INTERNATIONAL JOURNAL OF INNOVATIVE SCIENCE AND RESEARCH TECHNOLOGY
IJISRT A DIGITAL LIBRARY
ISSN NO : 2456-2165

ISSN No.: 2456-2165

International Journal of Innovative Science and Research Technology
Address:- sector-9,Rohini, Delhi.
Email :-editor@ijisrt.com
Web page :-www.ijisrt.com

EDITORIAL BOARD

Scientific Journal Impact Factor

CERTIFICATE OF INDEXING (SJIF 2015)

This certificate is awarded to

International Journal of Advanced Research (IJAR)
(ISSN: 2320-5407)

The Journal has been positively evaluated in the SJIF Journals Master List evaluation process
SJIF 2015 (Scientific Journal Impact Factor Value for 2015) = 5.336

SJIF (A division of InnoSpace)

Prof. Khaoula MESSAOUDI
P.Box 695 Rabat - Chellah 10002 Morocco

Innovative Space of Scientific Research – Morocco

Indexing

SJIF Impact Factor : 5.15

Implementation and Analysis of a Computerised Vehicle License Registration System
Author Name : Ihedioha Uchechi. M" Onyedeke, obinna C" Uzor Blessing Chimezie" Agubata, Immaculate Chidinma

Effect of Job Characteristics and Motivation on Employee Job Satisfaction of PT. Bank State Savings (Persero) Branch Office Malang - Indonesia
Author Name : Farah Adiba

The Influence of Work Motivation and Organizational Culture on Employee Performance at PT. Taspen (Persero) Malang Branch Office
Author Name : Farah Adiba

The Effect of Social Entrepreneurship on Organizational Learning, Partnerships, Competitive Advantages and Business Performance (Study on Small Scale Enterprises in Creative Industries Oriented in DKI Jakarta Province)
Author Name : Catur Susanto, Dr. H. Taher Alhabsyi, Dr. Wilopo, Yusri Abdillah.

Comparision of Accommodative Facility and Assessment of Tearfilm Before & After 6 - 7 Hrs of Usage of Digital Screen
Author Name : Nishad Begum A P, Sachitanand Singh

A Study on Impact of Non-Performing Assets on Profitability of Public and Private Sector Banks
Author Name : Krupal A Chaudhari, Dr. Taral M Patel

Analysis of Reward, Work Environment, Job Promotion And Supporting Facilities Towards Job Satisfaction
Author Name : Widy Hastuty HS, Nasib, Maya Syahlina, Srie Hartati, Ballian

Estimating the Determinants of Unemployment in Sudan by Applying the Philips Curve Using the E GARCH Model during the Period 1990-2018
Author Name : Almahdi Musa Attahir Musa, Tarig Adam Balla Abd Allah

An Exploratory Study of Criminology Students' Perception to Relative Deprivation in Using Social Media Sites
Author Name : Jamaica Kim Lopez Mabanglo

Financial Liberalization and Economic Growth in Nigeria (1986-2018)
Author Name : ILUGBUSI, Segun. B; AJALA, Rosemary B; AKINDEJOYE, John A; OGUNDELE, Abiodun

Dupont Analysis for the Financial Performance of Trading, Service & Investment Companies in Indonesia
Author Name : Citra Shahnia, Endri Endri

Use of Google Forms for Ludic Learning The Experience in the Computer Science Fundamentals Course
Author Name : Irene Hernandez Ruiz, Kerly Gomez Toaza

Hypothesis: Advanced Biotechnological Treatment Approaches Against SARS-CoV-2 (COVID-19)
Author Name : Farmanli Orkhan, Uysal Melike, Ayhan Yunus Emre, Gokdemir Cihan, Donmez Omer Faruk, Bastug Samet, Parlak Murat, Uckun Ilknur, Jafarov Alemdar, Pamuk Ibrahim, Farmanli Kubra, Karatas Ihsan

Speaking System for Mute People Using Raspberry-PI
Author Name : Dr. K N Nagesh, A. Sai Teja Reddy, K. Veerendranath, N. Pranay Reddy, N. Sarath Kumar

2DCrypt: Image Scaling and Cropping Without Physical Interface
Author Name : Sudhakara Reddy M, Sindhuja M, Sireesha K, Tejaswini M, Geethika R V

A Study on Employee Attrition Rate in One of the Multispeciality Hospital in Bangalore
Author Name : Dr.V.Uma, S. Monishwar

The Health of Gashaka Gumti National Park using SWOT Analysis
Author Name : Kanati Madaki, Tonga Ak Noweg, Alexender Kiew Anak Sayok, Wong Swee Kiong, Isaac John Umaru

Research Measurement Profile of Surface Revolution By Laser Scan Micrometer Method
Author Name : Le Xuan Cam, Nguyen Van Vinh, Hoang Hong Hai

Application of Electrical Resistivity Method in Delineating Brine Contaminated Aquifer in Abakpa Area, Lower Benue Trough, Nigeria
Author Name : Akiang, F. B." George, A. M." Ibeneme, S. I. "Agoha, C. C.

Influence of Age and Gender on the Quantification of Uropathogens Via Streak Plate Technique in Urine Subjects from University of Medical Sciences Teaching Hospital Complex, Akure, Nigeria
Author Name : Bayode, M. Tosin" Olalemi, A. Oluwasogo" Oladejo, B. Olawale" Bodunrinde, R. Ebunoluwa" Gabriel, P. Oladimeji" Oladapo, O. Daniel" Adebisi, O. Omowumi" Okunade, A. Stephen" Adesanya, J. Abiola" Bayode, E. Oluwafemi

Identity Orientation Dimensions as Correlates of Cyber-Aggressive Behaviour among Undergraduates
Author Name : Nwokedi blessing chidimma

Asynchronous Interview Analysis
Author Name : Pratik Satpute, Rohan Nair, Vaibhav Pathak, Priyanka Bhilare

Applying ATC FEMA P-58 Approach and Nonlinear History Analysis to Estimate Economic and Social Losses due Earthquake for Reinforced Concrete Building in Iraq
Author Name : Ali Majdi, Ali Majdi

An Approach to Communication Models in Portuguese Public and Private Organizations
Author Name : Ana Matias, Luis Cardoso

Railway Track Crack Detection Using GPS and GSM
Author Name : Nanda Kishore, Ruhejadhav J, Aishwarya K S V, Pallavi M

Songs Recommender System using Machine Learning Algorithm: SVD Algorithm
Author Name : B.Srikanth, V.Nagalakshmi

Adsorption and Separation of Mercury (II) on Synthetic Two Component Ion Exchange Material
Author Name : S.D.Ajagekar

Digital Technologies and Relation with Changing Entrepreneurial Finance Landscape
Author Name : Sourav Mondal

Developing Model of Mathematic Instructional for Enhancing Sustainability Analysis Thinking and Achievement of Secondary Education in 10th Grade Students
Author Name : Chatuporn Chitmat, Pornchai Jedaman, Benjapuk Jongmuanwai

Knowledge and Practices Related to the Quality of Life of Patients with Chronic-Degenerative Conditions
Author Name : Guillermo Del Solar Villareal, Ivett Reyes Guillen

The Effect of Employee Retention, Rotation of Work, Working Environment and Working Spirit to Employee Performance with Intention Turnover as The Intervening Variables
Author Name : Yudi Prayoga, Raja Saol Marto Hendry, Hayanuddin Safri, Meisa Fitri Nasution, Aziddin Harahap

Civilizing the Love of the Sea through Learning
Author Name : Darju Prasetya, S.Pd.M.Si

Intelligent System Determines The Nutritional Needs Of Pregnant and Nursing Mothers Using Forward Chaining and Certainty Factor
Author Name : Muhammad Amin, Muhammad Syahputra Novelan, Chairul Rizal

Microbiology of Used Lipstick Products
Author Name : V. N. Anakwenze, M. O. Ikediaso, B. A. Ilodinso

Diabetes Predictor System using Machine Learning Algorithms over Live Cloud Infrastructure
Author Name : Deeksha K, Amrutha M, Harshitha, Ashwini Gotyal, Dr.M. Kusuma

The Impact of Sphenocentrum jollyanum, Baphia natida and Combined Extract Consumption on Reproductive Indices and Antioxidants Gene of Male Wistar Rats
Author Name : Wopara, Iheanyichukwu" Mobisson, Samuel Kelechi" Olusegun, G. Adebayo

Holistic Approach to the Effectiveness of Leadership in Higher Education: Theoretical Study
Author Name : Sivar Ali

Financial Statement Analysis: Evidence from Indonesian Bank BUKU IV
Author Name : Fifin Firdaus,Endri Endri

Characterization of Powder Obtained from Surface of Waste-Plastic Bricks
Author Name : Rutticka Kedare

Cloud Computing and Security: The Security Mechanism and Pillars of ERPs on Cloud Technology
Author Name : Musoni Wilson, MBANZABUGABO, Muhire Leonce

COVID-19: A Deadly Pandemic
Author Name : Patsey Sera Castelino

Influence of Different Environement on the Tribological Behavior of Molybdenum Disulfide Mos2
Author Name : H.S. Bui

Knowledge Regarding Birth Spacing Methods of Contraception among Postnatal Mothers in PGIMS, Rohtak, Haryana
Author Name : Kumari Sunita, Rani Reena, Rani Deepika

Implementation of Criminal Sanctions against Members of the Electoral Commission of Elections in Indonesia
Author Name : Abdul Jabar, Sri Endah Wahyuningsih

Derivation of Value of Root Over 2 across Ages
Author Name : Kanta Prasad Sinha

Web Application of Attendance and Result System
Author Name : Pavan G V

Drug Utilization Trend of Psychotropic Drugs in the Psychiatric Out-patient Department of Crimson Hospital, Rupandehi
Author Name : Manju KC, Dr. Mohammad Mustafa, Dr. Gautam Prasad Chaudhary, Bikram Shrestha, Purushottam Yadav

Analysis of Financial Performance of Plantation SubSector Companies Listed on the Indonesia Stock Exchange for the 2014-2019 Period
Author Name : Novri Eka Rinaldo, Endri Endri

Assessment of Defect in Building Services Equipment in Tertiary Institutions Across Lagos Megacity, Nigeria
Author Name : Ogungbemi Abel Olayinka

Blockchain Technology as a Health and Safety Contributor in the Transport and Logistics Industry – Human Resource Requirements
Author Name : Richard Skiba

Weaving Teaching and Leading: A Systematic Literature Review on Pedagogical Leadership Contributions
Author Name : Manuel E.Caingcoy

Test the Effect of Some Methods of Breaking the Dormancy on the Germination and Growth of Johnson Grass Seed (Sorghum halepense (L.) Pers.)
Author Name : Muhammad AL SAKRAN, Kamal Almhemed, Sena DAL, Tamer USTUNER

Fauna of Mallikarjun and Santoshgiri Hills, Sangli District, Maharashtra, India
Author Name : Saurabh Atul Kininge, Kedar Jayadev Dhepe, Sandeep Sampatrav Patil,

Computerized Healthcare System Embedded with Machine Learning
Author Name : Amal S, Athira Lagi, Thomas Kuruvilla, Leya Elizabeth Sunny

Exploring the Influential Factors of Online Consumer Shopping Habits and Intention in GCC Special Reference to Kingdom of Bahrain

Data Protection from Policy to Practice
Author Name : Dr. Fernando Wangila

Data Privacy: Governance of the Hidden Dimension
Author Name : Dr. Fernando Wangila

Online Hall Allocation System (OHAS) for Improved Examination Center Scheduling
Author Name : Onyedeke, Obinna, C" Ihedioha Uchechi. M" Uzo Blessing C" Agubata, Immaculate C" Obidigbo Chinonso

Oil Rate Design and Control System for Wells using Microcontroller
Author Name : Adeboye Olatunbosun, Engr" Awani Kester

Does Service Quality Affect Customer Loyalty with Customer Satisfaction as an Intervening Variable : Case Study at PT Bank Tabungan Negara (Persero) Tbk. Sub Branch Office Bintara Bekasi
Author Name : Andika Dewa, Sri Wahyuni

Development of Information App for Alert on Financial Matters
Author Name : Snega.S, Swetha Tharini S,Tania Simon, Dr.B.Vinodhini, Dr.T.Kalaikumaran

Development Teaching With Constructive Approach to Improve Student Learning Results of Class IV
Author Name : M. Indra Patmoko, Aminuddin Kasdi, Mustaji

Design and Development of the Fault Tolerance Software for the OBC Subsystem of STUDSAT

Effect of Market Orientation on Learning Orientation to Reach Competitive Advantage Rural Credit Banks in East Java Province - Indonesia
Author Name : Tri Marhaeni Widiastuti, Dr.Taher Alhabsji, Dr. Suharyono,MA, Dr.Zaiunul Arifin,MS

Effect of Dietary Fats on Goat Rumen Condition
Author Name : Niel L. Ningal

Teaching the Cybersecurity Courses at the University in Georgia
Author Name : Girshel Chokhonelidze, Giorgi Basilaia

Litho-structural Interconnections and Deformation histories of the Tullu Dimtu Neoproterozoic Basements, Western Ethiopia
Author Name : Diriba Alemayehu

Screening and Isolation of Fungal Pathogens Alternaria solani and Fusarium oxysporium
Author Name : Nilesh Lavhate, Mukul Barwant

Quality Assessment of Hurdle Preserved Onion Puree (HPOP) as a Convenience Product: A Preliminary Investigation
Author Name : E.I. Oluwasola, A.L. Ahmad

The Practice of the Nursing Professional in Child Development
Author Name : Gabriel Frazao Silva Pedrosa, Lidiane Andréia Assunção Barros

Quasi Experimental Study to Assess the Effectiveness of Beetroot Juice on Serum Iron, CBC & Clinical Features among Adolescent Girls with IDA in Selected Areas of DNH
Author Name : Priya Sharma, Hetal Patel, Amar A. Mulla, Sujeeta Malik

An Effective System to Forecast Environmental Pollution using Air Quality Index
Author Name : Mohammad Ishaque Ali, K. Yasudha

Digital Notice Board with Real Time Clock
Author Name : Bhavya V, Harsha Vardhan, A Charan, Lokesh B G, Nischal R

Role of Librarian in NAAC Beyond Librarianship for Better Visibility
Author Name : Dr Suresh Jange

Spatiotemporal Population Dynamics Based on a Location Survey in Taal Volcano Island, Philippines
Author Name : Leslie Jamie C. Cobar, Novie Lyn Saladar

Stress and Deflection Analysis of Cantilever Beam by Numerically
Author Name : Daw Thanda Aye, Daw Aye Myint Thwe

BRIGUNA Credit Distribution at PT Bank Rakyat Indonesia (Persero) Tbk Kramat Jati Branch Office
Author Name : Fitri Malisna, Diana Anugrah Prastiw

Cloud Service Android Model for Safe Trips Using NFC
Author Name : Bhargavsai Chitta, Veeravenkatesh Chandragiri, G. Meeragandhi

Automated Toll Collection System
Author Name : Harish V, S.Md. Shakeel Ahammed, Y. Siva Dinesh Kumar Reddy, S. Ravi Kishor, S. Maneendra

Water Quality Status of Main Temple Tanks in Kumbakonam City, Thanjavur District, Tamil Nadu
Author Name : Rakesh Sharma, T.; Kavitha, K.K.

Effectiveness of Structure Teaching Programme on Practice Regarding Prevention of Breast Engorgement among Postnatal Mothers in Haryana
Author Name : Kumari Sunita, Rani Deepika

Overview of Environmental Management in Petroleum Refineries: Case Study of S0x and N0x Air Pollutants
Author Name : Rilwan Omogbolahan Anjorin, Sheyin Israel Amos

Allelic Polymorphism of Insulin Like Growth Factor 1 Gene and its Effect on Growth Performance of FUNAAB Alpha Chickens
Author Name : Ojoawo H.T; Ogunpaimo O. J; Ilori B. M, Wheto, M; Adeleke, M. A.; Adebambo, A. O.; Adebambo, O. A.

Clinical Profile and Validity of PRISM III among Children Admitted in a PICU Over One Year
Author Name : A K Simalti, Badal Parikh, Pramod Garg

Activated Carbon – A Textile Material
Author Name : Aiswarya V Mohan, Dr. D Bhaarathidhurai

Design and Implementation of Quadcopter for Surveillance Application
Author Name : Dr. Nagesh K N, Shaik Altaf, M. Kiran mayee, Siddaram jagadi, D Vaishnavi

Deformation Resistance of Plastic Asphalt Mixture on Various Temperatures in Field
Author Name : Agung Beriyadi, Melawaty Agustien, Joni Arliansyah

Competitive Strategy Analysis of Logistics Companies PT XYZ
Author Name : Emiria Rieza Garnette, Dudi Permana

Study on Structural, Morphological and Optical Characterization of Lithium Tetraborate Nanoparticles by High Energy Ball Milling
Author Name : Neetu Rathore, Asita Kulshreshtha, Rajesh Kumar Shukla

Nutritional Woes in a Pandemic: A Developing Country's Perspective
Author Name : Donnette Wright, Kadiann Hewitt-Thompson

How are Children Coping with the COVID-19 Pandemic? A Developing Country Perspective
Author Name : Kadiann Hewitt-Thompson, Donnette Wright

Big Push Theory to Reduce Fiscal Deficit
Author Name : Diptarghya Bhattacharjee

Robotic-Assisted Laparoscopy: THE DA VINCI ® ROBOT General Principles
Author Name : Dr Mohammed LAHFAOUI, Pr Mohammed Boughaleb, Pr Houssine Benhaddou

Innovation in Medical Practice, Interests and Challenges
Author Name : Dr Mohammed LAHFAOUI, Pr Mohammed Boughaleb, Pr Houssine Benhaddou

Reconstructive Medicine and 3d Bio-Printing, What Future?
Author Name : Dr Mohammed LAHFAOUI, Pr Mohammed Boughaleb, Pr Houssine Benhaddou

Effect of Population, GDP and Levels of Literacy on Unemployment
Author Name : Roshni Batra, Pranav Kapoor

A Study of Work Life Balance in Woman Employees Strategies for Sustainability in Information Technology Sectors
Author Name : PRAVEEN P T, PAVITHRA S

A Mathematical Model for Forest Growth
Author Name : Dr Rashmi Chaudhary; Dr. A.K. Yadav; Dr. S.S Tomar; Dr. Sushil Kumar

IOTI Basedi Smarti Surveillancei Roboti fori Industriali Application
Author Name : Dr. P. K.Sasikumar, N.Rimanika, B.Rameethasri, R.Suryakala, S.Subangisureshpatel

Improving Service Quality Creative Advertising Industry with the PDCA Method (Case of PT Kharisma Advertising)
Author Name : Novita Damayanti, Rosalendro Eddy Nugroho

The Influence of Diameter and Spacing between Helix on the Bearing Capacity of Helical Pile
Author Name : Ghina Amalia, Maulid M. Iqbal, Ratna Dewi

A Review on Mechanisms of Turbulence Generation in Solar Corona
Author Name : Prachi Sharma, R. P. Sharma

Optimizing the Use of Government Assets: A Case Study in the Regional Government of East Java Province

Author Name : Nurbaiti Isnaini, H UJIANTO, Indrawati Yuhertiana

Prediction of Employee Turnover Using Light GBM Algorithm
Author Name : Rajat Keshri, Dr. Srividya P

Assessment of Clinical Characteristics in Chronic Kidney Disease Patients
Author Name : P. Keerthana, Syed Mubasheer Mohiuddin, B. Srijan, Dr. CH. Pradeep Kumar, Dr. V. Nikhil Kumar

The Effect of Instagram Engagement to Purchase Intention and Consumers' Luxury Value Perception as the mediator in the Skylounge Restaurant
Author Name : Rizka Amelia, Syarif Hidayatullah

Military Surveillance Robot
Author Name : L Jyoti, Mahesh Totad, R. Naveen Kumar Reddy, Mahindhar Remata, Vinay A

A General Perspective on Overlapping of Right to Privacy and Information Technology
Author Name : Arpit Vihan, Bhawna

Deos Casleman,s Disease Affect the Breast ? Case Report in Middle Age Women
Author Name : Ghada Seifeldin,

Intelligent Tutor for Teaching Service Station Mechanics in Technical Colleges in Lagos State
Author Name : Nwahunanya, I; Asogwa, U. U; Nwaji, G. N; Attah, O. K; Ogbonna, I. J

Suture Materials in Dentistry
Author Name : Dr. Vamsee Krishna N, Dr. Jasmitha C, Dr. Madhuri Nadhamuni, Dr. Dattaprasad S

Effect of Participation in Cooperative Society on SMES Activities of Members in Mubi Metropolis, Adamawa State, Nigeria
Author Name : GARANDI, I. D. , HASSAN, S. T.

Mould Flow Analysis of a Plastic Injection Moulding Component Using Software Tool to Obtain a Quality Output
Author Name : Sowrabh Kugunavar, L.G. Sannamani

Modelling Nigeria Population Growth: A Trend Analysis Approach
Author Name : Olanrewaju S.O, Olafioye S.O, Oguntade E.S

A Mathematical Model for a Novel Corona Virus Disease
Author Name : Dr. A.K. Yadav, Dr. Sushil Kumar, C.S. Yadav, Dr H.P.S Chauhan

Use of Latex as a Renewable and Sustainable Asphalt Mixture Material
Author Name : Ardi Virgo Nino Putra, Melawaty Agustien, Edi Kadarsa

Impact of Chromium on Chlorophyll Content of Weed Plants: A Comparative Study

Author Name : Nirmalkumar, S; Kavitha, K.K

Effect of Heat Source on Magnetohydrodynamic Free Convection Through a Channel With a Wall Having Periodic Temperature
Author Name : Achogo, Wisdom Hezekiah, Okereke, Ifeoma Chikamma, Ofomata, Amarachukwu I.O, Eleonu Blessing Chikaodi

Moses Leadership Transition - A Moses Leadership Transition Model - A Successful Succession Management Model
Author Name : Yohanes Parapat, Erastus Sabdono, Madya Andreas Agus Wurjanto

The Reactions over Employees Performance Viewed from Work Environment, Discipline, and Leadership variables at Directorate General Development of Rural Areas of the Ministry of Village, Regional Development and Transmigration
Author Name : Abdul Hamid, Setyo Riyanto

An Efficient Approach for Credit Card Fraud Detection
Author Name : Rajeev Kumar, Rajesh Budihul

Citrus Stem Cuttings Growth Lime (Citrus Aurantifolia S) by Soaking Shallot Extract
Author Name : Kamsia Dorliana, Yudi Triyanto, Astria, Widya Lestari

Impact of Education and Occupation on YouTube Advertising Videos
Author Name : Obada Alorfahli

Pakistanis in Italy and their Motivations Choosing Italy as their Destination Country
Author Name : Zeeshan Mukhtar

Perceived Problems on the Library Information Resources for Research among Graduate Students in Higher Education of Southern Mindanao, Philippines: It's Contribution to Academic Library Profiling
Author Name : EDWIN M. PUHAGAN

Mesh Network for Precision Agriculture in the Northern Part of Cameroon
Author Name : Vournone Marcelin, Ngakawa Taya, Senoua Cesar, Zannouba Nassourou

Development of a Story-Designed on Story Book C to Improve Reading Comprehension Skills at Second Grade Student in Elementary School
Author Name : Dede Elisa, Kisyani Laksono, Hendratno

Phytopathology and Diagnosis using Deep Learning
Author Name : Mayur S. Shinde, Tejas H. Kenjale

Smart Accident Notification System using GPS-Module and GSM-Module
Author Name : Dr. Basavaraj G.M, Jeevan Shetty, Dikshith B.K, Karthik S, Devraja

Classification of Genetic Mutation using Machine Learning
Author Name : Karan A. Solanki, Sonali A. Shinde, Anish N. Shelte

Modified Ranking Engine
Author Name : Rashi Goel, Jessica Spencer, Avani Jain , Baldivya Mitra

Effect of Non-Revenue Water on the General Functioning of the Water Utility in Doka District of Kaduna North LGA, Kaduna State, Nigeria
Author Name : Ajoge, H, N.; Muhammad, M.N.; Akhadelor, M.O., Zayyanu, A.S

Family and Work Related Stress, Social Support and Stress Interventions by Nurses among Factory Workers in Selected Industries in Osun State. Nigeria
Author Name : Omolola O. Irinoye, Tinuke Abimbola Oyedeji

Design and Development of Heat Exchanger for Solar Water Heater (SWH) Using Zeolite
Author Name : S.Arunkumar, B.Guruprasad

Influence Analysis of Product Quality and Brand Trust against Customer Satisfaction and Impact on Customer Loyalty Wardah Brand Cosmetics in Jabotabek
Author Name : Ajeng Syarifah, M. Mukti Ali

Pursuing Robot for Assisting Senior Citizen and Physically Challenged
Author Name : Sunil Kumar B S, Vandana K, T M Vidyashree, Akshay M, Rajamani V

Relationship Pattern in Community Empowerment through Family Empowerment Post (Posdaya) (Posdaya Pesantren Rakyat Al-Amin, Sumberpucung Village, Malang Regency)
Author Name : Andri Meiriki, Ety Rahayu, Risna Resnawaty

Antimicrobial and Synergistic Potentials of Xylopia Aethiopica (UDA) and Occimum Gratissimum (Nchanwu) Leaf Extracts
Author Name : Emeh, Amara. A., Anyanwu, Gladys O., Onyeulor, Prisca N., Chimereze, Nwamaka C. and Abba-Father, Chinyere A.M.

Operation Sequence and Production Technologies in Intimate Apparels
Author Name : Aiswarya V Mohan, S Praveena

Objectification and Deification of Images: A Spiritual Interrogation of Cultural Motifs in Yoruba Theatre Performance
Author Name : Ayodele, Vincent Adesina.

Planning Proposals for Eco Village Development of Chikani Village Sangamner
Author Name : Kokate Megha D., Satpute Pravin C.

Geographic Information Database Systems to Operation Applicative of Efficiency Community Business Entrepreneurs in Nakhonratchasima Province, Thailand
Author Name : Puannguluam, K; Neankratok, S.; Prachai, S.; Jongmuanwai, B.; Jedaman, P.

Microcontroller based Smart Crop Protection System to Detect Fire and Animals
Author Name : Premjyoti G Patil, B. Pavan, B. Praveen Kumar, B. Siva Sai Reddy, M. Sandeep Kumar

Mobile Security Metrics
Author Name : Drd. Ioan Adascalitei

The Effect of Individual Characteristics, Competence on Job Satisfaction and Employee Performance of IKM Batik in Pamekasan
Author Name : Farid Firmansyah, Ida Aju Brahmasari, Ida Aju Brahma Ratih

Scientific Paper on Sedimentation Challenges in Hydro-Power Storage Projects (Reservoir) and it's Mitigation Measures
Author Name : Tejaswi Sharma

Live Streaming of Agriculture Market Statistics to the Remote Village Areas Using Amateur Radio
Author Name : Dr. H.Venkatesh Kumar, K. VENKATA MOHAN REDDY, B. SAMARASIMHA REDDY, K. NIRANJAN REDDY, K. YASWANTH KUMAR REDDY

Text to Speech Conversion for Visually Impaired People
Author Name : Anjaly Siby, Anisha P Emmanuel, Chikku Lawrance, Jain Mariya Jayan, Prof. Kishore Sebastian

Factors associated with the Nutritional Status of Older Adults in Azogues – Ecuador
Author Name : Rosa Elvira Minchala Urgiles, Maria de los Angeles Estrella Gonzalez, Pedro C. Martinez Suarez, Andres Alexis Ramirez-Coronel

The Influence of Job Stress on Job Satisfaction among Female Lecturers
Author Name : Sara Oshaghi Lashkariani, Saeid Motevalli

Non Governmental Organisations as Agents of Women Empowerment: The Case of Development Education Center (DEC) in Enugu State, Nigeria
Author Name : Onugu Charles Uchenna, Gbughemobi B.O, Chinwuba Onyinye Lovina, Obiekwe N.J

A Mini Review on Toxic Substance in Building Paint
Author Name : Siti Nabilah Amir, Razali Ismail

Research and Practice on Agile Development Method for Teaching with Lego Blocks
Author Name : Ming Zhu, Kang Du, Jing Li

Perceptions and Response of Residents, Horse Guides and Tourists on Sudden Volcanic Disasters: Taal Volcano, Philippines
Author Name : Leslie Jamie C. Cobar

Awareness on Sudden Volcanic Eruptions through Infographics
Author Name : Leslie Jamie C. Cobar

Evaluation of Signal Times and Comparison with Queueing Models at Signalized Intersections in Urban Area
Author Name : Fatih Gunes, Selim Bayraklı, Abdul Halim Zaim

Real Time and Accurate Face Detection Application using Convolutional Neural Network Algorithm
Author Name : P. M. S. Bhargav Kumar, K.Yasudha

Drug – Disease Association for Drug Repositioning Using Machine Learning
Author Name : Jishnu Raj R, Sherin K R, Neelima philopaul, Shilji Rajan, AmbilI M P, Deepthi K

Content Based Image Retieval Using Faster RCNN
Author Name : Navyashree. B.C, Aditi Ravichandra

Investigation of Egg Shell and Alumina Reinforced with Magnesium Matrix Composite
Author Name : L.Subash, U.Natarajan

A Study on Water Absorbing Road by Pervious Concrete
Author Name : Ashish Kumar Kanoujia, Hanumant Sharan Singh

Role of Bound Lexemes in Limbu Religious Scripture Mundhum
Author Name : Mohan Kumar Tumbahang

Bidirectional Dictionary Based Machine Translation for Wolaytegna-Amharic by Java
Author Name : Temesgen Mengistu Helana

Development of Instructional Materials Based SETS (Science, Environment, Technology and Society) to Improve Participation and Learning Result Grade Sixth Elementary School in Electrical Energy Materials
Author Name : Miftakhul Huddin, Prabowo, Wahono Widowo

Segmentation of Bones Using MRI
Author Name : Abhishek Kumar K, Nagaraja Hebbar N, Jaison Dsouza, Kavya, Manoja Kumara

Comparative Evaluation of Socket Sield and Immediate Implant Placement
Author Name : Dr. Lia Mathew, Dr. Nandini Manjunath, Dr. Anagha N P, Dr. Arya Ashok

Application of Information and Technology in Supply Chain Management of Fruits and Vegetables – A Brief Overview
Author Name : Mahesh Shanmugasundaram, Rajendran Chellaiah, Om Prakash Chauhan, Jayathilakan Kizhekkedath

The State of Mathematics Education at the Senior High School Level in the Sekondi-Takoradi Metropolis
Author Name : Christopher Yarkwah; Daniel Gbormittah

Inventory Management Effect on Profitability of the Food and Beverages Sector of Nigeria
Author Name : Bingilar Paymaster Frank, Sawyerr, Egberipou Ayaundu, Willy Nelson Ogoja

Application of Statistical Quality Control on the Production of Long Span Aluminum Roofing Sheet Produced by Spring Aluminum Nigeria Ltd
Author Name : Ajewole K.P., Osunronbi F.A., Raji I.I.

Learning Management Training District Integrated Services in Improving Government Services to the Community by the District
Author Name : Supriyanto, Rustono, Fakhruddin, Titi Prihatin

Effect of Capital Structure on Dividend Pay-Out Ratio of Public Listed Commercial Banks in Kenya
Author Name : Paul Mulongo Webi, Dr. Lucy Njogu

Effect of Bank Liquidity on Financing of Small and Medium Scale Enterprises by Selected Banks
Author Name : ILUGBUSI, Bamidele Segun, IBUKUN, Felix Olusegun, OGUNDELE, Abiodun Thomas

Mechanical Behaviour of Aramid and Glass Fibre Reinforced Polyester Resin Composite
Author Name : G. Dhanasekar, P. Prema

New Bari Wheat Cultivars: Evaluation of Processing and Nutrition Value
Author Name : Mst. Meherunnahar, Md. Mozammel Hoque, Mohammed Abdus Satter, Faridul Islam

Cataloguer the Driver behind the Scene of Information Access and Retrieval in a Global Society
Author Name : Bitrus N. Umar, Akpan, A. E, Olorunfemi, Emmanuel, A

Drugs Abuse among Youth in Maiduguri, Borno State, Nigeria
Author Name : Baba Gana Alimi, Bintu Kachalla Galadima, Ahmed Garba, Hassan Suleiman

Causes and Implications of Prostitution among Young Girls in Maiduguri, Borno State, Nigeria
Author Name : Bintu Kachalla Galadima, Baba Gana Alimi, Ahmed Garba, Hassan Suleiman

Air Conditioning Screw Chiller & Ducted Control Panel Air Conditioning Electrical Control Panel
Author Name : Bhoir Leena A., Narkhede Rahul D., Mude Ankita D., Bhoir Ankita A., Bhaisare Ashish S.

Effectiveness and Performance of Artificial Insemination Service Units in Supporting Agribusiness Programs and Increasing Beef Cattle Population in Pohuwato Regency

Author Name : Muhammad Mukhtar, Darmawan Salman and Rosalina Bahua.

Description of Knowledge, Attitude and Action of Mother on Care Diarrhea in Under-Five Children After Getting Educational Information Communication (KIE) with Integrated Media in Posyandu Merpati Working Area of Tanjung Pinang Public Health Centre Jambi City in 2019
Author Name : Poornima. Dini Suryani, Meri Neherta, Lili Fajria, Rosalinda.

A Survey on Insect Gall Diversity in Two Different Areas at Kozhikode District, Kerala
Author Name : Aneesha P., Dr. J. Roopavathy.

Handling Solid Waste using Design Thinking Principle in Bengaluru
Author Name : Adarsh Agrawal, Gunjan Javaria, Kaustav Kishor, Bhaskar MG.

Design and Study of Single Lateral Pivot Folding Trike
Author Name : B. Praveen Kumar, Narra Aashray Reddy, Navneet Sharma, M.A. Saboor, Asimuddin Sharief.

ISSN No:-2456-2165

Effectiveness and Performance of Artificial Insemination Service Units in Supporting Agribusiness Programs and Increasing Beef Cattle Population in Pohuwato Regency

Muhammad Mukhtar[1], Darmawan Salman[2] and Rosalina Bahua[3]
[1]Animal Science Department of Agriculture Faculty, Gorontalo State University
[2,3]Agriculture Faculty of Hasanuddin University

Abstract:- The low population of beef cattle in Gorontalo Province demands the performance of the artificial insemination service units (AISU) in providing sustainable services to farmers in increasing livestock productivity. The study objectives are 1) Analyze the effectiveness of artificial insemination of beef cattle, 2) Analyze the institutional performance of AISU in response to the need for artificial insemination, 3) Mapping the active strategy and the reflective strategy adopted by the AISU institution in transforming institutional capacity into institutional performance in response to the need for artificial insemination and 4)Formulating the direction of strengthening the active strategy and institutional reflective strategy of AISU in enhancing the effectiveness of artificial insemination in Pohuwato District. In this study, randomly selected breeders were used at the AISU locations in Randangan, Popayato and Marisa Districts in PohuwatoRegency. Variables measured were Service per Conception (S/C), Calving Interval (CI), Conception Rate (CR). Formulation of direction for strengthening active and reflective strategies of AISUperformancewas analyzed by SWOT analysis. The results showed that the institutional performance of AISU in Pohuwato Regency was very effective in helping the process of artificial insemination in beef cattle indicated by an increased in the number of effective acceptors of artificial insemination followed by the artificial insemination birth rate increased and the S/C indicator number was 1.37 times, CI was 1.22 years and CR was 66.67%. These results are relatively similar to the results of previous studies so that it can be concluded that the state of S/C, CI and CR in Pohuwato Regency is better.

Keywords:- *Artificial Insemination,Beef Cattle, Calving Interval, Conception Rate, Effectiveness, Performance and Service Per Conception*

I. INTRODUCTION

The livestock sub-sector has an important role in the Indonesian economy. Livestock also has a role in supporting national food security. As one of the sources of animal protein, beef has a strategic value in the Indonesian economy. National beef production growth is relatively slower compared to consumption growth so that beef imports tend to increase over time. The low growth of national beef production as a result of the low level of productivity of beef cattle. This is caused by the cycle of cattle production where calving intervals are relatively long, cultivation technology is low and there are epidemics. If there is no significant technological change in the beef cattle maintenance system and there is no significant increase in cattle population, the gap between beef production and demand will be wider, so the import volume increases.

Artificial Insemination is one of the technologies in the cultivation of beef cattle to increase the population and genetic quality of livestock. The optimization of Artificial Insemination technology is expected to shorten births, so that it will encourage increased production of beef cattle and the added value of the domestic livestock sub- sector while creating employment. The benefits of applying artificial insemination in livestock are as follows: 1) Can regulate the distance of birth of livestock properly; 2) prevent the occurrence of inbreeding in cows; 3) equipment and technology that both spermatozoa can store for a long time; 4) Frozen sperm can still be used for several years later; 5) Avoiding accidents that often occur during marriage because the physical male is too large and 6). Avoiding livestock from transmission of diseases, especially diseases that are transmitted by sex.

One of the determining factors of the success of the artificial insemination program is the institution, namely the Artificial Insemination Service Unit (AISU) in the Department of Animal Husbandry and Animal Health. This institution which houses inseminators in carrying out the duties and functions of artificial insemination in the farmer community. The smooth implementation of artificial insemination activities needs an implementation team at both the central and regional levels. The Provincial Livestock Service Office in its capacity plans and prepares the implementation of artificial Insemination activities in the province, supervises, evaluates and coordinates the implementation of artificial insemination with relevant agencies and issues a Permit for Artificial Insemination and Pregnancy Examination Permits and Reproductive Technical Assistance. A good calving interval for cattle is 12-13 months. If the spacing of 12 months can be ascertained the cattle have high fertility. In a cattle breeding business that gives good results in reproduction the number of Service per conception (S/C) ranges between

1.6 - 2.0, the lower the value, the higher the fertility of female animals in the group. Calving interval in cows mated with Artificial Insemination can reach 65%(Kusriatmi, 2014; Hastuti, 2008; Toelihere, 2005; Bahar, 2014).

ISSN No:-2456-2165

Pohuwato Regency is one of the seed producing regions in Gorontalo Province so that the local government designs beef cattle agribusiness programs and forms an institution that deals specifically with the beef cattle agribusiness program. This beef cattle agribusiness is certainly very helpful for the government in improving the standard of living and welfare of farmers and farmers in Pohuwato Regency. Institutional Institutions of the Provincial Level Artificial Insemination Service Unit have the task of coordinating the implementation of artificial insemination, the procurement, storage and distribution of frozen sperm and artificial insemination equipment.

Based on the understanding of theoretic and empirical conditions related to the institution of artificial insemination and the effectiveness of insemination in the livestock community in Pohuwato Regency, it is an urgent topic to examine about how active strategies and reflective strategies that run on these institutions in transforming institutional capacity into institutional performance in supporting beef cattle agribusiness. Capacity is the potential that can convert input into an output system. Inputs to artificial insemination institutions are: 1) Human resources, namely inseminators, pregnancy examiners, reproductive technical assistants, 2). Natural resources in this case are beef cattle, 3). technology and 4). budget support from the government. The interaction between institutional capacity and institutional performance in the form of the adoption process of artificial insemination technology can be described, where the institutional capacity of the Artificial Insemination Service Unit can convert inputs into output by waiting for feedback from the institutional performance of AISU which produces pregnant cattle, normal livestock birth and animal health.

II. MATERIALS AND METHODS

❖ *Experimental Field*

This study was carried out in Randangan Subdistrict, Popayato Subdistrict, and Marisa Subdistrict, Pohuwato Regency in January - June 2017. The selection of sub-districts was based on the population of beef cattle and as an area of artificial insemination development. Pohuwato Regency is the second area to be targeted by the Gorontalo Provincial Government as an area that is the source of livestock procurement for the surrounding areas. In addition to the artificial insemination service system, this study also involved 150 farmers, 11 artificial insemination officers and 6 artificial insemination institutional officers as respondents.

This type of study is describing reality. The reality described is the reality of the artificial insemination service system institution (AISU) and the act of artificial insemination carried out by farmers in their communities. This study approach is qualitative, social reality is approached in qualitative terms, namely the process of running the reality. In this case the process of running the AISU institutional strategy in processing input into output. Output in this case is the result of artificial insemination.

The data of this study are primary data, namely data collected from actual situations when events occur and secondary data, namely data collected from second hand or from other sources available before the study is carried out such as comments, interpretations and discussion of original material (Silalahi, 2012). Sources of data in this study are: 1. Institutional administrators of AISU; 2. Insemination officers; 3. Farmers who do insemination; 4. Officials and staff of agriculture / livestock services.

❖ *Data Analysis*

Descriptive analysis is to describe systematically, classically and taxonomically about: 1. The types of input obtained by the AISU institution from its environment to be processed into output. The types of output produced as institutional performance of AISU, the level of institutional capacity in processing input into output; 2. Describe in a sequential manner the strategies carried out by the AISU institution in generating output, both strategies that have active and strategic dimensions with reflective dimensions; 3. Comparing the active and reflective dimensions of the strategy carried out by AISU institutions with the ideal type of strategy with active and reflective dimensions.

Analysis of the success of artificial insemination are: Conception Rate (CR), Service per Conception (S/C), Calving Interval (CI).

A. Measurment of Conception Rate

Conception rate (CR) is the percentage of pregnant women in the first insemination, pregnancy is diagnosed within 40-60 days after insemination.

$$CR\ (\%) = \frac{\text{Number of pregnant female cattle at 1 time of insemination}}{\text{The total number of female cattle inseminated}} \times 100\ \%$$

The factors that must be considered before performing Artificial Insemination are the length of the estrus cycle, the length of estrus, the time of ovulation, the fertile age of the spermatozoa (24-36 hours), the fertile age of the ovum 8-12 hours and the time of sperm capacitation. The optimum time to do insemination must be taken into account with capacitation time, which is a physiological process experienced by spermatozoa in the female genital tract to obtain capacity or ability to fertilize ovum. Insemination time in cattle is recommended not to be less than 4 hours before ovulation or not to exceed 6 hours after the end of estrus(Directorate General of Livestock, Ministry of Agriculture, Republic of Indonesia, 2012).

B. Measurement of Service per Conception

To compare the relative efficiency of the reproduction process among individuals of fertile cows, it is often used to calculate the number of insemination services (services) needed by a female until pregnancy occurs or conception. Normal Service per conception values range from 1.6 - 2.0. The lower the value, the higher the fertility of female animals in the group (Toelihere, 2005).

C. Measurement of Calving Interval

Calving interval Is the distance from one birth to the next.Calving interval is an important indicator in assessing female reproductive activity. Calving interval of 12 months can be ascertained the cattle have high fertility.

D. Analisis SWOT

Strength, weakness, opportunity and threat(SWOT) analysis was carried out to achieve the objectives of this study, namely formulating the direction of strengthening the active strategy and institutional reflective strategies of AISU in increasing the effectiveness of artificial insemination and supporting beef cattle agribusiness in Pohuwato District. This SWOT analysis is carried out by identifying the strengths and weaknesses faced by AISU in carrying out an active and strategic dimension with a reflective dimension in carrying out artificial insemination as well as opportunities and threats faced by AISU institutions in carrying out active dimension strategies and reflective dimension strategies in carrying out artificial insemination.

III. RESULTS AND DISCUSSION

A. Effectiveness of Artificial Insemination in Pohuwato Regency

Artificial insemination technology applied in Pohuwato Regency is intended to increase beef cattle population and support beef cattle agribusiness programs. The effectiveness of the implementation of Artificial Insemination in Pohuwato Regency can be seen from the number of beef cattle inseminated in 2016 in the amount of 1510 heads, from this number produced an output in the form of pregnant cattle in the amount of 1369 heads (90.66%) resulting in the birth of 948 cattle heads (62.78%). Benefit and impact of the implementation of this artificial insemination is beef cattle that live up to the age of 2 years, 850 cows are scattered in the District in Pohuwato Regency. This artificial insemination serves to regulate the distance of birth of livestock properly and prevent the occurrence of inbreeding.

With artificial insemination technology, the number of pregnant cows every year can be managed properly. If when the livestock is lustful but the male is not there then the marriage will not occur and wait for the next lust cycle. This results in a one-time reproductive cycle loss, so that the spacing of the calves becomes longer. In addition, marriage naturally also causes the occurrence of inbreeding where if pregnancy occurs, the child of the marriage brings recessive traits sometimes also causing lethal genes which cause livestock to die after birth and while still in the womb (Pradana, T, 2015).

The success of this artificial insemination program can not be separated from the role of inseminators and farmers. Inseminators carry out their duties with responsibility and carry out artificial insemination processes according to the rules. Farmers are those who interact directly with female livestock, care for their feed and carry out lust detection and report it to inseminators, and routine socialization is carried out by the Pohuwato District Animal Husbandry and Health Service and assistance by district extension agencies. This condition shown in Table 1.

Description		**Number of Farmers**		
	Respondent	**Value**	**S/C**	**Percentage**
Service per Conception (S/C)				
1 time mated	100	100		66.67
Twice mated	45	90		30.00
Third mated	5	15		3.33
Jumlah	**150**	**205**	**1.37**	**100.00**
Calving Interval (CI)			**CI**	
12-13 months or 1 - 1.1 years	43	43		28.67
14-15 months or 1.2 -1.3 years	44	54.7		29.33
≥ 16 months or 1.4 - 1.5 years	63	91.4		42.00
Jumlah	**150**	**189.1**	**1.26**	**100.00**
Conception Rate (CR)				
1 time mated	150	100	**CR**	**66.67**

Table 1:- Beef Cattle Reproduction Performance in Pohuwato Regency
Source: Primary Data Analysis, 2016

Service Per Conception (S/C) is the number of insemination services needed by a female animal until pregnancy occurs or conception. The results of study in Pohuwato Regency, from 150 farmers showed that in beef cattle the average value of S/C was 1.37. In the reproduction of S/C numbers ranging from 1.22 - 1.60. The lower S/C value means the higher fertility of cattle in the group (Toelihere, 2005).

Based on information from farmers that the value of S/C is affected by the delay of farmers in detecting lust and delays in reporting it to inseminator, in addition there are some farmers who do not know the signs of lust of beef cattle or are less careful in detecting their lust. The S/C value is affected because the farmer is late in detecting lust or late in reporting the occurrence of lust to inseminator, abnormalities in the reproductive organs of cows, insufficient inseminators, limited insemination service

facilities and lack of smooth transportation (Hastuti, 2008).

The state of S/C for beef cattle in Pohuwato Regency is still in a good range. This is influenced by good maintenance procedures and also the application of the cattle breeding system with artificial insemination technology where in general livestock that arise quickly get a response from the farmer to be reported to the inseminator officer so that the cattle are inseminated on time and eventually pregnancy occurs. This is a very good form of work from AISU.

Calving interval (CI) is the distance of time or time from the next birth period. The results of the study of 150 breeders, beef cattle in Pohuwato Regency, the average value of CI was 1.26 years. This study showed that the state of CI in Pohuwato Regency is good. This is influenced by good maintenance procedures, the application of the cattle breeding system with artificial insemination technology where all female animals as active artificial insemination (AI) acceptors have a complete record on the recording officers in AISU and inseminator itself so that the cattle that have aroused quickly get a response from breeders to be reported to inseminator officers.

Conception Rate (CR) in cattle mated with Artificial Insemination can reach 65%. The ability of female cows to be pregnant in the first insemination is strongly influenced by environmental variation (Phlilips, 2001). Possible causes of low CR, namely: sperm quality at the farmer level decreases, acceptor conditions are not good due to genetic factors, physiological factors caused by feed, temperature, climate and maintenance management, improper detection of lust due to farmer negligence in detecting lust / report to inseminator, and AI techniques that are influenced by inseminator skills in AI timeliness and sperm deposition in female reproductive organs. Based on this, it can be concluded that the condition of CR beef cattle in Pohuwato Regency is good (Ihsan, 2010).

CR ranging from 64 - 65% indicate that the level of inseminator skill at the study location is very good. This is also indicated by the low number of S/C below 1.5. The high CR value obtained is inseparable from the average nutrient content in feed every day by farmers who exceed the needs of livestock. The reproductive process runs normally if the feed ration meets the needs of growth and reproduction. The ability of female cows to bunting in the first insemination is strongly influenced by nutritional feed received before and after childbirth, where the conception rate is good if it has reached 60 percent or more (Hardjopranjoto, 1995).

Output obtained from S/C, CR and CI in Pohuwato District shows that all the numbers obtained from the S/C, CI and CR calculations provided by the respondent are good where if S/C numbers are below the number 2 which means that cattle can still breed once a year but if the S/C number is above 2 it will not reach the ideal calving distance and show that the reproduction of the cow is less efficient which makes the breeding distance longer. So that the outcome of the outcome in Pohuwato Regency is the achievement of the ideal calving distance which results in increasing the beef cattle population. Benefit and impact is that with the increase in population, the welfare of farmers will increase.

B. Institutional Performance of Artificial Insemination Service Units (AISU) in Pohuwato District

Inseminator experience shows that officers can be said to be sufficiently experienced and skilled, so that insemination is not successful because officers' mistakes should be minor. Inseminator officers who are civil servants are not only as inseminators but also as livestock extension officers in sub-districts, pregnancy examiners (PE) and paramedics. This additional task affects the number of cows that can be timely inseminated and the results of pregnancy achieved. This is one aspect that often occurs in the field, namely the limited time for inseminators to carry out their duties as inseminators, there is often a delay in insemination of lusting cattle, resulting in pregnancy failure. Inseminator officers who are not civil servants are still under the supervision of the Livestock Service Office, both the sperm straw collection system and the incentive system. Inseminator takes sperm in the AISU every time there is a request for artificial insemination (AI)

The interaction between the institutional capacity of AISU and the institutional performance of AISU is the process of adopting artificial insemination technology where the institutional capacity of AISU can convert inputs into output by waiting for feedback from the institutional performance of AISU. The process carried out by AISU in processing the existing input into output is the existence of a report from the farmer if there are more livestock, then the inseminator officer conducts an IB on the livestock. Make a recording and report it to PE officers, within 30 to 40 days after the IB has been conducted, PE officers will check the condition of the livestock whether pregnancy occurs or not and subsequently reported to the reproductive technical assistant(RTA) officer to ensure that the condition of the livestock is healthy so that the output is pregnant cattle, the number of cattle produced by IB increased, short birth intervals, the price of breeding livestock and the health of cattle. The output generated from the results of the institutional performance of AISU can be directly felt by the community and the environment in the form of improving the welfare of farmers. By the community this success has become a public information material and this activity will be sustainable.

Inputs managed by AISU in Popayato Sub-district are 2,447 beef cattle as potential acceptors of artificial insemination with 1,388 breeders' households. Inputs managed by AISU in Randangan Subdistrict are beef cattle as a potential acceptor of 5,700 artificial inseminations with 2,957 breeder households. Inputs managed by AISU in Marisa Subdistrict are beef cattle as a potential acceptor of 977 artificial inseminations with 2,957 breeder households (Statistics Center Bureau of Gorontalo Provincial, 2016).

ISSN No:-2456-2165

A very decisive factor in taking strategic steps to achieve artificial insemination programs is the availability of accurate data, especially data on beef cattle population as potential AI acceptors. The purpose of implementing population data collection is to meet the demands of a more accurate population data demand through enumerating farm households that maintain beef cattle. This data collection is also to find out the estrus cycle of cattle as acceptors so that it can be known when these animals will be inseminated.

The next step is to detect acceptors who are lustful and ready to marry, carried out by farmers and inseminators. Every day farmers can detect their livestock regularly 2 times a day, namely in the morning and evening, so that symptoms or signs of lust can be immediately observed and reported to the inseminator. The right information to inseminator causes the IB implementation time to be right so that pregnancy will occur. Accuracy in the case of lust detection by farmers or inseminator causes the AI implementation time to be correct, S/C will be good and CR is high. This has an impact on cattle pregnancy. Inseminator will implement IB in livestock after calculating the initial time of emergence of lust in livestock. The accuracy of the farmer reporting the lust time will cause the right time in the implementation of the AI.

In Pohuwato District the average implementation of insemination at high fertility results in low S/C (1.37 times) and high CR (66.67%). Pregnancy detection is carried out about 2 (two) months after insemination. Pregnancy examinations can be carried out by Pregnancy Examiners (PE) officers who have been carrying out duties as examiners in AI regions or other officers appointed by Regency/City or Provincial Technical Teams on inseminator reports.

After pregnancy detection, PE officers will make a report to the reproductive technical assistant (RTA) officer to examine the animals that have been inseminated and declared pregnant. This is to ensure that the livestock of both prospective children and their mothers are healthy. Towards the end of the cattle pregnancy, farmers and inseminator officers, PE and RTA always accompany their livestock waiting for the birth process. This is done to keep from happening something that is not desirable during the birth process.

The increase in the population of beef cattle increases from year to year. From a number of pregnant animals, AI calves will be born, which will then be maintained and cared for by the breeders until the animals are mature. Table 2 shows the birth data of livestock that received artificial insemination from AISU.

Data on the Birth of Artificial Insemination								
	2014			2015			2016	
AI	Birth	%	AI	Birth	%	AI	Birth	%
672	443	65,9	1241	756	60,9	1510	948	62,8

Table 2:- Birth Data of Beef Cattle Results of Artificial Insemination (AI) by AISU in Pohuwato Regency 2014 - 2016.
Source : Livestock and Animal Health Services of Pohuwato Regency, 2016

The transformation of capacity into performance in the sustainability of an AISU institution in Pohuwato Regency is determined by an active strategy and a reflective strategy carried out by the institution. The active strategies of artificial insemination service units include general guidelines and implementation guidelines for the development of artificial insemination which are used as a reference for artificial insemination service units and their managers to work to produce performance. The reflective strategy of the artificial insemination service unit in the form of experiences experienced during AISU stood up and began carrying out its activities is a learning for inseminator managers and officers to improve their performance so that mistakes that have been made at the beginning will be improved along with the time that continues. This will produce good output. The response of the livestock community to the application of artificial insemination technology is very good, even all livestock produced by artificial insemination develop and have a high selling value compared to natural mating animals.

C. Direction of Strengthening Active Strategies and Institutional Reflective Strategies of AISU in Improving the Effectiveness of Artificial Insemination and Supporting Beef Cattle Agribusiness in Pohuwato District.

The institutional role of AISU and the realization of its effectiveness in the field were analyzed by "SWOT" (Strengts, Weaknesses, Opportunities and Threats) by approaching several indicators that were considered to be representative and adjusted to the general conditions of the selected artificial insemination (AI) assessment area.

ISSN No:-2456-2165

Active Strategy	Internal		External	
	Strengts	Weaknesses	Opportunities	Threats
Data collection of ttle beef acceptor	There are female cow acceptor officer	Lack of transportation facilities	Farmer provide data on livestock ownership	There are farmer who do not provide ownership data
Detection of acceptor is ready to marry	Inseminator officer have reproductive records	Cattle often show no signs of lust	Farmers detect their lust 2 times a day	The farmer does not know the signs of lust
Insemination implementati on	Inseminator officers are accepted in the community	The budget managed by AISU is not sufficient in operational needs	High public interest in the artificial insemination program	Farmers report late to the officer
Pregnancy detection	Inseminator officers and PE check artificial insemination (AI) cattle after 7 days	Still needed the pregnancy examiners (PE) power	Farmers have been trained in AI centers in Singosari and Lembang	Inadvertent rectaldetection of pregnancy
Health check for child and parent candidates	Reproductive technical assistant (RTA) officers inspect lives-tock in AI for PE reporters	RTA staff facilities and infrastructure that are not sufficiently available	Farmers care about the health of their cattle	Farmers often ignore the health check of their cattle
Birth assistance	Inseminator, PE and RTA will accompany	Birth time that is not according to the schedule	Farmers usually accompany their own cattle that	Farmers are overwhelmed if their cattle
	cattle		will give birth	experience abnormalities during child birth

Table 3:- SWOT Analysis Active Strategy for Artificial Insemination Activities in Supporting Beef Cattle Agribusiness in Pohuwato Regency.

Reflective Strategy	Internal		External	
	Strengts	Weaknesses	Opportunities	Threats
Data collection of ttle beef acceptor	Officers carry out data collection	The officer did not meet the farmer	Good response from farmer	Take a long time
Detection of acceptor is ready to marry	Complete data available on acceptors and lust cycle	Inseminator officers do not Have records of acceptor livestock reproduction	Farmers quickly report to inseminators for AI	Farmers fail to detect their livestock every day
Insemination Implementation on	Obtained a high conception rate	Incomplete equipment Hampers the implementation of AI	The farmer report to Inseminator if their cattle have sign of lust	Farmers are late In detection lustfull cattle
Pregnancy detection	Pregnant cattle will not cause lust	After AI is often not follow by a pregnancy check	The farmer have Experience in examining the pregnancy of their cattle	The farmer does not tell the PE officer to inspect their cattle
Health check for child and parent candidates	RTA officers and veterinarian are always ready when there are reports	Cattle are sick so farmers do not check their cattle To RTA or veterinarian	Farmers are always responsive when there are sick cattle	Breeder neglect to check the health of the parent and prospective child
Birth assistance	Needed help from a ATR or veterinarian officer	Farmer are not equipped with equipment to Assist the birth Process of their cattle	Breeders take Good care of their livestock	Animal health workers are not in place

Table 4:- SWOT Analysis Reflective Strategy for Artificial Insemination Activities

Based on the SWOT analysis of active strategies and reflective strategies carried out by AISU of Pohuwato Regency, it can be said that the process starting from data collection of acceptor cattle, detection of ready-to-marry acceptors to monitoring and raising livestock until weaning or adult sex at the age of 2 years has been carried out accordingly with guidelines and instructions and based on experience that is usually carried out by farmers, inseminators and pregnancy examiners (PE).

ISSN No:-2456-2165

In the active strategy and the most reflective strategy the strengths and opportunities are at the data collection stage for acceptor livestock, detection of livestock ready to mate, detection of livestock pregnancy, determination of birth time and livestock raising up to 2 years old. While the weaknesses and threats are most at the stage of implementing insemination, health checks of prospective children and parents and at the stage of birth assistance.

No	Stages	Direction of Strengthening
1	Data collection of Acceptor cattle	Data collection to find out exactly which beef cattle are potential AI acceptors or active AI acceptors.
2	Married acceptor detection	The acceptor detection that is ready to mate can be seen from the record of the reproductive cycle of acceptor cattle, so that when the livestock lust will be known both by the breeder itself and by the inseminator.
3	Insemination implementation	Insemination is done at 7 hours from the onset of lust until 18 hours before the end of lust. Insemination is carried out by Inseminators on reports from farmers.
4	Pregnancy Detection	Performed by PE officer after being reported by inseminator. This examination is carried out by rectal method or physically
5	Health Check for Prospective Calves and Cows	The existence of reproductive abnormalities in cattle that have been AI will be examined by RTA officers on PE officer reports, so that reproductive abnormalities will be treated immediately and solutions are sought.
6	Birth Schedule Determination	After AI is carried out, the data of active acceptor livestock is already in the inseminator. So that if these animals are pregnant, the preliminary examination of pregnancy and the estimated birth can be done either by inseminator or PE officer.
7	Birth Assistance	Need to be done by farmers, PE officers and RTA officers to help cattle in the birth process.
8	Monitoring and maintenance by farmers	After the birth process, the calf with its mother needs to get extra attention from farmers and RTA officers both in terms of feeding, cleanliness of the cage and others.

Table 5. Direction of Strengthening Institutional Active Strategy of AISU

No	Stages	Direction of Strengthening
1	Data collection of Acceptor cattle	Data collection of acceptors needs to be done so that we have accurate data about acceptor livestock.
2	Married acceptor detection	Farmers must know the signs of livestock lust, so that if the signs are seen, the farmer will quickly report to the inseminator.
3.	Insemination implementation	The optimum time to do insemination must be taken into account with cattle capacitation time and ovulation time.
4	Pregnancy Detection	It is important to know whether the cattle are pregnant or not. If pregnancy does not occur during the first insemination, a second insemination will be carried out. This is to optimize the birth of livestock.
5	Health Check for Prospective Calves and Cows	Pregnant cows should be examined by RTA officers to find out whether the prospective child they are carrying is in good condition.
6	Birth Schedule Determination	This birth schedule can be determined after PE officers check cows that have been AI the fastest one week after IB is done rectally.
7	Birth Assistance	The time of birth of livestock must be accompanied by animal health workers and farmers.
8	Monitoring and maintenance by farmers	Maintenance of livestock from calves up to the age of adolescents and adult sex, needs to be done well.

Table 6. Direction of Strengthening Institutional Reflective Strategy AISU

ISSN No:-2456-2165

IV. CONCLUSION

The effectiveness of artificial insemination of beef cattle that took place in the community of farmers in Pohuwato District carried out by AISU was in accordance with the mechanism. Service per conception (S/C) and calving interval (CI) are ideal. The conception number (CR) was 66.67%, S/C value was 1.37 times and CIwas an average of 1.26 years.

The active strategy adopted by artificial insemination service unit (AISU) is to improve the quality of human resources of artificial insemination (AI) officers and improve the AI service performance management system so that it is expected that there will be an increase in the birth of livestock from AI while the reflective strategy adopted by AISU is AI counseling activities for farmers, especially farmers who have not implemented AI to increase acceptors effective AI in the area.

The direction of strengthening the active strategy and the institutional reflective strategy of AISU in improving the effectiveness of artificial insemination in Pohuwato Regency is referring to the guidelines issued by the Directorate General of Livestock and Animal Health of the Indonesian Ministry of Agriculture and also based on the experience of farmers, inseminators, pregnancy check-ups officers and reproductive technical assistant officers while maintaining and implementing AI.

REFERENCES

[1]. Bahar, L.D. 2014. Barriers to Adoption of Artificial Insemination Technology. Bali Cattle Farm in Soppeng Riaja District, South Sulawesi. Faculty of Animal Husbandry, Hasanuddin University, Makassar.

[2]. Development of the Gorontalo Provincial Livestock and Plantation Service. 2014. Preparation of Maps and Analysis of Potential Livestock Areas in Pohuwato Regency. Gorontalo Provincial Livestock and Plantation Service. Map Preparation and Analysis of the Potential of Animal Development Areas in Pohuwato Regency.

[3]. Directorate General of Animal Husbandry, Pangandan Agriculture. 2016. Strategies and Policies in Accelerating Achievement of Meat Self-Sufficiency. National Planning Agency, Ministry of Agriculture Republic of Indonesia. Directorate General of Livestock, Food and Agriculture. 2016. Strategies and Policies in Accelerating Achievement of Meat Self-Sufficiency. National Planning Agency, Ministry of Agriculture Republic of Indonesia, Jakarta.

[4]. Directorate General of Livestock and Animal Health. 2013. Guidelines for the Implementation of Beef Cattle Breeding in 2013, Ministry of Agriculture of the Republic of Indonesia, Jakarta. Directorate General of Livestock and Animal Health. 2013. Guidelines for the Implementation of Beef Cattle Breeding in 2013, Ministry of Agriculture of the Republic of Indonesia, Jakarta.

[5]. Director General of Animal Husbandry and Animal Health. 2014. Guidelines for the Implementation of Birth Optimization through the Implementation of Optimization of Artificial Insemination and Mother Nature, the Directorate of Cultivation of the Ministry of Agriculture of the Republic of Indonesia, Jakarta.

[6]. Hardjopranjoto. 1995. Science of Life in Livestock. Airlangga University Press, Surabaya. Pluralism in Livestock. Airlangga University Press, Surabaya.

[7]. Hastuti, D. 2008. Success rate of Beef Artificial Insemination in Review of Conception Figures and Service Per Conception. Journal of Agricultural Sciences, 4 (1): 12- 20, Faculty of Animal Husbandry, Hasanuddin University, Makassar. Success Rate of Beef Artificial Insemination in Review of Conception Figures and Service.

[8]. Per Conception. Journal of Agricultural Sciences, 4 (1): 12-20, Faculty of Animal Husbandry, Hasanuddin University, Makassar.

[9]. Ihsan, M. N. and S. Wahjuningsih. 2011. Beef Cattle Reproduction Performance in Bojonegoro Regency. Tropical Livestock Journal, 12 (2): 74-80. Beef Cattle Reproduction Performance in Bojonegoro Regency. Journal of Tropical Livestock, 12 (2): 74-80.

[10]. Kusriatmi. 2014. The Role of Artificial Insemination Technology in Beef Cattle Production in Indonesia. Agro Economic Journal Vol. 32 No. 1 The Role of Artificial Insemination Technology in Beef Cattle Production in Indonesia. Agro Economic Journal Vol. 32 No. 1

[11]. Silalahi. 2012. Institutional Analysis and Feasibility of "Privatization" Provision of Frozen Sperm Supporting Artificial Insemination Program in Yogyakarta. Livestock Research Institute, Bogor.

[12]. Sugoro, I. 2009. Bio Ethics Study on the Use of Artificial Insemination for Increasing Cattle Productivity, School of Life Science and Technology.Bandung Institute of Technology.

[13]. Toelihere, M. R. 2005. The Role of Reproductive Biotechnology in Animal Husbandry Production Development in Indonesia. Presented at the Technical Meeting and Production Coordination, Directorate General of Livestock, Cisarua Bogor. The Role of Reproductive Biotechnology in Animal Husbandry Production Development in Indonesia. Presented at the Technical Meeting and Production Coordination, Directorate General of Livestock, Cisarua Bogor.