulatory rules. Subsequently, the ideal governance model is based on shariah principles. BMT consists of Baitul Maal which functions to collect and distribute social funds, along with Baitul Tamwil which is a profit-motivated business institution. Furthermore, BMTs are entitled to perform economic activities such as trade, industry, and agriculture, and as a result, have become sharia-based institutions intending to alleviate poverty and provide protection to the community.

**Keywords:**
Reconstruction, BMT, Poverty Alleviation
Online Learning Using Interactive Digital Comics in the Era of the COVID-19 Pandemic

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Yetti Supriyati, Universitas Negeri Jakarta  
Asep Supena, Universitas Negeri Jakarta

Abstract:--

The current digital era and the Covid-19 pandemic are the reasons for the need to develop teaching materials that are packaged in the form of interactive digital comics, especially for elementary school students, because these conditions force all teachers to carry out learning activities online. The purpose of this research is to develop interactive digital comic teaching materials for elementary school grade V semester 1 for the theme "Animal and Human Movement Organs" sub-theme "Humans and the environment" which is in accordance with the 2013 curriculum, the characteristics of students and supports online learning in the digital era and the Covid-19 pandemic. This study uses the Bergman & Moore model development method. This model includes six main activities, namely: analysis, design, development, production, writing, and validation of the developed product. This study concludes that the use of teaching materials packaged in the form of interactive digital comics in online self-learning has been proven to be effective in increasing the involvement of students in online independent learning and learning outcomes.

Keywords:
learning outcomes, interactive digital comics, online learning, Covid-19 pandemic era
Teachers' Readiness in Teaching Flood Disaster Mitigation, Portrayed By the Teacher's Pedagogical Content Knowledge (PCK): A Case Study in Pelalawan District, Riau Province, Indonesia

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M. J. Adi Putra, Riau University
D. Ayub, Riau University
C. R. Lius, Riau University
Mahmud, Riau University

Abstract:--
This is the first research on PCK (Pedagogical content knowledge) teachers about learning flood disaster mitigation. This article aims to identify and describe teachers’ experiences in teaching flood disaster mitigation in elementary schools based on Professional and Pedagogical and Experience Repertoire (PaP-ERs). This article is written based on qualitative research conducted in Pelalawan district, Riau province, Indonesia. 12 teachers were involved in answering a list of questions about teaching readiness based on their experiences and conducted interviews. Based on the results of the study, it was found that in general, the teacher had appeared PCK in choosing the right method/strategy according to the conditions of student knowledge, using certain techniques to respond to student diversity, and guiding students to understand. Teachers begin to appear on knowledge about floods, identify and utilize students' initial knowledge, select and use media/learning resources, review students' new knowledge, and choose appropriate techniques for evaluating. On the other hand, teachers do not or have not appeared using prompting and probing questioning techniques, student focus and discipline, and follow-up learning. This condition shows that in general, the teachers do not have the readiness to teach disaster mitigation properly even though they have experience in dealing with flood situations

Index Terms
'Teachers' Readiness, Pedagogical Content Knowledge (PCK), Disaster Mitigation.
Customary Criminal Law Policy against Fisheries Crime in Indonesia

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Barda Nawawi Arief, Professor of the Faculty of Law of the University of Diponegoro
FX Adji Samekto, Professor of the Faculty of Law of the University of Diponegoro

Abstract:--

In judicial practice related to illegal fishing, there has never been a verdict of a judge imposing a criminal or customary sanction in the form of fulfilling traditional obligations. In fact, on the one hand, indigenous peoples want to impose criminal or customary sanctions in the form of fulfilling these customary obligations. Starting from the criminal law, the fact that the existence of customary criminal law is not easily accepted, even so that it can be put into practice in the criminal justice system is considered very difficult. Nothing but the existence of a legality principle which becomes a barrier to the enactment of written and unwritten criminal law.

This research is a research using the socio legal research approach. The socio legal research approach means that there are two aspects of research. First, legal research aspects, and second, socio research. The results of this study are the first that the current policy on the prevention of fisheries crime, namely Law Number 45 of 2009 concerning Amendments to Law Number 31 of 2004 concerning Fisheries has not accommodated the interests of indigenous peoples and in its formulation does not include customary law as an alternative. In tackling fisheries crime. Second, that the policy Against Fisheries Crime Management in the future, that is, the future fisheries law formulation should include customary provisions and customary criminal law, so that indigenous peoples in prosecuting perpetrators of fish theft or perpetrators of fisheries crimes are recognized as decisions and their existence which must be obeyed a person or corporation that commits fisheries crime in the customary territory.

Index Terms
Customary Criminal Law, Fisheries Crime
The Role of Visual Media to Improve the Quality of Publication and Promotion of Batik Training

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Maitri Widya Mutiara, Universitas Tarumanagara
Maria Florencia, Universitas Tarumanagara

Abstract:
Batik as Indonesia's cultural heritage is sometimes understood as a patterned cloth by ignoring its process. Therefore, batik training center has the aim to educate society what is called batik is a process by giving certain patterns to plain cloth with certain techniques that use wax. Batik training centers such as the Rumah Batik Palbatu (RBP) in Jakarta, provide training verbally or by demonstration. This method application is limited to trainees, so visual media is needed which can be reproduced and disseminated. The preparation of the batik process training module as a visual media is intended to help educating society broadly about understanding batik as a process, not as a final product. Research preparation begins with interviews to the batik training instructor and field observations where the batik training is conducted, followed by systematic writing and the final sample module is consulted to Rumah Batik Palbatu to get feedback. The resulting modules were then reproduced to help training and to educate society.

Index Terms
Batik, education, training module, visual media.
Customer Experience, Customer Engagement, and Customer Loyalty in Indonesian E-Commerce Online Retail: A Descriptive Study

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Abstract:
E-commerce market growth in Indonesia urges e-commerce players, especially online retailers, to implement strategies which can foster customer loyalty. Customer experience and engagement strategies can be implemented with the support of digital technologies. This research measures the digital technology, customer experience, customer engagement, firm reputation, and customer loyalty in online retailing in Indonesia. This research was conducted descriptively on e-commerce customers who had made transactions in e-commerce platforms with online retailers selling fashion and beauty products. Total respondent in this research is 505 and 400 questioner data are complete to process in statistic tools. The results of this research showed that the first and second most dominant factors of digital technologies in online retailing were interactivity and ease of use, respectively. Meanwhile, personalization still needs some improvement. The first and second most dominant customer experience dimensions were the pragmatic and sensory ones, while the relational dimension contrarily exhibited low performance. Cognitive engagement of customers was the most dominant factor, followed by emotional and behavioral engagement.

Keywords: digital technology, customer engagement, customer experience, customer loyalty
Development of a Community Based E-Prescription System

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Abstract:-- Healthcare service is one of the major concerns specially in this hard time of experiencing a pandemic due to Coronavirus Disease (COVID-19). It is the objective of this study to present a centralized Community Based E-Prescription System that can provide convenience on part of patients and for doctors to be able to monitor the use of the prescription system, thus reduce errors in prescription writing. The system was developed using HTML, CSS3, PHP, and MySQL. After certain analysis to the many literatures on features and performance of health care system, the website development software was determined and applied. Four modules were developed namely: Doctor’s Module, Patient’s Module, Pharmacist Module and Administrator Module allowing specific accounts to own right and privileges of access to the system. Study was conducted in one of the hospitals at the city of Caloocan, Philippines and conducted system evaluation for acceptability level of the stakeholders. The system features online prescription writing, track patient prescription history, list of drugs, and monitoring of medicines. System testing was successfully conducted to validate the performance using Sortsite software tool testing the Accessibility and Usability criteria. Evaluation was performed using parameters of Web-based Design (for IT Professionals) and Website Usability Instrument based on ISO 9241-11 (for Non-IT Professionals). Finally, results of the criteria for effectiveness and efficiency got a very acceptable rating which means e-prescription system indicate importance in the completed module design and capabilities it could serve.

Index Terms
automated medicine prescription, e-prescription system, Covid-19, web based
Biocompatible Self-Assembled Hyaluronic Acid Based Nanogel Increased Aqueous Solubility and Stability of Asiatic Acid.

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Abstract:
Asiatic acid (AA), one of the major pentacyclic triterpenoids commonly found in Centella asiatica, possesses polypharmacological properties that can contribute to the treatment and prophylaxis of various diseases. However, its hydrophobic nature and rapid metabolic rate lead to poor bioavailability. The aim of this research is to nano-size hydrogel from natural polysaccharide, hyaluronic acid (HA), as delivery system for solubility and stability enhancement of AA. Poly-(N-isopropylacrylamide) (pNIPAM) was conjugated onto backbone of HA. The resulting copolymer was characterized using 1 H NMR. HA-grafted-pNIPAM (HA-g-pNIPAM) nanogel were prepared from three different concentrations using 0.1% w/v, 0.15% w/v and 0.25% w/v of the polymer in water by simple sonication method. AA was loaded into the preformed nanogel by incubation method. Size, morphology, AA loading capacity and encapsulation efficiency (EE%) were analyzed using DLS, NTA and HPLC, respectively. In vitro cytocompatibility was evaluated in fibroblast L929 cells using CellTiter-Blue® cell viability assay. Results showed that HA-g-pNIPAM at 5% grafting degree were assembled into spherical submicron nanogel and had reversible thermo-responsive behavior. 0.15% w/v HA-g-pNIPAM nanogel was found to be optimal for drug stability. The cell viability assay showed that 12.5 μM AA in all three formulations were considered non-toxic to L929 cell.
Conceptual Framework of Talent Management Affecting Employee Performance of State Government Employees in Malaysia

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Abstract:--
Government of Malaysia is emphasizing on development of talent in the public sector, as it is the most significant resource for the federal and state services. Even though the government has invested in various programs and initiatives to develop and produce key talented human capital, Malaysia is still short of talented people and struggling to develop talent, and talented skilful people are leaving. This paper fills the gap by analysing the comprehensive literature in order to bring understanding on talent management issues within Malaysian state government context. The aim of this paper is to identify talent management practices affecting state government employees and to develop a conceptual framework explaining their relationships. The literature reveals that there is positive relationship between talent acquisition, talent development, talent retention and employee performance. Although the relationships among the four constructs have been extensively studied in the extant literature, this paper is one of the few, if any, in investigating the constructs in state government agencies or local authorities in Malaysia. If empirically supported, the proposed framework may provide an effective alternative in assisting state government agencies at attracting and nurturing talented workers. The study also discloses that there is a need for further research to discover new insights on talent management and retain talent among the state government employees in Malaysia.

Keywords:
talent management, state government, human capital, retain talent
Impact of Design for Material Value Conservation on Flexible Plastic Packaging towards the Life Cycle of Plastic Materials

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Abstract:--
In 2018 China and Indonesia became the biggest contributors to plastic waste reaching the ocean, which were million tons and 3.2 million tons of plastic waste, because there are still many companies that design plastic packaging without thinking about their recycle abilities. This study aims to prove whether the application of the material value conservation paradigm at the beginning of the design process of flexible plastic packaging to a product packaging, will increase the life cycle and value of flexible plastic packaging that has been used. This will make flexible plastic packaging waste feasible to be recycled and profitable for recycler and collector of plastic flexible packaging waste. Literature studies are conducted to obtain definitions of the variables used in the study. Data collection was carried out in the form of a survey of 400 samples of flexible plastic packaging commonly used today. Then the survey results are mapped based on the plastic design category in accordance with the paradigm of material value conservation. The application of the material value conservation paradigm is in line with the Presidential Regulation 97/2017, namely implementing waste reduction by 30% (20.9 million tons) in 2025.

Keywords:
Material Value Conservation, Plastic Material, Life Cycle
Capacity Estimation for 5G Cellular Networks

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Abstract:--
This paper outlines the requirements for 5G cellular networks driven by the combination of increasing throughput demand, improving coverage and the capacity estimation for wireless access in the next decade. Deployment of 5G networks will emerge between 2020 to 2030 in many countries and will be built upon existing sites. 5G will offer great benefits for both consumers and industries to achieve a ‘hyper connected society’ capable of zero-distance connectivity between people and connected machines. The applications, the use cases as well as the massive MIMO technologies, for example antenna beamforming and network densification to enhance the system capacity and mobility of 5G cellular networks are discussed in this paper.
Wideband MIMO antenna for SCADA Wireless Communication Backhaul Application

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Abstract:
A wideband multiple-input-multiple-output (MIMO) antenna system with common elements suitable for SCADA wireless communication backhaul application which is operating frequency of 0.85-2.6GHz that can cover global system for mobile communication (GSM) 900MHz and 1.8GHz, The Universal Mobile Telecommunication System (UMTS) 2GHz, Wi-Fi (2.4GHz) and Long Term Evolution (LTE) 2.6GHz is proposed. The proposed MIMO antenna system consists of four microstrip feedline with common radiating element and a frame shaped ground plane. A single port antenna also was designed and presented in this paper to show the process to design wideband MIMO antenna structure. The radiator of the MIMO antenna system is designed as the shape of modified rectangle with straight line at each corner to enhance the bandwidth frequency. To improve the isolation between ports, the ground plane is modified by inserting four L-slots in each corner to reduce mutual coupling. For an antenna efficiency of more than 60%, the simulated reflection coefficients are below -10dB for all ports at expected frequency. Simulated isolation is achieved greater than -10dB by using a modified ground plane. Also, a low envelope correlation coefficient (ECC) less than 0.1 and polarization diversity gain of about 10dB with the orthogonal mode of linear polarization and omnidirectional pattern during the analysis of the radiation characteristic are achieved. Therefore, the proposed design can be used for SCADA wireless communication backhaul application.

Keywords—
Diversity gain, envelope correlation coefficient (ECC), ground plane, isolation, Global System for Mobile communication (GSM), Long Term Evolution (LTE), Multiple-Input-Multiple-Output (MIMO)
Moderating Effect of the Entrepreneur Education on Entrepreneur Intention of University Students

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Abstract:
This research studied the relationship between entrepreneurship education and the entrepreneurial intention of university students. Furthermore, this study aimed to investigate the hypothesis of a selection of entrepreneurship education with entrepreneurial intentions. The study consisted of three main objectives, the first being the identification of the factors affecting entrepreneur education. The analysis of several past researches revealed six main student characteristics that affect entrepreneur education; such as propensity to taking risks, self-efficacy, control attitudes, behavioural control, need for achievement and social norms. Finally, this study also investigated the moderating effect of the entrepreneur's education on entrepreneur intention. In this study, the Authors’ discovered that entrepreneurship education shapes entrepreneurial intention. Students with higher-education will be more likely to have higher business intentions. It is also proven that there is a strong relationship between the social influences of business intention. Furthermore, it was identified that male and female students have a different perspective on entrepreneurship education that affected their entrepreneurial intention. Entrepreneurial education is measured as a vital variable that affects entrepreneurial intentions, hence this study is conducted with the aim of establishing the effect of better education on business intentions.

Index Terms – Entrepreneur Education; Entrepreneur Intention; Knowledge gap, Social norms, Students’ Characteristics.
Sharia Corporate Governance and Financial Reporting Timeliness: Evidence of the Implementation of Banking Regulations in Indonesia

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Abstract:--

The purpose of this paper is to study Islamic banking regulations related to the Sharia corporate governance (SCG) mechanism and financial reporting timeliness (FRTL) in Indonesia. First, the authors examine the relationship between the implementation of SCG and FRTL regulations. Second, the authors investigate differences that may exist between Islamic banks (IBs) and non-Islamic banks in terms of FRTL. This empirical study uses an unbalanced panel data of 14 Islamic commercial banks (ICb), 20 Sharia business unit bank (SBu) and 20 conventional banks (CBs), during a period that ranges from 2016 to 2019. The authors use a two-stage approach in order to examine factors that may influence the FRTL. Based on the availability of unbalanced panel data, the authors use the panel regression model estimation method. The findings indicate that the variation of FRTL for IBs (represented by ICb) is determined by Sharia corporate governance mechanisms (board of commissioner, board of director, Sharia supervision board, audit committee effectiveness). Further findings relate to a comparative study of variations in FRTL between ICb, SBu, and CBs. Although there are different determinants between ICb (SCG) and CBs (CG), there is no difference in FRTL variation between the two. Meanwhile, between ICb and SBu which regulations have the same determinant, there are differences between the two variations of FRTL. The findings of this study are useful for financial services authorities, auditors and investors. It helps OJK to oversee the implementation of banking regulations based on the information disclosed in the annual report. Based on our findings, OJK can find the reasons why banks are late in issuing financial reports. The auditor may consider that the stronger the SCG and CG are, the lower the audit risk assigned to the audited banks. Investment decisions in banks can also study these findings, especially regarding the more effective control over managers by the existence of SCG and CG. This paper is the result of a study that first discusses the relationship between Sharia corporate governance and FRTL based on the implementation of banking regulations. This study contributes to the literature on the FRTL, especially in relation to SCG as a determinant, which is the first time it has been carried out in Islamic banking.

Keywords: Islamic commercial banks, Sharia business unit, Sharia corporate governance, Financial reporting timeliness
Development of Greywater Utilization Scheme as an Alternative of Water Source at a Hotel

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Abstract:
Hotel is one of the biggest water consumers. The water needs category in hotels varies from drinking water requirements to garden irrigation needs where each requirement has different water quality criteria. But in Indonesia, all water needs in hotels are met with one water quality, which is clean water. This causes waste in limited clean water resources and the cost of procuring clean water at the hotel. The use of greywater as an alternative water source in hotels is a way to reduce the consumption of clean water in hotels. The use of greywater can be maximized by processing greywater according to each water quality criterion needed at the hotel. Therefore, this research was conducted to aim for developing a scheme for utilizing greywater to meet water requirements in a hotel based on the category of water quality needs and criteria. The potential of greywater in a hotel is reviewed through literature studies and case studies in a five-star hotel in Jakarta. The results showed that the use of greywater in hotels has the potential to save up to 65.20% of clean water consumption, equivalent to 43.04 m$^3$/day and save water supply costs of IDR 10,607,000 per year.

Index Terms
alternative water source, greywater, water needs category, water quality
The Perceived Effects of Festivals in the Heritage City Of Vigan, Philippines

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Abstract:--
This paper discusses the multiple perceived effects of vibrant festivals on the city of Vigan. The respondents in this study were the heads of offices of the city government, school administrators, participants and performers, tourists, organizers, local businessmen, and the business owners and managers. A non-purposive convenience sampling was used to determine the perceptions of the respondents on the perceived effects of festivals. The researcher employed a descriptive procedure and analysis of data. Frequency and percentage were used to interpret data collected from the respondents. Study results showed that most respondents thought the festivals had an overall positive perceived effect on the city. Age, monthly income, and occupational status are significantly related to the perceived effects. Festivals help attract tourists, which boosts a city's tourism and other business growth. Amid all the negative effects of festivals, it has a positive impact, which strengthens the sense of belonging and pride, uses festivals as a cultural attraction in tourism, creates city brands, creates community well-being, and boosts economic growth. To further enhance the organization of the city's festivals, such recommendations were also articulated.

Keywords:
perceived effects, festivals, Vigan City, tourism
Rainwater Harvesting Scheme as Additional Source of Clean Water at an Apartment

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Abstract:--
Increased population growth is linear to the proportional of the need for housing. Amid the difficulty of providing land for housing, the apartment is the option. Clean water supply for apartment needs is a major concern for developers. The increasingly shrinking source of surface water and excessive extraction of ground water is a factor in finding cheap and easily obtained raw water sources. DKI Jakarta with 2500-3000mm of rainfall per year has the potential of rainwater that can be utilized. The Rainwater Harvesting system is used for rainwater collection. The potential of rainwater can be known by analysing hydrological data using annual rainfall. Criteria of water quality for using in apartments is arranged based on the number of volumes as needed and the result of rainwater laboratory tests. It is known that rainwater can supply around 13.93% clean water needs for a month at December. According to the estimated calculation, the value of savings obtained if applying the rainwater utilization scheme is IDR 3,769.60 per m³.

Keywords:
rainwater harvesting, rainwater, rainfall, apartment, water quality
A review on IoT cloud and M2M communication systems

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Abstract:--
The Internet of Things (IoT) will be a smart generator of data which support the Information Systems (IS) and Communication Technologies (CT). It offers the opportunity to exchange structured and unstructured data among devices in real time, to process data to be useful as information, from where we can extract out knowledge in this area. With M2M communication technology, IoT services can aims to understand connected devices reactions in order to optimize services and applications. IoT also is a technology which provides special service in cloud environment that can support storage, analyze and modeling IoT-Data phases. However, some resources (memory and CPU) in IoT, cloud and M2M communication systems are overloaded. Because of the different IoT-data features (source, nature and volume) as well as the way to manage this data in order to explain the complexity of IoT systems. In this review, we identify and describe the resources that are used in IoT Cloud environment. we study the possible scenarios that can help us to define relationships between IoT/CLOUD and M2M technologies. Further, we present the benefits of the information system and feature extraction technics that can be explored for the processes management of IoT-data.

Keywords
IoT-data, Cloud, M2M communication, Sensors networking, Resources overload, Big data.
The Use of Cybercommunity on Tourism Workers

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Abstract:

The development of information technology and communication has brought people to a new era, it has made a great transformation in the way people communicate and interact. One of its implications occurred in the business sector. The digital era generates many changes in the business industry, people tend to become more competitive in investing in tools, machines and, networks to integrate their works and be able to develop and increase the company’s performance. Information technology and communication also brings many changes in the tourism industry, not only in organization, however to the life of the workers in the tourism industry. The objectivity of this research is to find other sides of the use of the cyber community in the life of workers in the tourism industry. The finding of this research is that the cyber community generates many balances for workers, it is not only in the satisfaction of their works and advancing skill and self-qualify that implicate in the increasing of organizational productivity. The workers became more creative in their work field, delegating the assignment and authority become easier to do in group chat, moreover better coordination among the departments in the organization. The cyber community also became the entertainment media while the workers overcoming stress with their work problems. The acceleration of the cyber community in work-life balance is not only perceived by the workers, moreover by family and the surrounding environment. It generated more options for workers in work-life balance, they who could use the cyber community properly will be able to develop their skills, however its use also gives loss for them who can use it wisely.

Index Terms

Cyber community, self-development, tourism’s worker
Development of Rainwater Utilization Scheme as an Alternative of Water Source at a Hotel

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Haifa Al Kautsar, Department of Industrial Engineering, Universitas Indonesia
Djoko Sihono Gabriel, Department of Industrial Engineering, Universitas Indonesia

Abstract:--

Human needs for water vary from requirement of drinking water up to sanitary purpose. In Indonesia, it tends to utilize one type of water supply standard to cover all needs which causes clean water deficiency that will trigger environmental problem. To resolve the problem, we must create alternative water source, in which is rain water. This research focused on Hotel Sector, based on its consumption rate. The main purpose is to develop rainwater utilization scheme as an alternative of water source in a hotel, that depends on rainwater potential, water demand category and water quality criteria. By using the rainwater harvesting method, the potential of rainwater that falls on the roof area and the walls of the hotel can be calculated. This research indicates that development of rainwater utilization scheme will divide water into several qualities and remove the tendency to use one type of water to cover all needs that will affect clean water saving for the volume of 2,398 m3/year from the local water supply with financial saving IDR 45 million/year.

Key Words--
rainwater harvesting, rainwater quality, alternative water source, hotel water management
Analysis of Familiar and Unfamiliar Images Using Power Spectral Estimation for EEG Authentication System

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Abstract:

Biometric authentication is a system used for recognizing an individual according to their physiological and behavioral characteristics. Recently, the application of biometric authentication is the most useful in cybersecurity such as fingerprints, facial, and voices. Traditional authentication such as password and PIN have been used for a decade, however, they bring drawbacks to the users which were attacked by cybercriminals. Therefore, the brainwave of electroencephalogram (EEG) is proposed as the biometric trait to encounter the problems faced. The aim of this study is to explore the feature extraction method by applying the power spectral estimation method as linear feature analysis such as the Welch method, Burg Method, Yule-Walker method, Covariance method and Modified Covariance method. After extracting five features, the statistics of mean, median, variance, and the standard deviation is computed and fed into three types of shallow classifiers including Neural Network, K-Nearest Neighbors, and Support Vector Machine. As a result, the Yule-Walker feature contributes to the highest average accuracy and Neural Network using Levenberg-Marquardt (LM) has achieved the highest accuracy for all frequency bands. In fact, the highest frequency band obtained by highbeta (20-30 Hz) followed by gamma (30-45 Hz), lowbeta (13-20 Hz) and alpha (8-13 Hz). Overall, all three features and three classifiers able to achieve between 70.1% to 98.2% of accuracy which shows that it can differentiate between different tasks.

Keywords:
Land Acquisition System Model with Analytical Hierarchy Process and Geographic Information System on Toll Road Infrastructure Projects.

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Abstract:--

Land acquisition, particularly in toll road construction, was required a lot of time, inefficient, tends to be protracted, and has even become a major obstacle to inhibiting progress. One of the obstacles was the decision making to decide which land needs to be acquired earlier than the other based on its ownership status. This study aims to accelerate the land acquisition process. The method used in this research is Analytical Hierarchy Process (AHP) with the aim (goal) is Land Ownership Status with the highest priority scale, and the criteria used are the inhibiting factors of land acquisition which are analyzed first with the cut-off point method. The results of the AHP calculation were mapped in a Geographical Information System. The final result of this research is a map of land acquisition with color visualization to differentiate the priority level of land acquisition, along with progress and alternative actions that must be implemented in the field. From the results of this study, it is hoped that the Land Acquisition Committee can be assisted in the land acquisition process so that it can accelerate the completion of the land acquisition process.
Influence of Vacuum Impregnation with Different Substances on the Proline Content and Organoleptic Properties of Spinach Leaves

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Abstract:--
Vacuum impregnation (VI) has been immensely used in modifying the physicochemical properties, nutritional values and sensory attributes of fruits and vegetables. In this study, spinach leaves were impregnated with salicylic acid (SA), γ-aminobutyric acid (GABA) and sucrose to improve its quality and storage ability by reducing the chilling injury through the improvement of proline content. The spinach leaves were stored at 4 °C for 7 days and were measured for its proline content, chlorophyll content, total soluble solids, titratable acidity, pH value, weight loss, and sensory evaluation. Upon 1 day of impregnation, the proline content in GABA, sucrose and SA impregnated leaves were increased by 240 %, 153 % and 103 % respectively while in non-impregnated leaves, the proline content was decreased by 23.8 %. Result for chlorophyll content showed that GABA impregnated leaves exhibited the lowest reduction (49 %) followed by sucrose (55 %) and SA (57 %) meanwhile non-impregnated leaves reduced up to 80 % of chlorophyll content on 7th day of storage. Sensory evaluation showed that non-impregnated leaves obtained the lowest score in terms of freshness, colour, texture, and overall appearance, whereas GABA impregnated leaves had the highest score for all categories followed by sucrose and SA impregnated leaves.
Prevalence of Multidrug Resistant Escherichia coli in Ready-to-Eat Chicken Shawarma Sandwich Sold at Restaurants in Klang Valley, Malaysia

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Abstract:--
The objective of this research was to investigate the prevalence and multidrug resistance of Escherichia coli in ready-to-eat chicken shawarma sandwich sold at 20 selected restaurants in Klang Valley, Malaysia. The food samples were purchased from three visits to each restaurant and E. coli isolates were characterized based on standard biochemical and molecular methods. Their antimicrobial resistance against 11 types of antibiotics were determined according to the Clinical and Laboratory Standard Institute guidelines. Microtiter plate assay was employed to determine biofilm formation among the resistant isolates. The results revealed that 31 (52%) of the food samples were positive for E. coli and the resistance was highest to Penicillin G (96.8%), followed by ampicillin (90.3%), cephalothin (48.4%), tetracycline (35.4%), kanamycin (32.2%), gentamicin (29%) and nitrofurantoin (19.3%). The lowest resistance was to Ciprofloxacin (3.2%), while 9.6% were resistant to each trimethoprim, sulfamethoxazole-trimethoprim and chloramphenicol. Seventeen isolates (54.8%) were multi-drug resistance with the multiple antibiotic resistance index ranged from 0.09 to 0.54. All 17 resistant isolates were able to form biofilms, with only 11.8% (n=2) were moderate biofilm formers. These findings suggest that RTE shawarma can be reservoirs of antimicrobial resistance E. coli and may facilitate their spread in the food chain.
Covid-19 Therapy Tool

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**Abstract:**
Covid-19 is a disease caused by the Coronavirus. This virus is difficult to detect and can spread quickly. In the body, this virus is found in the respiratory tract. With new – normal, it is necessary to have a tool to stop the spread of the coronavirus, by eliminating this virus in the human respiratory tract. This Anti-Covid-19 therapy tool is a nebulizer, a device that converts liquid into steam, so if the liquid is a drug, it can easily enter the respiratory system and kill bacteria and viruses. The anti-Covid-19 therapy tool that we develop has three main functions: oxidant therapy, medical therapy, and antioxidant therapy. In oxidant therapy, we use heaters to introduce hot air into the body. Then proceed with medical therapy, namely the insertion of food-grade herbs into the body, using the inhalation method, to kill the virus. Then it ends with antioxidant therapy, which is the introduction of hydrogen into the body, to relax, cleanse, and soothe the body. The combination of these three functions is very useful for the prevention and cure of Covid-19 with the market segment of Covid-19 patients, medical personnel, crowded places, and middle-high income households.
Role of Digitization in sustainable Business in Auto Industry in India.

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Abstract:--
Progress in digital technologies and Cyber physical technologies in last one decade has created immense opportunities for business firms and companies to adopt sustainable practices in their end to end business cycle. This is helping business to conserve the various resources like energy, material, manual efforts, water and contributing to lower cost of goods sold, ultimately making the balance sheet and profit and loss account green and healthy. The consumer and NGO pressures, Government rules and regulations and depleting resources is also acting as a trigger for businesses to adopt sustainability. Digitization is helping companies in achieving the sustainability aspect in their operations, supply chain and other parts of the business. This paper is based on the interaction and interviews with 40 business leaders from Automobile industry in India during the last 2 years and literature study of UN development goals and other related research articles.

Keywords:
Digitization, Sustainability, Green, Environment
Character Education in Improving Student Achievement at Labschool UNJ

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Abstract:--
This study aims to determine the implementation of character education in Labschool UNJ schools in increasing student achievement. Labschool as an educational laboratory school at the State University of Jakarta needs to always strive to be a model in the implementation of education in Indonesia. Character education is important in the implementation of education in accordance with the national goals of education. Character education that is implemented properly contributes to improving student and school achievement. The research was conducted using qualitative methods with a case study approach with data collection methodologies through observation, interviews and documentation studies. This research was conducted by involving school leaders, students, teachers, parents of students and Labschool alumni. Based on the results of the study, it is revealed that the implementation of character education that takes place in Labschool schools (SMP-SMA Labschool Jakarta, SMP-SMA Labschool Kebayoran) has been going well and student achievement. The implementation of education runs well because of good leadership and school management. School leaders provide role models in the implementation of character education, teachers carry out character education in learning and extracurricular and student activities. The implementation of character education also collaborates with all parties and gets good support from students' parents.

Keywords:
Character education, Student Achievement, Labschool UNJ
Lightning Localization System Application for Overhead Line Lightning Performance Improvement in Malaysia

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Abstract:--
Malaysia is one of the tropical countries experiencing high number of lightning activities which is identified as one of the causes of power interruptions. In an effort to reduce the impact of lightning, TNB Research Sdn. Bhd has installed a Lightning Detection System Network (LDSN) in Peninsular Malaysia in 1994. This paper presents the use of lightning data provided by the LDSN for overhead line lightning performance improvement to increase network reliability for transmission network. Case study on line lightning performance study and mitigation measures carried out to reduce the occurrence of tripping due to lightning on the 275kV lines whereby the lightning ground density data are used to determine the most cost effective area to install line surge arresters. One year monitoring period of the study line has shown significant improvement on the line lightning performance based on the reduced tripping rate with the high frequency of lightning activities observed. The LDSN has made real-time detection of lightning in the Peninsular Malaysia possible. Quantitative data on stroke locations, time and parameters have enabled accurate estimation of lightning severity in Malaysia. This information provided the opportunities to be more scientific and quantitative in the mitigation approach when dealing with lightning.
Under the "Internet +" model, combined with push-pull theory to explore the factors affecting the behavioral intentions of the Endowment Tourism in the elderly

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Abstract:
Endowment Tourism (travel plus pension) is a fusion of "migratory bird pension" and "resort pension". It is different from ordinary tourism. The elderly who choose to stay for pension pursue the integration of travel, health, and comfort, and sojourn pension will also The unused beds in elderly care institutions are combined with migratory bird-type "elder care" to provide comfortable itineraries and comprehensive services for the elderly. In European and American countries, "residential care" is becoming a new type of elderly care for many elderly people, but in Taiwan, "residential care" still sounds like an unfamiliar concept. This study uses the "Internet+" model combined with push-pull theory to explore the behavioral intentions of the former silver-haired and silver-haired people on the "residential pension" and its influencing factors. This study uses structured questionnaires as the main survey method. Through the compilation, collection, comparison, and sorting of relevant research literature at home and abroad, the survey questions about the intention of participating in the sojourn behavior and related influencing factors have been developed, and then tested by scholars. Twenty middle-aged and elderly people did a pilot test and revised the questionnaire items to ensure the rigor of the questionnaire. In the collection of empirical data, this study uses 150 middle-aged and elderly people in central Taiwan as a sample of questionnaires. After collecting the questionnaire and completing the coding check, the researcher used descriptive statistics and PLS partial least square structural equation model to verify the relevant research hypotheses of this study. The results of the questionnaire show that both the introduction factor and the pull-in factor have a positive relationship with the behavioral intentions of the silver-haired people engaged in living for the elderly. The results of this research can be used as a reference for drawing up the tourism market and new product design for the former silver-haired and silver-haired people.

Keywords:
Internet+, push-pull theory, Endowment Tourism, behavior intention