UNIVERSITAS AIRLANGGA
Excellence with Morality

Fakultas Vokasi Universitas Airlangga

Certificate

Is Proudly Presented to:

Dyah Puspitasari Srirahayu

as:

Presenter

Of The 2nd International Conference on Vocational Innovation and Applied Sciences 2019
held by Faculty of Vocational Studies - Universitas Airlangga
November 5th, 2019

Dean of Faculty of Vocational Studies

Prof. Dr. H. Widi Hidayat, S.E., M.Si., Ak., CA., CMA
NIP. 196007121985111001

Chief Executive Program

Prof. Dr. Retna Apsari, M.Si.
NIP. 196806261993032003

UNIVERSITAS AIRLANGGA
Excellence with Morality

Fakultas Vokasi
Universitas Airlangga

THE 2ND INTERNATIONAL CONFERENCE ON VOCATIONAL INNOVATION AND APPLIED SCIENCES 2019

Innovation Developments in Information Technology, Instrumentation and Control for Global Sustainability

BOOK OF ABSTRACKS

November 5th, 2019
Wyndham Hotel - Surabaya, East Java

ICVIAS 2019

Proceedings of the
2st International Conference on
Vocational Innovation and Applied Sciences

Faculty of Vocational Studies, Universitas Airlangga, Indonesia

"*Innovative Developments in Information Technology, Instrumentation & Control for Global Sustainability"*

Editor:
Riky Tri Yunardi
Tesa Eranti Putri
Fitri Retrialisca
Tiara Kusumaningtiyas
Herlambang Setiadi

Layout Editor:
Aji Akbar Firdaus

Published by:
Department of Engineering, Faculty of Vocational Studies Universitas Airlangga, Indonesia http://icvias.vokasi.conference.unair.ac.id.
icvias@vokasi.unair.ac.id

ICVIAS 2019 COMMITTEES

EXECUTIVE COMMITTEE
Prof. Dr. Widi Hidayat, SE., M.Si., Ak., CA., CMA.
Prof. Dr. Retna Apsari, M.Si.
Dr. Ari Prasetyo, SE., M.Si.
Dr. Imam Susilo, dr., Sp.PA (K)., FISCM.

CONFERENCE CHAIR
Prof. Dr. Retna Apsari, M.Si.

CONFERENCE CO-CHAIR
Yutika Amelia Effendi, S.Kom., M.Kom.
Eva Inaiyah Agustin, S.ST., M.T.

TREASURER
Endah Purwanti, S.Si., M.Kom.
Hestiningrum, S.E.
Wheni Puspita Catur Riyanti, S.KM.

SECRETARY
Elsyea Adia Tunggadewi, S.T., M.T.
Sisca Dina Nur Nahdliyah, S.T., M.T.
Nahdiya Muftiyani, S.Psi.

PROCEEDING DIVISION
Riky Tri Yunardi, S.T., M.T.
Tesa Eranti Putri, S.Kom., M.Kom.
Fitri Retrialisca, S.Kom., M.Kom.
Tiara Kusumaningtiyas, S.Hum., M.Hum.
Herlambang Setiadi, S.T., M.Sc., Ph.D.

PUBLICATION & DOCUMENTATION DIVISION
Winarno, S.Si., M.T.
Nasa Zata Dina, S.Kom., M.Kom., M.Sc.
Rachman Sinatriya Marjianto, B.Eng., M.Sc.

EQUIPMENT & LOGISTICS DIVISION
Deny Arifianto, S.Si., M.T.
Darto Utomo, S.T.
Bambang Sudik Wiyono

PUBLIC RELATION DIVISION
Dyah Puspitasari Srirahayu, S.Kom., M.Hum.
Triubaida Maya Ardianti, S.Pd., M.A., M.Pd.

ACOMODATION & TRANSPORTATION DIVISION
Aji Akbar Firdaus, S.T., M.T.
Bagus Dirgantara, A.Md.
Aunur Rochim

EVENT DIVISION
Drs. Eto Wuryanto, DEA.
Nove Eka Variant Anna, S.Sos., MIMS.

CONSUMPTION DIVISION
Dessy Harisanty, S.Sos., MA.
Evista Indra Diva, S.A.
Sri Suprabaningrum, S.Sos.

TECHNICAL PROGRAMM COMMITTEES
Prof. Dr. Hamzah Bin Arof, Ph.D. (University of Malaya, Malaysia)
Prof. Badri Munir Sukoco, SE., MBA., Ph.D. (Universitas Airlangga, Indonesia)
Syed Abdul Shabbir, MD., MSc., Ph.D. (Taipei Medical University, Taiwan)
Assoc. Prof. Sunny Joseph Kalayathankal (Kuriakose Elias College, India)
Assoc. Prof. Hsueh-Ting Chu, Ph.D. (Asia University, Taiwan)

Assoc. Prof. Dr. M. Noorman Masrek (University Teknologi Mara, Malaysia)
Prof. Dr. Retna Apsari, M.Si. (Universitas Airlangga, Indonesia)
Ira Puspitasari, S.T., M.T., Ph.D. (Universitas Airlangga, Indonesia)
Dr. Rimuljo Hendradi, S.Si., M.Si. (Universitas Airlangga, Indonesia)
Prof. Dr. Sulaiman Wadi Harun (Universitas Airlangga, Indonesia)
Prof. Dr. Moh. Yasin, M.Si (Universitas Airlangga, Indonesia)
Prof. Dr. Ing. Setyawan P. Sakti, M.Eng. (Universitas Brawijaya, Indonesia)
Prof. Dr. Ir. Mauridhi Hery Purnomo, M.Eng. (ITS Surabaya, Indonesia)
Prof. Chin-Sung Hsiao (Asia University, Taiwan)
Prof. Cheng-Yuan Ho (Asia University, Taiwan)
Prof. Seiichi Ozawa (Kobe University, Japan)
Dr. Karl Owen Jones (Liverpool John Moores University, England)
Dr. Mithulan Nadarajah (The University of Queensland, Australia)
Dr. Rakibuzzaman Shah (Central Queensland University, Australia)

TABLE OF CONTENTS

[ICVIAS2201901] Decision Support System for Culinary Search with VIKOR Method
Faried Effendy and Tesa Eranti Putri 1
[ICVIAS2201902] E-Library Based on Email Notification: A Case Study of XYZ Library with Elasticsearch Method
Ahmad Habib, Geri Kusnanto and Hendra Julian Putra ..... 2 [ICVIAS2201903] Proposed Enterprise Architecture Model for Smart District using Zachman Framework Approach
Aang Kisnu Darmawan, Daniel Oranova Siahaan, Tony Dwi Susanto, Hoiriyah Hoiriyah, Busro Akramul Umam and Titus Kristanto 3
[ICVIAS2201904] Machine Care Management Information System Using MTBF Method And QR Code Based On Website
Ahmad Habib, Geri Kusnanto and Faris Friansyah 4
[ICVIAS2201905] OCR and LSTM Neural Network Approach for Book Classification by Librarians
Yesy Diah Rosita and Yanuarini Nur Sukmaningtyas ..... 5 [ICVIAS2201906] Inverse Kinematics and PD Controller Implementation of Six-Legged Robot for Wall Follower Navigation
Riky Tri Yunardi, Arief Muchadin, Kurnia Latifa Priyanti and Deny A. 6
[ICVIAS2201907] Maturity Level Implementation of Big Data for Enterprises
Fitri Retrialisca, Umi Chotijah and Rachman Sinatriya Marjianto 7
[ICVIAS2201908] Development of Practice Module Planning and Installation Audio Systems Based on Augmented Reality as Learning Media in Technology
Vina Oktaviani, Mufti Ma'Sum and Angga Seftian Lagatari 8
[ICVIAS22019010] Design of Greenhouse Monitoring for Hydroponic Based on Microcontroller and Android System *Aji Akbar Firdaus* 9
[ICVIAS22019011] Vokhum Fest: A Specialized Integrated Marketing Communication Event towards Small Medium Enterprises Brand Management and Youth Social Welfare
Hardika Widi Satria, Maudisha Alifa Rahman, Friska Arifiani and Fitriyah Nurzakiyah 10
[ICVIAS22019012] Microcontroller based Access control of home's electronic door using e-KTP and Personal Identification Number (PIN)
Winarno Winarno, Franky Chandra Satria Arisgraha, Ali Suryaperdana Agoes, Achmad Hanif and Dyah Cahya Lestari 11
[ICVIAS22019013] Development Of Information Technology And Communication Human Resources Management Success Model In Local Government (Case study: Surabaya City, Sidoarjo and Madiun City)
Muhamad Nasrullah and Tony Dwi Susanto 12
[ICVIAS22019014] Dynamic Maze Generations in 3D Virtual Game using Recursive Division Algorithm

Darlis Herumurti, Imam Kuswardayan, Purbo Panambang, Andhik Ampuh Yunanto and Siska Arifiani 13
[ICVIAS22019015] Implementation of Fuzzy-AHP Method for Selection Recommendation of Choir`s New Members (Case Study: Brawijaya University Student Choir)
Nania Nuzulita, Yutika Amelia Effendi, Nurul Hidayat and Dewi Candra 14
[ICVIAS22019016] A Sentiment Analysis using Text Mining Focused on Employee's Review Experience
Nasa Zata Dina 15
[ICVIAS22019017] Development of Conceptual-Level Architecture Vision for Real Estate Sector
Army Justitia, Indra Kharisma Raharjana and Kinanti Ramdhani 16
[ICVIAS22019018] Improving Perfomance of Lecture's The Era of Industrial Revolution 4.0 through e learning : a Comparative Study in faculty economics nusantara PGRI Kediri
Dhiyan Septa Wihara, Anis Eliyana and Indrianawati Usman 17
[ICVIAS22019019] Analysis of Increase in Krawu Rice Business Revenue Turnover Using Dynamic System Approach
Nanang Fakhrur Rozi, Titus Kristanto, Eka Cahya Muliawati, Rachman Arief, Syaiful Hidayat and Dewi Rahwamati 18
[ICVIAS22019020] User Acceptance Analysis Of Bitcoin Using Unified Theory Of Acceptance And Use Of Technology Model
Purbandini Soeparman, Army Justitia, Alberto Martin Hau and Nasa Zata Dina 19
[ICVIAS22019021] E-Learning Development As An Interactive System With Scrum Methodology
Supangat Supangat, Anis Rahmawati Amna, Titasari Rahmawati and Geri Kusnanto 20
[ICVIAS22019022] Four Quadrant Chopper for Separately Excited DC Motor Speed Control
Gigih Priyandoko and Wahyu Mulyo Utomo 21
[ICVIAS22019023] Query Suggestion for Research Paper Recommendation using WordNet Query Expansion
Indra Kharisma Raharjana, Ahimsa Denhas Afrizal and Badrus Zaman 22
[ICVIAS22019024] The Feasibility Analysis Of Digital Library By Using The Cost And Benefit Analysis Method At The Library Of State Islamic University Of Sultan Syarif Kasim Riau
Nikawati Nikawati, Nurmaini Dalimunthe and Arabiatul Adawiyah 23
[ICVIAS22019025] Analysis Of Varian Particle By Carbon Nano As The Propellant Fuel To Increase Specific Impulses Of Rockets
R Djoko Andreas Navalino, Nur Rachman Supadmana Muda, Tafiek Munawwaroh, Yayat Ruyat and Budi Santoso 24
[ICVIAS22019026] Text Categorization with Fractional Gradient Descent Support Vector

Machine
Dian Puspita Hapsari and Imam Utoyo 25
[ICVIAS22019027] Design and Simulation of Vertical Parking Using PLC and Internet of Things
Ratih Setyaningrum, Helmy Rahadian and Shavira Shavira ..... 26 [ICVIAS22019028] Youtuber as a Potential Job For Generation Y And Z in Revolution Industry 4.0
Syaifurrizal Wijaya Putra, Anis Eliyana and Indrianawati Usman 27
[ICVIAS22019029] Women in Tehnopreneur: Effects of Information Technology and Women's Entrepreneurship on Sustainable Economic Growth in Surabaya
Rismawati Sitepu, Anis Eliyana, Indrianawati Usman, Ilham -, Nuzulul Fatimah, Syaifurrizal Wijaya Putra and Rina Dewi 28
[ICVIAS22019030] Emotional Intelligent, Compensation, Resilience And Enterpreneurship To Improve Agents Achievement Motivation
Nuzulul Fatimah, Anis Eliyana, Indrianawati Usman, Syaifurrizal Wijaya Putra, Rismawati Sitepu and Anita Kartika Sari 29
[ICVIAS22019031] Facilitating Student Engagement Through Interactive E-Learning Media
Dhika Maha Putri, Moh.Danang Bahtiar and Muhammad Muhammad .. 30
[ICVIAS22019032] Calculating Fitness, Completeness, and Validity of Process Models
Yutika Amelia Effendi 31
[ICVIAS22019033] Physical Factors Monitoring of Rare Collection Room as Preservation Effort in Grhatama Library Service Center Yogyakarta
Eka Ratri Noor Wulandari, Tri Mega Asri, Pitoyo Widhi Atmoko and Gita Sulika Sari 32
[ICVIAS22019034] Analytical Method Validation for Cobalt Determination on Organic Fertilizer
Puji Kurniawati, Tri Esti Purbaningtias and Bayu Wiyantoko 33
[ICVIAS22019035] Analysis of Medical Mobile Application Based on Human and Computer Interaction (HCI) Principles
Rizqiyatul Khoiriyah 34
[ICVIAS22019036] Smart Wearable Device for Hand Gestures Recognition using Accelerometer and Flex Sensors
Eva Inaiyah Agustin, Winarno and Riky Tri Yunardi 35
[ICVIAS22019037] Modeling biorefineries process in production bioethanol using artificial neural network
Sisca D N Nahdliyah, Elsyea Adia Tunggadewi, Aji Akbar Firdaus, Eva Inaiyah Agustin, Winarno, Riky Tri Yunardi and Deny Arifianto 36
[ICVIAS22019038] The Influence Of Corporate Culture On Employee Job Satisfaction Of PT. Anzindo Gratia International
Tatag Herbayu Latukismo, Anis Eliyana, Indrianawati Usman, Ilham Ilham and Dhiyan Septa 37
[ICVIAS22019039] A Review of Blockchain Technology Role in Financial Technology
Faried Effendy, Chrisna H Wibisono, Muhammad Emir Rifqy, M Raka S Azna, Haryo Rahmadityo and Novianagta Kurniantoro 38

[ICVIAS22019040] A Review of ITIL and Cobit 5 for IT Governance
Faried Effendy, Muhyidin Ubaidilah, Hendriyan Ogivano, Ahmad Deliar Nur, Aldino H Pandu and Affandy Fahrizain 39
[ICVIAS22019041] Implementation of ITIL in SMEs: A Review in Developing Countries
Faried Effendy, Maulia Mutiartanti, Anisa Firdausa, Dini Harianti, Hanesyang Idha Suciningati and Tinezia Putri Aisyah 40
[ICVIAS22019042] Implementation of Fuzzy Multi Criteria Decision Making for Determining Student Rank (Case Study: Bimbel Plus IKA)
Yutika Amelia Effendi and Nania Nuzulita 41
[ICVIAS22019043] Cluster Optimation for Promotion The New Students Admissions
Dwi Vernanda, Nunu Nugraha Purnawan and Tri Herdiawan Apandi ... 42
[ICVIAS22019044] Smart Dustbin Prototype for Automatic Waste Segregation in Indonesia University of Education – Cibiru Regional Campus
Mochamad Iqbal Ardimansyah, Hendriyana and Raditya Muhammad ... 43
[ICVIAS22019045] Internet-of-Thing (IoT) Based Teaching Media Used in Teaching English at University Level in the Era of Industrial Revolution 4.0
Dini Kurnia Irmawati and Tri Mega Asri 44
[ICVIAS22019046] An Analysis of Technology Acceptance Model in Understanding Academics' Behavioral Intention to Use of Information System of Research and Community Service
Sri Rahayu Natasia, Vinda Daningrum and Tegar Palyus Fiqar 45
[ICVIAS22019047] Development Of The E-Government Evaluation Model on City Level Through Pattern System Approach
Alifian Sukma and Tony Dwi Susanto 46
[ICVIAS22019048] Detection of Muscle Strength Scale with Surface Electromyography using Multiple Channels Points Measurement Method
Aulia Elhakim, Sulfan Bagus Setyawan and Dyah Anggun Santika 47
[ICVIAS22019049] Application of 'Catch Reptiles' as a Means of Reptiles Education and Socialization in Two Languages
Condro Kartiko, Novanda Alim Setya Nugraha and Dery Sudrajat 48
[ICVIAS22019050] Small Signal Stability Analysis of Two Stage PV Generation
Herlambang Setiadi 49
[ICVIAS22019051] Deploying Content Based IMage Retrieval on Natural and Artificial Images
Suhendro Irianto and Muhammad Galih ..... 50 [ICVIAS22019052] Temperature and Humidity Monitoring System for Library Rooms Based on Internet of Things
Harnan Malik Abdullah and Eka Ratri Noor W 51
[ICVIAS22019053] An Automated Creative Thinking Assessment Tool for Figural Forms
Yeni Anistyasari and Ekohariadi ..... 52 [ICVIAS22019054] Effect Of Job Satisfaction And Work Motivation To Employees Performance Pt. Garam (Persero)
Hendra Kurniawan, Anis Eliyana, Indrianawati Usman, Ilham Ilham and

Riyan Sisiawan Putra 53
[ICVIAS22019055] Measuring Smart Living Dimension on Smart City in Indonesia
Syehka Sofia Arya Larasati and Tony Dwi Susanto 54
[ICVIAS22019056] E-learning research positioning in Indonesia: a bibliometric overview
Agung Purnomo, Fatkul Anam, Nur Asitah, Elsa Rosyidah, Etsa Astridya Setiyati, Yudhistya Ayu Kusumawati, Ach. Zuhri, Nurlaily Wulandari, Eko Sumartono and Hadi Ismanto 55
[ICVIAS22019058] Development of Information Technology Investment Feasibility Evaluation Model in Local Government
Fathiya Hasyifah Sibarani and Tony Dwi Susanto ..... 56 [ICVIAS22019059] Measuring Smart Cities: Identification of Smart Society Indicators in Indonesia
Dwitika Pangestuti, Tony Susanto and Lantip Trisunarno 57
[ICVIAS22019060] Effect of Work Environment on Job Satisfaction in Primbiz Hotel Surabaya Employees
Riyan Sisiawan Putra, Anis Eliyana, Indrianawati Usman and Hendra Kurniawan 58
[ICVIAS22019061] The effects of smart home multimedia with e-learning method on older people independent: a Meta-Analysis and Research Synthesis
Joni Haryanto 59
[ICVIAS22019062] Evaluation and Assessment Method in Educational Games for User: A Literature Review
Andhik Ampuh Yunanto, Darlis Herumurti, Siti Rochimah and Siska A. . 60
[ICVIAS22019063] Educational management: systematic twitter analysis
Fatkul Anam, Agung Purnomo, Mega Firdaus, Ana Christanti and Hadi Ismanto 61
[ICVIAS22019064] Educational management: learning management system review
Fatkul Anam, Agung Purnoomo, Andre Septianto, Anindya Widita and Elsa Rosyidah 62
[ICVIAS22019065] The Effect of Learning Capability and Total Quality Management Practices on SMEs Financial Performance is mediated by Non-Financial Performance
Uswatun Hasanah, Anis Eliyana and Indrianawati Usman 63
[ICVIAS22019066] Information Needs, Information Seeking Behaviour, and Obstacles of New Students in Universitas Airlangga
Dessy Harisanty 64
[ICVIAS22019067] Characteristics of the Modified Particle Swarm Optimization Method
Eto Wuryanto and Dyah Herawatie 65
[ICVIAS22019068] An Application of Geographical Information System (GIS) for Assessing Tourist Destination Awareness: A Lesson from Australia
Cholid Fauzi, Syifa Novianti and Dwi Suhartanto 66
[ICVIAS22019069] The Effects of Library User Education on the Information Seeking Behavior: A Survey of State Institute of Islamic Studies (IAIN) Kudus Students

Tiara Kusumaningtiyas and Dyah Ayu Novita Hadi 67
[ICVIAS22019070] Development Curriculum Double Track Fashion Design Program for High School
Irma Russanti, Luthfiyah Nurlaela, Munoto Munoto, Ekohariadi Hariadi and Tririjanto Rianto 68
[ICVIAS22019071] Consumer Responses on The Develovment of Eco Print Hijab
Irma Russanti, Yulistiana Yulistiana and Mutimmatul Faidza 69
[ICVIAS22019072] Social Media & Knowledge Management: Knowledge Management 2.0
Muhammad Rifky Nurpratama and Tiara Kusumaningtiyas 70
[ICVIAS22019073] Students' Perception of Internet Banking Facilities Using Technology Acceptance Model (TAM)
Yossy Imam Candika and Shofiyah Permatasari Budiarsa 71
[ICVIAS22019074] Design of Custom-Made Electromagnetic Solenoid for Ball Kicking Mechanism on KRSBI Soccer Robot
Deny Arifianto, Winarno Winarno, Ali Suryaperdana Agoes and Fuad .. 72
[ICVIAS22019075] Big Data Analytics to Improve e-resources service in Academic Library
Nove E. Variant Anna, Nasa Zata Dina and Novita Dwi Anawati 73
[ICVIAS22019076] The IoT Perform Analysis for Smart Greenhouse Monitoring System
Diana Rahmawati, Achmad Ubaidillah and Heri Setiawan 74
[ICVIAS22019077] Gamification at the Indonesian Library: Opportunities and Challenges
Esti Putri Anugrah and Muhammad Rifky Nurpratama 75
[ICVIAS22019078] Psychology of the entrepreneur: a 45-year publication analysis of Scientometric
Agung Purnomo, Ajie Muhammad Ichsan Susila, Nur Asitah, Alvin Arifin and Elsa Rosyidah 76
[ICVIAS22019079] The Design of Solar Water Pump with Fuzzy Logic Method
Elsyea Adia Tunggadewi, Sisca D N Nahdliyah, Winarno, Deny Arifianto, Riky Tri Yunardi, Eva Inaiyah Agustin and Aji Akbar Firdaus 77
[ICVIAS22019080] Smart Branding Indicators Identification in Indonesian Smart Cities
Taufiqur Rohman, Tony Susanto and Raditya Rizkiantono 78
[ICVIAS22019081] Surveillance System Using Face Recognition and Identification with OpenCV and Python
Fairuz Iqbal Maulana ..... 79 [ICVIAS22019082] Development methodology smart environment assessment indicators: A Systematic Literature Review
Akhmad Syaiful Arief, Tony Dwi Susanto and Idaa Warmadewanthi 80
[ICVIAS22019083] The Effectiveness and Efficiency of Utilizing E-government Application
Nur Shabrina Meutia and Apol Pribadi Subriadi 81
[ICVIAS22019084] Real Time Notification for Patient Queue Management System
Rachman Sinatriya Marjianto and Fitri Retrialisca 82
[ICVIAS22019085] Development of Smart AWLR (Automatic Water level Monitoring) for Irrigation Canals Connected to The Web
Dwi Wiyantanu 83

[ICVIAS22019086] Design of Temperature Control System in Chilli Refrigerator
Purwadi Darwito, Murry Raditya and Detak Yan Pratama 84
[ICVIAS22019087] Design of Tissue Damage Detection System from a Digital Microscope Image Using the Feature Extraction Method
Retna Apsari, Ima Kurniastuti, Yoseph Ghita and Soegianto Soelitiono . 85
[ICVIAS22019088] Performance Enhancement of Multi-User Key Extraction Scheme (MKES) Based on Imperfect Signal Reciprocity
Mike Yuliana, Reni Soelistijorini, Amang Sudarsono, Prima Kristalina, Aries Pratiarso and Arifin - 86
[ICVIAS22019089] Design Of Electrical Stimulator Based On Microcontroller As A Replacement Of Hammer Reflex
Retna Apsari, Putrii Ni'Matulillah and Tri Anggono 87
[ICVIAS22019090] Harnessing Social Media for E-patient Empowerment and Public Health Promotion
Ira Puspitasari ..... 88 [ICVIAS22019091] Design of Information System for Pregnancy and Vaccination Monitoring and Scheduling (Case Study: Klinik Umum dan Bersalin Bunda Tanggulangin)
Tesa Eranti Putri and Febrianti Indah Rahmana 89
[ICVIAS22019092] Segmentation Method for Splitting Filler Particle of Polymer Composite in Microstructure Image
Fajar Astuti Hermawati, I Made Kastiawan and Muhyin 90
[ICVIAS22019093] Observation and Simulation of Road Traffic Congestion Using SimEvents MATLAB Application
Erwin Harahap, Farid Badruzzaman and Deni Darmawan 91
[ICVIAS22019094] Hospital Enterprise Architecture Modelling in East Java
Muhammad Mansur Yafi, Awang Andhyka, Hadi Ismanto, Agung Purnomo, Rizky Amalia Putri, Laily Muzdalifah, Asep Rahmatullah, Muhafidhah Novie, Untung Usada and Agus Rachmad Purnama 92
[ICVIAS22019095] The Influence of UI/UX Customer Satisfaction to Increase User Interaction in e-commerce Mobile Application
Yudhistya Ayu Kusumawati and Fairuz Iqbal Maulana 93
[ICVIAS22019096] Requirement Gathering and Analysis of Internship Information System using Scrum Method
Yanti Andriyani, Ibnu Daqiqil Id, Evfi Mahdiyah and Astried Astried 94
[ICVIAS22019097] Aligning COBIT and ITIL to Develop Standard Operating Procedures for IT Facility Management
Endah Purwanti and Eva Hariyanti 95
[ICVIAS22019098] Information Technology Capital Of Islamic State University Surabaya Sunan Ampel : Determination Of Database Costs, Technology Infrastructure Costs, Cost Software, And Brainware Costs On Improving The Budget Of Information Technology
Ilham Msaid and Tatag Herbayu Latukismo 96
[ICVIAS22019099] Aplication Of The New Adaptive Cuckoo Search Algorithm In

Travelling Salesman Problem
Eto Wuryanto, Regina Devi Loanita Lapian and Purbandini Purbandini 97
[ICVIAS220190100] Implementation Of Steganography For Safety News In The Form Of Video Data Online
Maarif Kurniawan, Nur Rachman Supadmana Muda, Dessy Derius Minggu and Imam Azhar 98
[ICVIAS220190101] The Structural Model of Online Brand Community, Value Creation Practices, Brand Trust dan Brand Loyalty on Indonesia Online Brand Community
Dien Mardhiyah and Ali Imaduddin Futuwwah 99
[ICVIAS220190102] Internet of Things Based Health Monitoring System Using Flutter
Mohamad Ardi and Febriliyan Samopa 100
[ICVIAS220190103] Comparison of PSO, DE and Hybrid DE-PSO for Solving LFC in Wind Power Systems
Herlambang Setiadi and Aji Akbar Firdaus 101
[ICVIAS220190104] Performance Evaluation of Land Deed Making Services using the Ethnographic Study Approach
Susilowati 102
[ICVIAS220190118] How to Construct IT Assets Management Procedure Using COBIT 5?
Army Justitia, Indra Kharisma Raharjana and Nindyasanti Nourma Ekaputri 103
[ICVIAS220190125] Strategy and Development of the ePakan Business Model as a Marketplace for Livestock Feed and Livestock Product
Astria Hijriani, Tristiyanto, Dinora Refiasari 104
[ICVIAS220190145] Role of Library Leader at Academic Library
Dyah Puspitasari Srirahayu and Anis Eliyana 105
[ICVIAS220190146] Risk Management in the Indonesian Archival Institution
Dyah Puspitasari Srirahayu 106
[ICVIAS220190147] Utilization of Big Data: Analysis of Airlangga University Library Circulation Data
Dyah Puspitasari Srirahayu and Dyah Wulan Sari 107
[ICVIAS220190148] Mobile-based Information System for Support Family Planning Programs
Endah Purwanti 108

Utilization of big data: Analysis of Library Circulation DataUniversitas Airlangga

Dyah Puspitasari Srirahayu[1] , Dyah Wulan Sari [2]

[1] Library Study Program, Vocational Faculty, Universitas Airlangga
[2] Management Program, Faculty of Economics and Bussiness, Universitas Airlanga

[1] dyah.srirahayu@vokasi.unair.ac.id

Big data is currently being developed to analyze the condition of the organization and also to make predictions about future commissions. Library is one of the organizations that apply technology in every business activity so that the data generated is large and can be utilized for the purpose of improving the performance of the library. One of the data produced in the library is circulation data in the library, such as the one in Airlangga University Library. The circulation data include: visitor data, loan data, return data, member data collection data and read data on the spot. This study aims to look at trends in library use by using circulation data. The research method used is descriptive quantitative by explaining the frequency table that has been processed. The results showed that the activities of borrowing, controlling and reading in hsnys 48.5% while the rest did other activities such as using discussion rooms, the internet and others.

Keyword: Big data, data circulation, trend library, college library

Introduction

Many companies use big data analysis to make business decisions. Riaha (2018) explains that Big Data refers to the evolution and use of technology that provides the right user at the right time with the right information from the mass of data that has grown exponentially for a long time in our society. Big Data Analysis refers to the process of collecting, organizing, analyzing big data sets to find different patterns and other useful information especially focusing on solving new problems or old problems in a better and effective way (Verma & Agrawal. 2016).

Libraries have not maximized the statistical data generated in research for library development, the data generated by the information system in the library is still only for reports without analyzing why and how. Processing statistical data in the library can also be used for appropriate promotional tools in the library to show trends that are happening at the moment. The formulation of the problem in this study is how the condition of the center if viewed from the statistical data of visitors in the library of Universitas Airlangga in 2019.

Literature Review

Higher education libraries are libraries located within the tertiary educational institutions, high schools, academies or other high schools which are essentially an integral part of a tertiary institution. The university library chooses, processes, collects, maintains, and serves its collections

to the citizens of their parent institutions in particular and the academic community in general. One of the activities in the library is circulation.

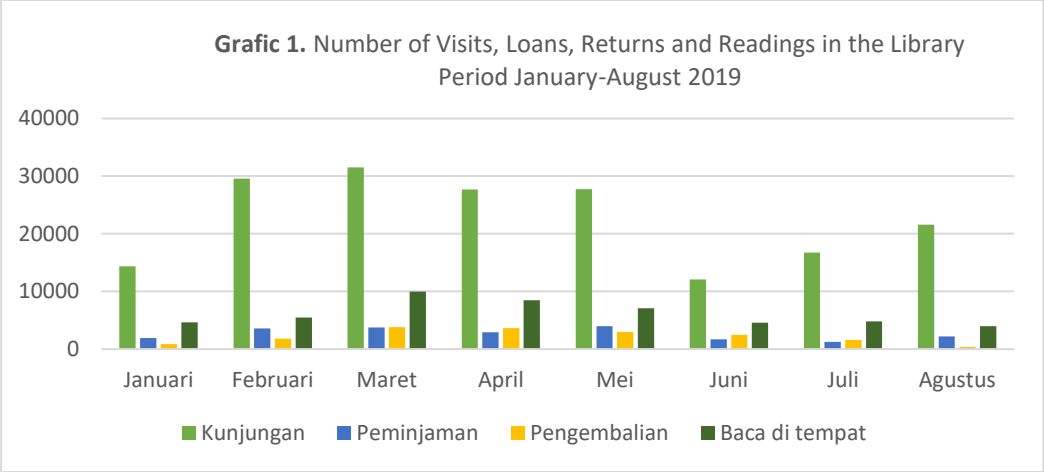
The word circulation comes from the English "circulation" which has a meaning of circulation, circulation. Whereas in library science, the word circulation is often known as borrowing, however the notion of circulation services actually includes all forms of recording activities related to the use of library materials. According to Lasa (1994), "Circulation services are work activities in the form of providing assistance to library users in the process of borrowing and returning library materials". One of the main activities or main services of the library is the borrowing of books and other materials. This lending activity is often known by the name of circulation which means borrowing. Circulation desks are often considered to be the forefront of library services because this section is the first to deal with users or users and is most often used by users, hence the performance of circulation staff can affect the image of the library (Sulistiyo-Basuki 1991).

From some of the descriptions above it can be concluded that circulation services are activities that must be in the library that relate to the lending and returning library materials so that they can be used by the user to the fullest. Circulation service is one of the user services. The main principles of good user service are still used as a guideline as stated in the College Library Guidebook (2004) that the principles of user service are: 1). User oriented, 2). Are universal, 3). Using discipline, and 4). Fast, precise and easy.

Research methods

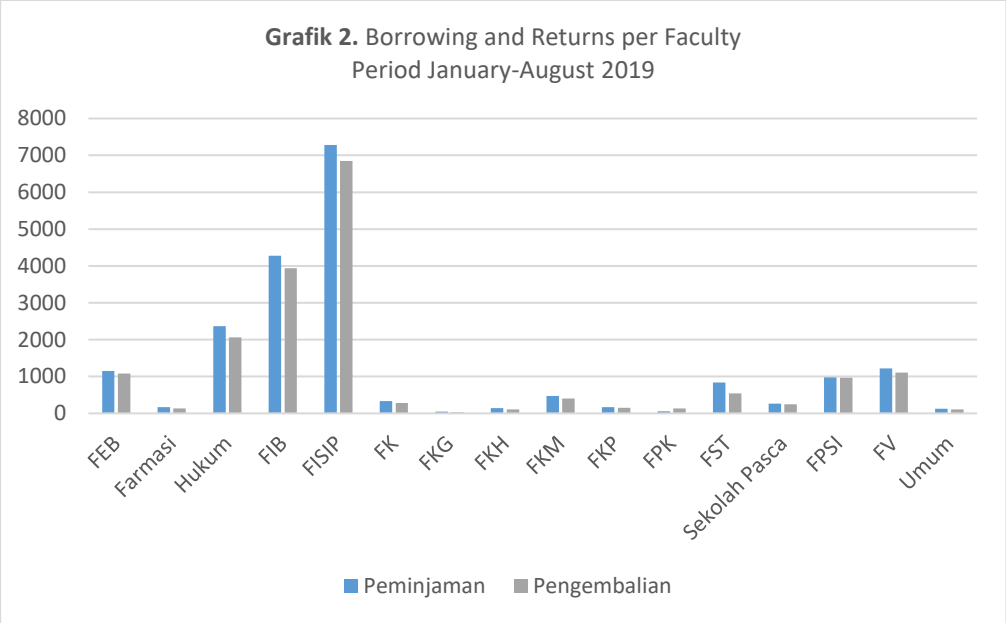
This research is a descriptive qualitative study using secondary data generated by the Airlangga University Library Information System, namely lending, returning, reading on site and visits obtained from February 2019 to August 2019. Data that have been obtained are then processed by using SPPS to get the frequency of data from the number of visits, the number of loans, the number of readings on the spot. The processed data are then analyzed using descriptive methods and conclusions can be drawn. The results showed that

Research result

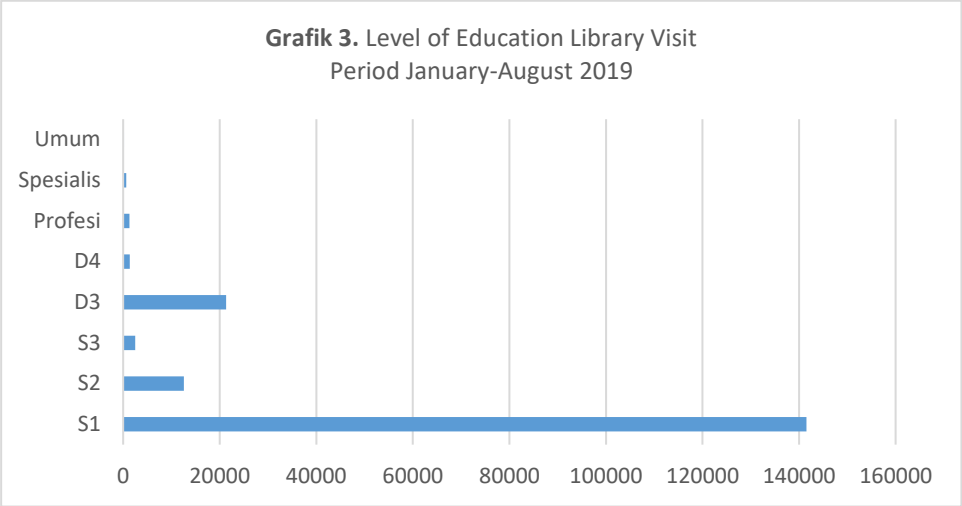


From the chart above shows the number of visits, borrowing, returning and reading collections in the library in the period January-August 2019. For 8 months, Airlangga Library received physical visits as many as 181278 visitors, the most visits occurred in March as many as 31515 visitors. March

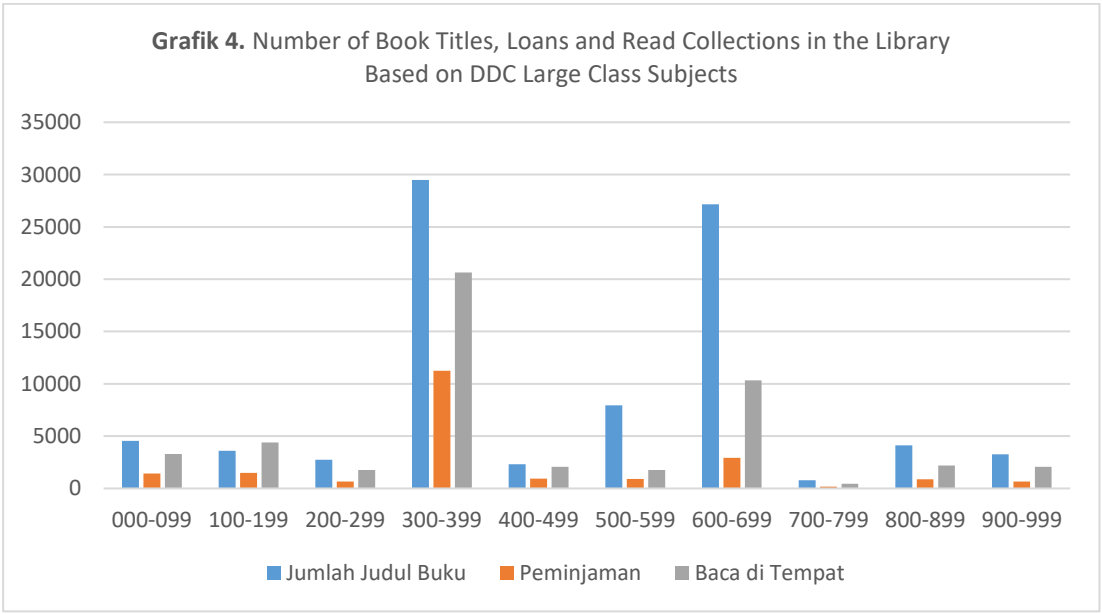
is an even midterm month in which students conduct midterm exams (UTS). The total number of loans for 8 months was 21295 borrowers, and the most occurred in May as many as 3985 borrowers. The total number of returns for 8 months amounted to 17600 returns, and the most occurred in March of 3807 returns. Compared to borrowing and repayment, the total number of library reading activities in the library is 8 months, which is 48958 users, and the most in March is 9969 visitors. In addition, from the chart above, it can be seen that the activities of the library visitors to the Airlangga University are not only about borrowing, returning and reading collections, but there are other activities carried out in the library. This can be seen from the considerable difference between the number of visits with lending, returning and reading collections in the library. The activity of borrowing, controlling and reading in hsnys is 48.5% while the rest are doing other activities such as using discussion rooms, internet and others.



The chart above shows the number of loans and repayments per faculty that occurred in January-August 2019. Of all the faculties at Airlangga University, the most lending and returning collection activities were the Social and Political Sciences Faculty (FISIP) 7278 loans and 6849 collection returns. And the faculties with the least borrowing and returning collection activities are the Faculty of Dentistry (FKG) with 51 loans and 33 collection returns.



The chart above shows the level of user education at the library visit that occurred in January-August. In the University of Airlangga there are 7 levels of education, namely Strata 1, Strata 2, Strata 3, Diploma 3, Diploma 4, Professionals and Specialists. Of all the educational levels in the Airlangga University environment, the most library visits are Strata 1 education with 141562 students, while the least is the public library group with 145 students. This public library group includes alumni or users who are not from the academic community.



The chart above shows the number of book titles, borrowing and reading collections in the January-August period library which is divided into 10 major Dewey Decimal Classification (DDC) classes. Of all the titles of books in the Unair Library, there are at most 300-399 DDC classes, namely 29840 social science subjects. While the least number of books in the class 700-799 with subjects of

arts, entertainment, and sports as many as 780 titles of books. The number of borrowing and reading collections in the library also shows the same thing, the most in class 300-399 is 1251 borrowing and 29630 reading collections in the library. Likewise, the number of borrowing and reading collections in the library at least in the 700-799 class was 177 borrowing and 433 reading collections in the library.

Table 1. Language Of Library Collection

Language	Frekuens	
	Borrow	reading
Indonesia	18375	41676
English	2920	7282
Sum	21295	48958

The table above shows the types of languages in the collection that are borrowed and read in the library. Both borrowing and reading collections in the library show the same results that collections with Indonesian are more borrowed and read by users when compared to collections in English, it can be seen from the large difference table between the two languages. In borrowing a collection of Indonesian books in 18375 copies and a collection of books in English as many as 2920 copies. While in reading activities in the library, books that were read in Indonesian were 41676 copies and books in English were 7282 copies.

Research Analysis

The faculties that visited the most, borrowed collections, read on the place were the faculties of social and political science, while the number two was the faculty of cultural sciences. Research conducted by Puspitasari (2014) in the Airlangga library also shows that the most coming faculties are the Faculty of Social and Political Sciences and the faculty of law, which when viewed from the collection table can be seen as having the most collections, so the library needs to increase the number of collections or can also promote other class books. When viewed from the language, the most numerous collections are in Indonesian. One of the constraints in the use of both printed and non-printed library collections is language (srirahayu, 2018; Anajoyce, 2016).

Conclusion

From the description data it can be seen that the month with the most visits, borrowing, repayment and reading on the spot is February - May and decreases in June and rises again in the following month, from this data the library of Airlangga University can estimate at what time the library is empty. and what month there are many visitors so that library managers can map both staff and activities in the library so as to improve services to users

Research Limitation

This research still has a lot of data that has not been explored using secondary data that is in the centers such as user demographics and others. Besides this data is still physical visit data to

perpsuatkaan, whereas perpsuatkaan at this time many have electronic collections, so it needs further research in this regard.

Reference

Anajoyce S K, Use of electronic journal resources by postgraduate students at the University of Dar es Salaam, *Library Review*, 63 (6/7) (2016) 445-460. https://doi.org/10.1108/LR-11-2015-0108

Cole, K. & Graves, T. & Cipkowski, P. (2010). Marketing the Library in a Digital World. *The Serials Librarian, 58*. 182-187. DOI:10.1080/03615261003625729.

Duke, L. & Tucker, T. (2007). How to Develop a Marketing Plan for an Academic Library. *Technical Services Quarterly, 25*. 51-68. DOI:10.1300/J124v25n01_05.

Ekwueme, D. & Ilo. (2019). Marketing of Library Services for Enhanced Accessibility in National Open University of Nigeria: Challenges and Strategies for Intervention. *Library Philosophy and Practice.*

Henry, Elizabeth & Longstaff, Rachel & Kampen, Doris. (2008). Collection analysis outcomes in an academic library. Collection Building. 27. 113-117. 10.1108/01604950810886022.

Korobili, Stella & Tilikidou, Irene & Delistavrou, Antonia. (2006). Factors that influence the use of library resources by faculty members. Library Review. 55. 91-105. 10.1108/00242530610649594.

Lasa, HS. (1994). *Jenis-Jneis Pelayanan Informasi Perpustakaan:Sirkulasi*, Yogyakarta: Gadjah Mada University Press.

Perpustakaan Nasional RI (2004). *Pedoaman Perpustakaan Perguruan Tinggi*. Jakarta: Perpustakaan NAsional RI

Puspitasari, D. (2014). Analisa Pengunjung Perpustakaan dana Peminjaman Buku Tercetak pada Perpusatkaan Universitas Airlangga. *Jurnal berkala ilmu perpustakaan dan informasi. 10*(1), 9-16. https://jurnal.ugm.ac.id/bip/article/view/7707/5970

Riahi, Y. (2018). Big Data and Big Data Analytics: Concepts. *Types and Technologies. 5*. 524-528. DOI: 10.21276/ijre.2018.5.9.5.

Saharkhiz, Yasaman & Valizadeh, Majid & Salamat, Hengameh. (2017). The Evolution of Academic Libraries in the Age of Technology. Journal of History Culture and Art Research. 5. 402. 10.7596/taksad.v5i4.615.

Srirahayu, Dyah P,. (2018). Analysis E-Journal Usage by student of Universitas Airlangga Indonesia. International conference on vocational innovation and Applied Sciences 13 november 2018: Surabaya Indonesia

Sulistyo-Basuki. (1994). Pengantar Ilmu Perpustakaan. PT Gramedia Pustaka Utama: Jakarta

Sun, B. (2011). A Study about the Prediction of University Library Lending Based on Multiple Regression Analysis. *Lecture Notes in Electrical Engineering, 122*. 525-532. 10.1007/978-3-642-25553-3_65.

Verma, J & Agrawal, S. (2016). Big Data Analytics: Challenges And Applications For Text, Audio, Video, And Social Media Data. *International Journal on Soft Computing, Artificial Intelligence and Applications. 5*, DOI: 41-51. 10.5121/ijscai.2016.5105.

Yamada, S. (2003). Analysis of Library Book Circulation Data: Turnover of Open-shelf Books. *Journal of College and University Libraries, 69*, 27-33.

The 2nd International Conference on Vocational Innovation and Applied Sciences