The Ninth Annual Research Conference of Jimma University
April 26-27, 2018

Book of Abstracts
Grand Theme: "Biotechnological Researches and Innovations for National Development: Prospects and Challenges"

- Prospect of Biotechnology in the Context of the Bio-economy: Potential in Ethiopia
- Application of Biotechnology in Various Sectors for Sustainable Development
- The Potential of Biotechnology in the Development of Ethiopian Agriculture
- Enhancing the Use of Biotechnology for Improving Health Care in Developing Countries

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The 9th ANNUAL RESEARCH CONFERENCE

BOOK OF ABSTRACTS

Theme: "Biotechnological Researches and Innovations for National Development: Prospects and Challenges"

April 26-27, 2018

Jimma
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Opening Session

Welcoming Speech

Dr. Tsige Ketema, V/president for Research and Community Services

Dear Prof. Fikre Lemessa, President of Jimma University
Excellences, Invited guests, and
Conference participants
Ladies and Gentlemen,

It is great pleasure and indeed honor for me to make a welcoming remark on the occasion of the Ninth Annual Research Conference of Jimma University.

Biotechnology and biotechnological research outputs are positively impacting the life of many people across the world. Starting in 1970s, Research and Development in biotechnology have been making significant progresses being supported by many agreements including the Convention on Biological Diversity. The agreements support the application and use of biotechnology in major economic sectors such as agriculture, industry and energy. Complementing the agreements, many donor agencies, NGOs, the private sector and governments in industrialized countries have focused their capacity-building policies and objectives on maximizing the benefits of biotechnology in developing countries through technology transfer. Hence, biotechnology is believed to have significant contribution in improving agricultural productivity, or improved quality and nutritional and processing characteristics, which can contribute directly to enhancing human health and development.

Dear Conference participants
In parallel to advances in biotechnological techniques, the fast growing economy of our country is demanding for technological innovations and adaptation of the existing technologies in a way it fit to the existing knowledge gaps. Accordingly, strengthening research and application of biotechnological findings for development could sustain the current development pace of the country. With this premises, universities and research institutions are expected to work on identification of safe biotechnological practices besides searching for innovative approaches to make utmost advantage out of our plant, animal and microbial resources. In so doing, however, it calls for paying attention to potential risks possibly associated with biotechnological practices and products. Biotechnological innovations that undermines the importance of risk assessment
and ignore bio-safety guidelines could possibly lead to unforeseen and irreversible damage to the sector as well as the end users. Thus, the application of modern biotechnology and its importance to economic development should not be at the expense of compromising safety of the public. Cognizant of this fact, all countries, be it developers or net importers of products derived from modern biotechnology, are introducing measures that safeguard human health and environmental safety by putting in place regulatory systems that address human health and environmental safety. In fact, the wise use and monitory of biotechnological innovations depend on availability of trained manpower. With the limited trained human capital, our country didn’t benefit much out of biotechnological innovations and calls for concerted effort by mobilizing the available human and material resources. Accordingly, organizing forum could gives an opportunity for scholars working in the area to share their experiences; and different sector could get the chance for networking with research institutes and universities to maximize access to expertise, infrastructure and ready-to-use biotechnological tools.

Dear Conference participants

Jimma University has been organizing series of annual research conferences for the last eight years under different pertinent and timely Themes. All those past conferences facilitated the coming together of researchers, stakeholders and policy makers to discuss in details on issues on national importance. Likewise, the current 9th Annual Research Conference is organized to discuss on the role of Biotechnological Research and Innovation in transforming the fast growing economy of the country besides giving an opportunity for JU researchers to share their research findings. Although the domains of biotechnology and the scope of its applications are difficult to address within the limited conference period, I hope the central theme of the conference will be efficiently tackled in due course of the conference and the way forwards will be made at the end.

In this conference, more than 90 research papers will be presented. In addition, posters prepared by our PhD students and Technology Transfer Projects developed by JU community will be presented.

With this brief introduction and welcoming remarks, may I call upon Prof. Fikre Lemessa, President of Jimma University, to officially open the conference?

Thank you.
Opening Speech

Prof. Fikre Lemessa, President of Jimma University

Dear Invited Guests
Stakeholders
Paper Presenters
Scholars from Higher Learning, and Research Institutions
Participants of the Conference
Ladies and Gentlemen,

Good Morning and Welcome to the 9th Annual Research Conference of Jimma University
It is my pleasure and privilege to deliver this opening speech on the event of the 9th Annual Research Conference of JU. The conference has brought together scholars, researchers and various stakeholders from all over the country to deliberate on research issues that matter most from the perspective of National Development Agenda. I believe, this forum is a platform where research findings and innovative ideas are exchanged, and scientific remedies for National Development challenges are sought.

Dear Participants,

JU is pleased to continually host such substantial event every year. It is now almost a decade since we have begun this tradition of annual gathering wherein researchers, scholars, stakeholders and the academic community share latest findings in research. The conference deliberates on strengthening the quality of research outcomes to address the national policy priorities of the country. It emphasizes on how to approach local and national problems through advances in technology and innovative strategies. Jimma University, with its motto ‘We are in the community’, is proud to persistently engage in, and organize valuable forums such as this, that enhance research capacity development in Ethiopia. Following its thematic and focused multidisciplinary research strategy, JU promotes collaborative and team based research undertakings. The University has undertaken remarkable steps in establishing research institutes and centers, labs and in developing research projects to promote innovation.
Ladies and Gentlemen,

Recognizing its promising potentials and prospects of boosting efficiency and productivity in various sectors, this year’s conference focuses on biotechnological research and innovation. Hence, the theme of JU’s 9th Annual Research Conference is ‘Biotechnological Researches and Innovations for National Development: Prospects and Challenges’. The theme of the conference reflects the growing need in efficiency and productivity in various sectors using the cutting-edge technologies to undertake research in agriculture, health, natural sciences and engineering. Biotechnology uses advanced technologies and has a very promising potential in extending research impacts and innovation.

Dear Participants,

Cognizant of this fact, and as part of its community based educational philosophy, JU has been working hard towards contributing to national development endeavors through engaging in establishment of centers wherein such advancements are to be realized. The University currently has research centers working in areas related to biotechnology such as; Plant and Animal Biotechnology Research Center and Molecular Biology Research Center

The centers in collaboration with national and international partners are contributing towards the national development endeavor through advancing excellence in molecular, pharmaceutical, cellular and plant researches. Just to cite one of the multiple aspects in the application of biotechnology, one could consider its potential in agriculture. Beyond boosting productivity and efficiency, biotechnology could promote environmentally friendly agriculture in Ethiopia. Hence; biotechnology contributes immensely in mass propagation and production of disease resilient crop varieties, assessment of genetic diversity, development of disease resistant crop and animal breeds, improving quality of agricultural products and development of vaccines against animal diseases. Dear participants, these are just few of the applications in just one area, that is, agriculture. You can think of the many applications of biotechnology in the areas such as health and other sciences.

Hence, considering the timely and national focus on the issue, it is imperative that we deliberate on the prospects and challenges of biotechnological research and innovation to further improve
the endeavors made so far. This conference emphasizes on the importance of engaging in biotechnological research and innovation as tools towards meeting the national development goal. Universities and Research institutions are expected to spear-head such endeavors and work with stakeholders in materializing the development agenda.

Dear Participants,

I am confident that the conference will be the right platform to exchange experiences pertaining to research and innovation in biotechnology. It is also a big opportunity to discuss with stakeholders on how to move forward. JU understands the importance of biotechnological research and innovation in realizing the national development agenda and solve community problems pertinent. Beyond the theme of the conference, I hope, participants would also share research findings in multidisciplinary areas in the parallel sessions organized by colleges and Institutes of JU.

I would like to extend my gratitude to paper presenters, panelists and researchers from various institutions for joining us to share their research findings and professional experiences. I am also grateful to the organizers of the conference for making it a success. Finally, I wish you all a fruitful and intellectually stimulating discussion over the next two days. And with this, I officially declare the opening of the conference.

Thank you
Key-Note Address by Guest of Honor
Prospect of Biotechnology in the Context of the Bio-economy: Potential in Ethiopia

Kassahun Tesfaye (PhD) and Alganesh Tesema Gellaw (PhD)

Ethiopian Biotechnology Institute (EBTi)

Abstract

In the next generation of global economy, scientific knowledge coupled with product innovation, and its transformation to economic gain is a crucial step. Consequently, to be competitive in the knowledge based global economy, availability of infrastructure, training human power, and enabling policy environment are a vital requirement. The current trend in the global economy is a tendency to move away from total dependence on non-renewable resources and increasingly use renewable biological resources. Therefore, in the 21st century, bioeconomy is anticipated to take a central stage in the global economy. This shift is made possible as a result of advancements in biotechnology over the last few decades. Bioeconomy uses renewable biological resources from land and sea to produce not only food but also materials and energy, making resource-efficiency and the transition to a low-carbon economy possible. It is a useful strategy to advance sustainable growth in Ethiopia by value adding and diversifying market oriented local agricultural commodities and increasing rural incomes. Furthermore, to feed the ever-increasing population and eradicate poverty in the country, it requires to realizes the Biotechnology Research, Development and Innovation at national level and transform the available biodiversity in to useful goods and services. Hence, to meet the national program strategic goals on sustainable basis, creating a circular, resource-efficient economy is mandatory. Furthermore, the knowledge based production, utilization of biological resources is also crucial to provide products, processes and services in health, agriculture, environment and industries. Presently, bioeconomy development under Ethiopian context, associated with various challenges related to infrastructure, resource allocation, research capacity, access to technology, lack of any clear policy and regulatory framework. To implement the stated program efficiently attempts is being made to put strong foundation on biotechnology R&D in Ethiopian, including Roadmap, new institution, and draft policy with 18 policy issues.
Application of Biotechnology in Various Sectors for Sustainable Development

Hailu Dadi Melka (PhD) and Dawit Tesfaye Degefu (PhD)

*Ethiopian Biotechnology Institute (EBTi)*

**Abstract**

Biotechnology is an application that describes processes using biological systems and/or derivatives to manipulate natural processes in order to produce products to specific use. It was begun over 10,000 years ago by human through domestication of plants and animals. The development of fermentation, vaccines and pasteurization in the early 1800s is good examples of traditional biotechnology. This traditional and scientific constitute is the basis of today’s modern bioscience. In the current scenario, biotechnology is one of the leading industries of this century and used as a way to offer a better lifestyle for human beings. It offers significant opportunities to enhance agricultural productivity, food and nutritional security. Its application extends to the discovery of new ways to maximize the benefits of human health and environmental quality worldwide. It is one of the economic engines of growth for developing economies in many countries. The application of biotechnology in integration with traditional system has tremendous potential to address challenges in various economic sectors in Ethiopia. Modern bioscience application for neglected and underutilized species as well as indigenous knowledge with regard to medicinal plants and traditional food processing technologies are the basics to scale up and build sustainable economic development and technological transformation in Ethiopia. The utilization of the countries untouched biodiversity through modern biotechnology application is very crucial approaches for economic transformation, sustaining healthy and productive human life. This presentation examines recent advances in the application of a number of biotechnological techniques used in agriculture, health, environment and industries elsewhere. The country, Ethiopia, current status and future prospects of biotechnology research and development, and education will be discussed.
The Potential of Biotechnology in the Development of Ethiopian Agriculture

Kassahun Bantte (Prof)

Jimma University, College of Agriculture and Veterinary Medicine

Abstract

Agriculture is the main sector of the Ethiopian economy, contributing over 41% of the gross domestic product (GDP), 75% of employment and 90% of exports (CSA 2014). However, due to the impact of global climate change, depletion of soil fertility, the use of age-old technologies and fast population growth, Ethiopian agriculture is facing the grand challenge of meeting its share to the economy and providing enough food for the population. Crop and livestock productivities are low by international standards and overall production is highly vulnerable to weather shocks, particularly drought. Thus, both raising productivity levels and reducing its vulnerability to shocks are essential aspects of improving food security in Ethiopia, to ensure adequate food availability, as well as to increase household incomes. This requires the use of advanced technologies besides improving conventional techniques of production. Biotechnology represents one of those advanced technologies and offers promising potentials where new tools of molecular breeding and genetic engineering help to increase the efficiency of crop and live stalk improvement programs. The application of modern biotechnology like genetic engineering of crops has tremendous economic turnover and social impact. Both developed and developing countries in the world are investing on biotechnology and are benefiting from it. Currently, over 18 million farmers in 28 countries in the world grow crop varieties of four genetically modified crops on over 181.5 million hectares of land (James, 2014) which is an indication of the fast expansion of the use of the technology. Some of the applications of biotechnology in crop improvement include mass propagation and production of disease free planting materials, enhancing the breeding program by shortening the time for development of homozygous lines, in vitro germplasm conservation, development of climate resilient crop varieties, assessment of genetic diversity, development of disease and insect resistant crop varieties, improving crop quality traits and shelf-life of horticultural products. Similarly, biotechnology has various applications in live stalk improvement including hormone-induced super-ovulation, embryo transfer and in vitro fertilization, improvement of disease resistance, productivity of animals and quality of animal products (milk, meat, egg, etc). In line with this, the Ethiopian Government has shown a strong desire to exploit the opportunities of biotechnology for the development of the country’s agriculture. Institutional setups and legal requirements are being in place so as to pave the way for the development and utilization of the technology. Universities including Jimma University and agricultural research institutes have started training and/or research activities on different aspects of agricultural biotechnology.
Enhancing the Use of Biotechnology for Improving Health Care in Developing Countries

Delenasaw Yewhalaw (Prof., PhD)
Tropical and Infectious Diseases Research Center (TIDRC) OR School of Medical Laboratory Sciences, Jimma University, Jimma, Ethiopia

Abstract

Biotechnology involves the use of living organisms, or parts of living organisms, to provide new methods of production and make new products. Among other products, it provides many scientific tools such as new health care products which include preventive, diagnostic, therapeutic and prophylactic agents. Advancement in biotechnology has greatly improved human health and living in the past century and it made significant contribution to modern health care. The need for developing countries to develop and benefit from biotechnology is clear as the impact of biotechnology on society and ways of living in the context of its application to human health and disease treatment is enormous. Despite biotechnology is an opportunity and has a great potential to fight diseases (both communicable and non-communicable) that highly affect people in the developing world, the benefits of biotechnology in the developing world has been minimal. As health is the very basic necessity of mankind, biotechnology will become beneficial in the field of health especially for developing countries with poor health care system. Research and development in biotechnology in developing countries which address local health needs is not growing well. Here, the important contributions and impact of biotechnology to health care in developing countries are discussed and enhancing the use of biotechnology for improving health care in developing countries in general and in Ethiopia in particular by ensuring effective regulation of biotechnology research and application is also highlighted.
Parallel Session 1: Organized by College of Agriculture and Veterinary Medicine

Study of Reproductive Performances, Effective Population Size and Level of Inbreeding of Indigenous Sheep Types in Eastern Arsi Zone of Oromia Regional State, Ethiopia

Abas Hasen Haji¹, Kirmani Manzoor Ahmed² and Gemeda Duguma³

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Abstract

The investigation was carried to study reproductive performances, effective population size and level of inbreeding of Indigenous Sheep types in Lode Hetosa, Lemmu Bilbilo and Diksiis districts of East Arsi zone of Oromia Regional State. Multistage purposive sampling techniques were employed, as: (a) Stage I: 3 Districts with highest sheep population were selected; (b) Stage II: 3 Kebeles /district with highest sheep population selected; and (c) Stage III: random selection of 18 households from out of households owning sheep were selected for questionnaires. A set of detailed structured questionnaire was prepared to collect information on reproductive performance (age at puberty, age at first lambing, lambing interval, life time lamb crop and productive life). The rate of inbreeding ($\Delta F$) from effective population size ($N_e$) for a randomly mated population was calculated according to Falconer and Mackay (1996). The study showed that overall mean age of males at first mating was 5.51 ± 0.1 months. The overall mean age of females at first mating, at first lambing, ewe life time lamb production, lambing interval and reproductive life span of ewes was 6.96 ± 0.16 months, 13.1 ± 0.15 months, 10.64 ± 0.30, 7.87 ± 0.08 months and 8.3 ± 0.18 years, respectively. The overall reproductive life span for male sheep was 6.55 ± 0.26 years. The effective population size in Lode Hetosa, Lemmu Bilbilo and Diksiis districts were 2.10, 3.30 and 0.60, respectively and the inbreeding coefficient ($\Delta F$) for these three districts were 0.24, 0.15 and 0.83, respectively. The possible reasons for these higher values of inbreeding may be (a) majority (87.7 %) of sheep are mixed by sex during both day and night time resulting in uncontrolled mating, (b) retention of rams > 3 years age for breeding thus increased parent-offspring matings, (c) uncontrolled mating and (d) very low effective population of rams. The high inbreeding levels found in the current study showed that sustainable extension service needs to be organized on all aspects of sheep management with more emphasis on ram management, ram selection based on physical appearance / body weight, use of adult unrelated rams in breeding (Either by purchase of new rams or organized exchange of rams among farmers of different flocks) and maintaining sufficient number of breeding male for breeding. 

Key words: Reproductive Performances, Effective Population Size and Level of Inbreeding
Study on Effect of Estrus Synchronization on Pregnancy rate of Cross Bred Cows in Jimma City

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Abstract
The objectives of the study was to compare the effect of synchronization using different protocols (GnRH - PGF2α; PGF2α-PGF2α) on estrus response and pregnancy rate. In all 105 cross bred postpartum anoestrus cows and aged ≥ two year were purposively selected for the study. The experimental cows were equally (35 each group) but randomly divided in to three groups (Treatments). The treatment I was control group where no hormonal treatment. The treatment group II cows were injected with a dose of 2.5 ml GnRH at day one and observed for estrus response for 6 days post injection. Cows showing estrus signs were inseminated. Cows which failed to show estrus signs up to 6 days post first injection were given a dose of 2ml of PGF2α at day 7, observed for estrus response up to 3 days post second injection and inseminated on exhibiting signs of estrus. Cows which failed to show estrus sign up to 3 days post second injection were subjected to fixed time AI after 04 days of second hormonal treatment. The same method was followed in the treatment group III except hormonal protocol was different. In the treatment group III cows were injected with 2 ml PGF2α (First injection) followed by second injection as required with again 2ml of PGF2α. The study showed that estrus rate was 37.14 % in control group whereas it was 31.42 and 83.33 % in Treatment group II for single (GnRH) and second (PGF2α) injection, respectively. Similarly the estrus response was 28.57 and 76.00 % in Treatment group III for single (PGF2α) and second (PGF2α) injection, respectively. The estrus rate was significantly different in first and second injection of hormone in Treatment groups II and III. The analysis of pooled data showed that estrus rate was significantly higher in both treatment groups (Treatment groups II and III) compared to control group. The results of pregnancy rate showed that differences among the three treatments (Control, Treatment groups II and III) were non- significant. The pooled data showed that pregnancy rate was 46.15, 51.61 and 44.82 % in control, Treatment Group II and Treatment Group III, respectively. The results further showed that the effect of parity was non-significant on the pregnant rate in all treatment groups. However the effect of body condition score and age were significant on pregnancy rate in treatment group II whereas these differences (Pregnancy rate) were non-significant in other two treatment groups (Treatment group I and III).The study showed that there was improvement in estrus response rate in hormonal treated groups compared to control group. Though GnRH followed by PGF2α showed higher estrus response than PGF2α followed by PGF2α but the difference was non-significant.

Keywords: Estrus synchronization, GnRH, Prostaglandin, Estrus response, Pregnancy rate.
Determinants of marketed surplus of potato producers in Dedo district of Jimma zone, Ethiopia

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Abstract
Potato is an important food security and a hunger reliever crop in Ethiopia, involvement in commercial agriculture helps for income and sustainable livelihoods of small holder farmers. Potato producers in Ethiopia face marketing challenges including limited access to markets and low surpluses for sale into the market due to different factors. The study aimed to identify factors that determine the marketed surplus of potato producers. Out of 53 rural kebeles in Dedo district, potato is produced in 20 kebeles, out of these 4 kebeles and 136 potato producers were selected randomly. Quantitative and qualitative data were collected from primary sources through interview schedule. Descriptive and econometric methods of data analysis were used to analyze data from survey. Tobit model was applied to investigate factors affecting actual amount of potato supplied by small holder farmers. Results of descriptive statistics revealed that out of the total sample producer 87.5% of sample household participated in supplying potato in the survey year. Out of 13 explanatory variables included in Tobit model, about 7 variables were found to be statistically significant; age of house hold head, non-farm income, active family labor, land allocated for potato access to improved seed, access to credit and number of extension contact were influenced marketed surplus of potato. Initiate active family labor engagement, strengthen the financial capacity of potato farmers, increase frequency of extension contact and reinforce input supply system were recommended to increase marketed surplus.

Key words: Marketed surplus, potato, Tobit model.
Value chain analysis of Potato in Dedo district of Jimma zone, Ethiopia

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Abstract
Potato is number one non-grain food commodity of the world. Even though, Ethiopia has favorable ecology, the production of potato is characterized by poor seed quality, low skills of farmers, diseases, high post-harvest losses and poor organization along chain. The study is aimed to identify potato value chain actors and their roles and analyze marketing margins for actor. For this study 136 potato producers were randomly selected, 5 wholesalers, 8 collectors, 12 retailers and 6 small scale processors were purposively selected. Quantitative and qualitative data were collected from primary and secondary sources. Descriptive statistics was used to analyze data, chain mapping was implemented to identify actors and their supply linkage. Margin analysis was used to estimate value gained by each actors involved in potato value chain. The identified actors were input suppliers, producers, wholesalers, retailers, small scale processors and consumers. Supporting actors were office of agriculture, irrigation, micro finance, cooperatives, trade and market development, NGOs and bank. The margin analysis revealed that 65.01%, 12.29%, 9.78%, 8.27%, 3.27% share of margin goes to small scale potato processors, potato producers, retailers, wholesalers and collectors respectively. The major constraints were high price of seed, poor infrastructure, interferences of brokers, low storage facilities, weak linkage, disease and pests. The opportunities were suitable agro-ecology and government support. Strengthening the linkage among actors, providing training on storage construction and disease control, improving bargaining power of producers and initiate small scale processors were recommended to improve potato value chain.

Key Words: Value chain analysis, potato, constraints and opportunities.
Determinants of Marketed Surplus of Rice among Smallholder Farmers in Shebe Sombo District of Jimma Zone, Ethiopia

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Abstract
Ethiopia’s agriculture remains a major engine of rural growth and livelihood improvement, yet it is largely subsistence. Therefore, any pathway that can lift large numbers of the rural poor out of poverty will require some form of transformation of the subsistence-oriented production system into a market-oriented production system as a way to increase the smallholder farmer’s income. In this paper, the market options available to these farmers, as well as market related factors that are problematic were investigated. Multi-stage sampling procedure was employed to draw a sample of 148 rice producers. Tobit model was used to identify factors affecting intensity of marketed surplus of rice. The result of Tobit model shows that the intensity of marketed surplus of rice was significantly influenced by amount of credit used, membership in cooperative, land allocated for rice, education of the household head, rice farming experience, Access to market information, family size, livestock holding, distance to nearest market, and non-farm income. The findings generally suggest the need to create reliable market information, provide good transport facilities for farmers through development of infrastructure, strong extension intervention and giving training to farmers on marketing.

Key words: Rice, Marketed surplus, Tobit model
Effects of altitude, shade and postharvest processing method on biochemical composition and quality of green arabica coffee beans in southwestern Ethiopia

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Abstract

Although various studies have assessed altitude, shade and postharvest processing effects on biochemical content and quality of coffee beans elsewhere, data on their individual and interactions are scarce in Ethiopia. The individual and interactive effects of these factors on the caffeine, chlorogenic acids (CGA), trigonelline and sucrose contents as well as physical and sensory qualities of green coffee beans from large plantations in southwestern Ethiopia were evaluated. Caffeine and CGA contents decreased with increasing altitude; they respectively declined 0.12 and 1.23 g kg\textsuperscript{-1} 100 m\textsuperscript{-1}. Trigonelline also decreased with altitude, but the altitude effect was significant for dry-processed beans (1.01 g kg\textsuperscript{-1} 100 m\textsuperscript{-1}), not for wet-processed beans (0.27 g kg\textsuperscript{-1} 100 m\textsuperscript{-1}). Sucrose content increased with altitude; however, the altitude effect was significant for wet-processed beans (3.02 g kg\textsuperscript{-1} 100 m\textsuperscript{-1}), but not for dry-processed beans (0.36 g kg\textsuperscript{-1} 100 m\textsuperscript{-1}). Similarly, sucrose content increased with altitude with much stronger effect for coffee grown without shade (2.11 g kg\textsuperscript{-1} 100 m\textsuperscript{-1}) compared to coffee grown under shade (0.93 g kg\textsuperscript{-1} 100 m\textsuperscript{-1}). Acidity increased with altitude when coffee was grown under shade (0.22 points 100 m\textsuperscript{-1}), but no significant altitude effect was observed on coffee grown without shade. Beans grown without shade showed a higher physical quality score for dry (37.2) than for wet processing (29.1). These results generally underline the complex interaction effects between altitude and shade or postharvest processing on biochemical composition and quality of green arabica coffee beans.

\textbf{Keywords:} Arabica coffee, Caffeine, Chlorogenic acids, Trigonelline, Sucrose, Acidity, Southwestern Ethiopia
Geographical Origin Differentiation of Ethiopian Coffee via Multi-elements and Stable Isotopes Fingerprinting

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Abstract

The demand of consumers for authentic single origin coffee of high quality is continually increasing, which might also increase the risk for fraud. Ethiopia produces some distinct coffee types (e.g., Harar, Yirgacheffe, Sidamo, Limmu and Lekemt coffee), which are classified and traded based on their growing regions. One hundred-three samples of green arabica coffee beans from four coffee-growing regions of Ethiopia (i.e., Harar, southeastern, southwestern and northwestern Ethiopia) were analyzed for multi-elements by using wavelength dispersive x-ray fluorescence spectrometry (XRF), inductively coupled plasma (ICP)-optical emission spectroscopy and ICP-mass spectrometry, and stable isotope ratios (δ\(^{13}\)C, δ\(^{15}\)N and δ\(^{18}\)O) by using elemental analyzer-isotope ratio mass spectrometer to: (1) compare different datasets to their potential to discriminate geographic origin of coffee, and (2) investigate traceability of geographical origin of Ethiopian coffee via multi-elements and stable isotopes fingerprinting. Application of linear discriminant analysis provided a classification accuracy of 89, 86 and 80% for XRF multi-elements with δ\(^{13}\)C, XRF multi-elements alone, and ICP multi-elements alone and with δ\(^{13}\)C, δ\(^{18}\)O and δ\(^{15}\)N, respectively. Compared to coffees from other regions, Harar coffee formed clear separate groups for all four datasets, whereas southeast and northwest coffees clustered together with unclear separation, particularly for ICP multi-elements. These results demonstrate the potential of XRF multi-elements for geographical origin discrimination of coffee and traceability of Ethiopian coffee based on production regions via multi-elements and stable isotopes. With its simple, fast and cheap analysis, XRF multi-elements can be a preferred method of choice for coffee provenance authentication and fraud detection in Ethiopia.

Keywords: Ethiopian coffee-growing regions, Green arabica coffee beans, X-ray fluorescence spectrometry, Inductively coupled plasma-optical emission spectroscopy, Linear discriminant analysis
Survival and growth analysis of multipurpose trees, shrubs and grasses to rehabilitate badlands in the sub-humid tropics

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Abstract
Vegetation plays a vital role for sustainable rehabilitation of degraded lands such as badlands with active gully erosion. However, the establishment of plant species on badlands remains a long-lasting challenge in most regions, including the sub-humid tropics. To address this challenge, 18 multipurpose plant species (6 trees, 3 shrubs and 9 grasses) which were pre-selected from the regional species pool in Southwest Ethiopia were planted in a badland and monitored from July 2011 to June, 2014. The experiment had a split-plot design with farmyard manure (FYM) application as main plot and plant species as sub-plot factors repeated in three blocks. The study revealed that grasses were the most successful to survive and rehabilitate the gully within the monitoring period, compared to trees and shrubs. The survival rate of the four most successful grass species, \textit{Chrysopogon zizanioides}, \textit{Pennisetum macrourum}, \textit{Pennisetum polystachion} and \textit{Pennisetum purpureum} ranged from 61 to 90\% with FYM application and from 20 to 85\% without FYM, while most of the well-known indigenous and exotic trees and shrubs failed to survive. For the grass \textit{Pennisetum purpureum}, shoot height, shoot and root biomass were enhanced by 300\%, 342\% and 578\% respectively due to FYM application, with a remarkably higher response to FYM compared to all the other studied species. The overall results demonstrate that badlands can be effectively restored by using early successional species such as locally adapted and selected grasses before the plantation of trees and shrubs.

\textbf{Key words:} Badland, farmyard manure, grass, gully, rehabilitation
Acrylamide occurrence in Keribo: Ethiopian traditional fermented Beverage

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Abstract
Keribo is one of the most commonly used traditional beverages in both rural and urban areas of Ethiopia. However, the occurrence of some harmful compounds which could potentially be formed due to its processing methods has never been investigated. The aim of this study was to investigate the occurrence of acrylamide in Keribo and its association with processing conditions. Malted and unmalted barley roasted at three levels and also similar levels of sugar concentration were used in Keribo preparation. The barley flour to water ratio used during preparation was 1kg: 10 L. A total of 18 Keribo samples were analyzed for their acrylamide contents using high performance liquid chromatography-diode array detector (HPLC-DAD). QuEChERS sample preparation procedure was used. In this study, there was a statistically significant variation (P < 0.05) in the acrylamide content of Keribo between malted and unmalted barely. The variation in acrylamide content between different levels of roasting and sugar concentrations was also statistically significant (P < 0.05). Statistically significant difference (P < 0.05) was observed for the three way interaction of malting, roasting and sugar level. The highest concentration of acrylamide (3440 mg/kg) was recorded from Keribo prepared from deep roasted unmalted barley with higher sugar concentration. The lowest concentration (1320 mg/kg) was obtained for light roasted unmalted barley with medium sugar concentration. It can be concluded that level of roasting has high implication on acrylamide concentration. Malted barley had a lower concentration of acrylamide and this warrants malting and light roasting of barely are crucially important to minimize the level of acrylamide concentration and reduce the potential health impacts.

Key words: Acrylamide, Keribo, Barley, Malting, Roasting, Sugar level
Value Chain Analyses of Rice in Shebe Sombo District of Jimma Zone, Ethiopia

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Abstract
The government of Ethiopia has named rice as the “millennium crop,” and has ranked it among the priority commodities of the country expected to contribute to ensuring food security. Even though the contribution of rice to food security, income and in alleviating poverty is substantial, limited attention has been given to rice value chain development. This study aimed at identifying rice value chain actors and their respective functions, assessing the distribution of rice value addition at different stages of the marketing chain. Multi-stage sampling procedure was employed to draw a sample of 148 rice producers and 32 traders. Value chain tools were used to identify rice value chain actors and share of value added by each value chain actors. The results of value chain analyses revealed that the major actors in rice value chain were input suppliers, producers, collectors, processors, wholesalers, retailers and consumers. Rice producers added 41% of the total value, processors, wholesalers, retailers and collectors respectively contributed to further value addition of 20%, 18%, 13%, and 8%. Based on the findings of the study, we suggest that concerned stakeholders should focus on Strengthening the linkage among rice value chain actors and reducing unfair profit distribution among actors through enhancing bargaining power of producers’.

Key words: Rice, Value Addition, Value Chain Analyses.
Epidemiological Investigation of Cause of Abortion in Cattle at Limu Seka and Chora Boter Districts of Jimma Zone, Southwestern Ethiopia

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Abstract

Abortion in cattle is one of the most important causes of economic losses in Ethiopian livestock industry. Between October 2016 and October 2017 an epidemiological investigation was carried out to quantify the magnitude, assess the risk factors and identify the potential cause/s of abortion in cattle using questionnaire survey, participatory epidemiology methods, and serology in Limu two districts of Jimma zone. From 180 randomly selected respondents, the majority (59.4%) attributed abortion to infectious diseases whereas the remaining proportion of respondents incriminated physical injury, shortage of feed and toxic agent as cause of abortion. The overall cumulative incidence of abortion was 14.3% (69/484). Breed, herd size, method of breeding, previous history of abortion, accessibility of dog to cow, and season were identified as a risk factor of abortion. Participatory epidemiological identified brucellosis, leptospirosis, and listeriosis as the most important cause of abortion in cattle. A very strong agreement (W= 0.880; P<0.001) was observed among informant groups in pairwise ranking as to the most important cause of abortion in cattle. Proportional pilling showed that brucellosis had the highest proportion of abortion (39.9%) followed by leptospirosis (22.5%) and listeriosis (16.3%). Matrix scoring showed strong agreement (W=0.572 to 0.898; p<0.001) with regard to abortion indicators between informant groups. Strong agreement was seen among informant groups about seasonal pattern of occurrence causes of abortion (W= 0.525- 0.794; P<0.001). In addition, case-control study was carried out (141 cases and 282 controls) to confirm whether the first priority disease (brucellosis) incriminated for abortion in the area is indeed associated with abortion using RBPT and CFT serially. The overall seroprevalence of brucellosis was 4.02%. The variation in brucella infection is not statistically significant (P>0.05). Age, breed, herd size and species composition as risk factors (P<0.05) for Brucella seropositivity. Thus, further investigation considering more causes should be carried out to identify the specific cause of abortion and the associated loss in the study area.

Keywords: Abortion, Infectious diseases, Cattle, Participatory Epidemiology
Sero-Prevalence of Q–Fever in Dairy Farms and Slaughter House of Jimma Town, South Western Ethiopia

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Abstract
Q-fever is a zoonotic disease, caused by Gram – negative bacterium *Coxiella burnetii*, with significant socio- economic importance. The disease is considered as an important cause of production and reproductive loss (abortion, stillbirth, and infertility) in cattle. Ruminants particularly cattle are considered the primary reservoirs of infection to human. However, very scanty information is available on serostatus of this disease in Ethiopia to inform its public health risk. During the period of October 2016 – October, 2017, a cross-sectional study was undertaken in Jimma dairy farms and slaughtering house with the objectives to estimate the seroprevalence of *C. burnetti* infection and its potential risk factors. A total of 422 blood samples (227 from dairy cattle and 195 from slaughter house) were collected and tested with Indirect Enzyme-linked Immuno-sorbent Assay (I-ELISA). The overall sero-prevalence of *C. burnetii* in this study was 8.8% (95% CI: 6.0-11.0). In this study, there is statistically significant variation in seroprevalence of Q-fever between the age categories; adult animals are 4.85 (OR: 95%CI: 1.12 – 20.95, P - value 0.034) times more likely to be infected with *C.burnetii* than their younger counter parts. The variation in seroprevalence between the different management system was statistically significant (P= 0.048); the highest (11.8%) and lowest (2.4%) seroprevalence being in extensive and intensive management system, respectively. Animals in extensive management system is 11.8 (95% CI OR: 7–16) times more likely to have antibody for *C.burnetii* than those managed under intensive farming system. The high seroprevalence of Q-fever recorded in this study is of eminent concern. A control measures involving health education and awareness for the slaughterers and improved cattle management system are recommended.

Keywords: Extensive management, Jimma, Q fever, I-ELISA, Sero prevalence.
Folk Practice During Birth Process and Justifications Beyond the Practice in Ethiopia: A Systematic Review

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Abstract

Ethiopia is a country of long-standing history with its own identity. It is also a country with many useful traditional practices. On the other hand, it is a country where harmful traditional practices commonly practiced during pregnancy, labor delivery, post-natal. The aim of this systematic review was to identify common folk practices during birth process and justifications beyond the practice in Ethiopia. Systematic review was conducted using a priori protocol prepared specifically for this review. Articles were retrieved through a comprehensive search strategy. Data were extracted using critical appraisal check list. A total of 173 articles were identified, of which 10 were included in the review after full evaluation. The findings were presented under sub headings as folk practice: During pregnancy: priority for first pregnancy, not talking about it at early age, not buying items for baby until delivery, food taboos like: food items that are white in color, vegetables, fruits, meat in some circumstances and sugarcane. During Labor and Delivery: Hanging experienced women near the laboring mother, not allowing men to be involved in the delivery process, sex preference, birth by shock and dancing, applying butter on abdomen, Bush Birthing, opening belts, opening all closed items in the house hold. During postnatal period: funeraling of placenta, “Gubbifachuu”, “Arguugaa eelmachuu” milking the cows for three consecutive days, giving water and/or milk right after delivery, washing newborn, staying with clothes dressed during delivery, not initiating breast feeding up until the cord cut off, placing the butter on the cord, not tying cord, “Ulumaa taa’uu”, not to touch the new born baby, Mingi, Lanka Mansat. There is strong evidence that Ethiopian women are practicing various cultural practices during child birth process. Therefore, we recommend context specific intervention to avert maternal and newborn complications/ deaths related to this folk practices

Key words: Ethiopia, folk practice, pregnancy, childbirth, Post-natal
Investigating Factors that Impede Proper Prescription Writing: The Case of Jimma University Specialized Hospital

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Abstract
Prescription is a written order by the prescriber to the dispenser on how the drug should be dispensed. It serves as a means of communication among the prescriber, dispenser and drug consumer pertaining to treatment. That is why doctors are legally obliged to write prescription clearly. However, most of the time prescriptions are found to be unclear. The main objective of this survey study, therefore, was to investigate the factors that affect proper prescription writing in Jimma University specialized hospital. To achieve the main objective, four specific objectives related to knowledge and perception on importance of good prescription and consequences of sloppy prescription writing, the practice of good prescription writing and other factors that affect the proper prescription writing were formulated. While all (50(100%)) pharmacists were included in the survey, 100 (25%) physicians were selected using convenience sampling. Data were collected via questionnaire and document analysis, and the data were analyzed using percentage and mean value. The result of the survey showed that most of the physicians have knowledge on the importance of clear prescription writing and positive perception regarding the negative impact sloppy prescription writing has on pharmacists and patients. Nevertheless, the magnitude of writing clear prescription was low as 54.8% of the sample prescriptions were proved to be illegible. Nonetheless, physicians write clear prescription only sometimes as70% of the pharmacists reported. The major factors that affect the proper prescription writing, according to the physicians, are shortage of time (69%), difficulty of some medicine names to spell (80%), and lack of feedback from pharmacists (52%) on their (physicians’) unclear prescription writing. Therefore, as illegible prescription may pose a medical threat to the treatment of a patient, the University, the administrative bodies of the hospital, the Ministry of Health, physicians, pharmacists and other concerned bodies should work further to alleviate the problem.

Key words: prescription, illegible, proper, sloppy, physicians, pharmacists, treatment
Determinants and Outcome of Safe Second Trimester Medical Abortion at Jimma University Medical Center, South West Ethiopia

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Abstract

Although the vast majority of abortions are performed in the first trimester, still 10–15% of terminations of pregnancies have taken place in the second trimester globally. As compared to first trimester, second trimester abortions are disproportionately contribute for maternal morbidity and mortality especially in low-income countries where access to safe second trimester abortion is limited. The objective of this study was to identify factors affecting and outcome of induced safe second trimester medical abortion in Jimma University medical center, South West Ethiopia. Institution based cross-sectional study design was used to conduct a study among women who seek safe second trimester medical abortion services and admitted at gynecology ward. All (201) eligible study subjects were included who come for the safe medical abortion service during data collection period. Data collected using pretested structured questionnaire through exit-interviewing and abstracted from their chart. The data was entered into EpData version 3.1 then exported to SPSS version 21.0 for analysis. Variables with P-value less than 0.25 in bivariate analysis were entered into the final model of multivariable logistic regressions to identify determinants with 95% CI and P-value < 0.05. Hosmer and Lemeshow Test were used to check model fitness at P-value of 0.05. Ethical clearance was obtained and confidentiality kept using codes and patient’s chart number. In this study the response was 98.05%. Out of 201 women participated in the study and admitted for safe second trimester medical abortion, 154 (76.6%) of them had favorable outcome while the remaining 47 (23.4%) had unfavorable outcome. Previous experience of abortion [AOR= 6.001, 95% CI= (3.766, 8.885)], gestational age [AOR=0.902, 95% CI= (0.074, 0.986)], parity [AOR=2.384, 95% CI= (1.040, 3.693)], cervical status [AOR=8.001, 95% CI= (5.715, 10.015)], overall waiting time for more than two weeks [AOR=0.531, 95% CI= (0.504, 0.963)], overall waiting time for two weeks [AOR=0.054, 95% CI= (0.006, 0.453)] and moderate anemia -(Hgb:7-10g/dl)[AOR=0.071,95% CI= (0.004, 0.163)] were independent predictors for outcome of safe second trimester medical abortion. This finding implied that favorable outcome of induced safe second trimester medical abortion overweigh its unfavorable outcome which strongly determined by gestational age, cervical status, previous experience of abortion, parity, moderate anemia and overall waiting time. Induced second trimester medical abortion is an effective and safe method. However, much should be done to reduce unfavorable outcome by minimizing overall waiting time through intervening at low gestational age. Therefore, it is recommended that safe second trimester medical abortion services should be continued under a certain legal circumstances so as to reduce maternal morbidity and mortality.

Key words: determinants, outcome of safe medical abortion, Second trimester
Evaluation of Physicochemical Properties as Quality Control Parameters for Selected Medicinal Plants in southwest Ethiopia

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Abstract
Medicinal plants are alternative source of remedy for the majority of people all over the world and serve as one of the potential sources for discovery of various active compounds. The demand for tradition herbal medicine is increasing and about 85% of world population heavily rely on herbal medicines for prevention and treatment of diseases. Ethiopia is one of the six plant biodiversity rich regions endowed with diverse biological resources. The country is having about 6,500 species of higher plants, with approximately 12% endemic. More than 62.5% of the forest areas are found in southwest region of Ethiopia which a source of traditional medicine to treat different human and livestock ailments. To ensure reproducible quality of herbal plants (or preparations), physicochemical and phytochemical characterizations are required to be carried out for establishing their identity, purity, and quality standards. Thus, aim of this study was investigate the physicochemical quality assessment of some herbal medicines commonly known by traditional healers in South West Ethiopia. The plants materials were obtained from the selected zones of southwest Ethiopia. Traditional Healers found in these zones were identified and selected through/using community leaders and the administrative staffs of the zone. The traditional healers were interviewed to identify the most commonly used plants/parts/preparation. The plant samples was collected and transported to Jimma University, herbarium laboratory for species identification. Physicochemical analysis was conducted at Jimma University Laboratory of Drug Quality (JULaDQ) and Jimma University, School Pharmacy, Pharmacognosy Laboratory. A total of 54 medicinal plants were reported by the 82 Traditional Healers from the study area as being used for treatment in the area. These plants are distributed in 31 families. Family Fabaceae was represented by 8 species followed by 4 species of Asteraceae and Lamiaceae each and 3 species of Euphorbiaceae. Five medicinal plants were selected for further processing for physicochemical investigation. The water soluble extractive value of the selected medicinal plants was found to be between 14.515±3.191 (\%w/w) and 18.53±1.19 (\%w/w) and the alcohol soluble extractive value was found to be between 0.143±0.067 (\%w/w). The amount of acid insoluble and water soluble ash was found to be between 6.845±2.409 and 7.217±4.799 (\%w/w) and 5.731±0.38 and 6.731±0.622 (\%w/w) respectively. The moisture content of all the medicinal plants studied was high enough to potentially compromise stability. The study also revealed that the water soluble extractive value of the selected medicinal plants indicates the presence of water soluble components such as sugar, acids and inorganic compounds etc. and the alcohol soluble extractive value indicates the presence of polar constituents like phenols alkaloids steroids glycosides flavonoids. It is essential to establish nationally recognized guidelines for assessing their quality.
Comparison of Preservation and Stool DNA Extraction Methods for the Molecular Detection and Quantification of Soil-Transmitted Helminth Infections in Stool.

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Abstract

A sufficient qualitative DNA yield is pivotal for the success of any DNA-based assay, but still poses a challenge for soil-transmitted helminth (STH) eggs in stool. This is in particular so for Ascaris and Trichuris eggs, which are covered by a thick egg shell. Moreover, stool samples are often preserved prior to DNA extraction, but it remains largely unknown whether the type or duration of preservation has an impact on DNA yield, and hence on any downstream performance of the assays. Our objective was to compare the DNA yield (measured by means of real time PCR) from STH eggs in human stool across 4 DNA extraction methods, 3 type of preservatives and 3 storage time points. In a first experiment, we extracted DNA from 50 samples using 2 commercial DNA extraction kits (the QIAamp® DNA stool mini kit and the DNeasy® blood and tissue kit), both with and without a prior bead beating step. Based on the microscopic examination, 20 cases of Ascaris, 20 Trichuris, and 10 negative samples were included in this experiment. In the second experiment, 20 stool samples were preserved in either 5% potassium dichromate, 100% ethanol, or RNAlater® and were stored at 4°C. These 20 samples had 14 cases of Ascaris, 15 of Trichuris, and 5 of hookworm, based on microscopic screening before preservation. At day 65, 244 and 426, DNA was extracted. The results of first experiment highlighted that adding a bead beating step before starting commercial DNA extraction protocols improved DNA yield of STHs, and these discrepancies were most pronounced in samples with low to zero number of eggs per gram of stool. The DNeasy® blood and tissue kit outperformed the QIAamp® DNA stool mini kit. second experiment revealed Stool preserved in ethanol and RNAlater® proved to be stable over time, whereas the cycle threshold (Ct) values for samples stored in potassium dichromate increased over time. Based on both experiments we conclude that ethanol preservation in combination with the DNeasy® blood and tissue kit DNA extraction protocol after bead beating maximizes the DNA yield.
Establishment of Hematological Parameters Reference Interval for Apparently Healthy Individuals ≥ 5 Years of Age in Southwest Ethiopia

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Abstract
Clinical laboratory reference intervals are an important tool for identifying abnormal laboratory results and for ultimately guiding patient management decisions. The setting of hematological parameters reference intervals for local population is very crucial to improve quality of health care. To determine hematological parameters reference interval for apparently healthy individuals ≥ 5 years of age in southwest Ethiopians. A community based cross-sectional study was conducted from March 13, 2017 to May 30, 2017. A total of 998 apparently healthy individual were included in the study. Complete blood count was done by Sysmex XS-500i hematology analyzer (Sysmex Corporation Kobe, Japan). The data were first entered in to Epidata, cleaned and exported to SPSS-version 20 statistical software for analysis. The non-parametric independent Kruskal-Wallis test and Wilcoxon rank-sum test (Mann-Whitney U test) were used to compare the distribution of the parameters among age groups and between genders. Most of the hematological parameters show significant age differences between all age group reference intervals for both male and females. Significant differences by gender were not detected for many of the indices in children age group. In adult and geriatric age groups males had significantly higher values of red blood cell, hemoglobin and hematocrit compared to females (p<0.001). And also statistically significance sex differences were observed among adult age group by having adult female participants higher platelet and lower eosinophil count than adult male participants (p<0.05). This study provided local reference interval which can be used to guide patient management and interpretation of laboratory findings and potentially improve the quality of health care in southwest Ethiopia.

Key words: Reference interval, Hematological parameters, apparently healthy, southwest Ethiopia.
Assessment of Pediatrics Radiation Dose from Routine X-Ray Examination at Jimma University Hospital, Southwest Ethiopia

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Abstract
Given the fact that children are more sensitive to ionizing radiation than adults, with an increased risk of developing radiation-induced cancer, special care should be taken when they undergo X-ray examinations. The main aim of the current study was to determine Entrance Surface Dose (ESD) to pediatric patients arising from routine x-ray examination in the Radiology Department of Jimma University Specialized Hospital (JUSH). Descriptive cross-sectional study was conducted on pediatric patients less than 15 years of age who visited to seek x-ray examinations in JUSH. In this study, chest (AP), skull (AP), Abdomen (AP) and Pelvic (AP) x-ray examinations were analyzed. Radiographic exposure factors were recorded in each examination. ESD was calculated using exposure parameters. The calculated ESD values were weighed against the Diagnostic Reference Level (DRL) recommended doses and similar published studies. Comparison was made among different age groups through mean comparison. The obtained ESD values were mostly higher than the values in internationally published studies and DRL for all age groups. For chest AP, the mean ESD values were 1.82mGy which is higher than similar studies in Nigeria (0.642mGy), Brazil (0.062mGy) and NRPB (0.050mGy) for ages of 0-1 years. The higher pediatric patient dose obtained in this study is a further indicator that doses delivered to pediatric patients are not according to ALARA principle, and there is a need to optimize service and patients’ radiation exposure in JUSH in particular and in Ethiopia in general.

Keywords: Pediatrics, Radiation Dose, Exposure Parameters, X-ray, Jimma, Ethiopia
Seroprevalence and risk factors of hepatitis B, hepatitis C and HIV infections among prisoners in Jimma Town, Southwest Ethiopia

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Abstract

To determine the prevalence and risk factors of hepatitis B virus (HBV), hepatitis C virus (HCV) and HIV infections among prisoners in Jimma Town, Southwest Ethiopia. A cross sectional study was conducted among 156 prisoners from January to June 2016. Socio-demographic and other data were collected using structured questionnaire. Antibodies against HCV and HIV, and hepatitis B surface antigens were determined in serum using ELISA techniques with commercial kits. Logistic regression analysis was employed to assess possible risk factors for the infections. From the totally 156 participants, 145 (93.0%) were males and 11 (7.0%) were females. The seroprevalence of HBV, HCV and HIV was 5.8% (9), 2.6% (4), and 2.6% (4), respectively. None of the study subjects had co-infections. History of sexually transmitted diseases (AOR = 26.1, 95% CI: 1.17–58.3, \( P = 0.039 \)) and tattooing (AOR = 9.3, 95% CI: 0.8–10.9, \( P = 0.05 \)) was predictor of HIV seropositivity. Having multiple heterosexual partners was significantly associated with HBV infection (AOR = 0.056, 95% CI: 0.03–0.9, \( P = 0.044 \)). None of the interviewed participants had practiced homosexuality. However, they heard that homosexuality was practiced in the prison. Intermediate prevalence of HBV and HCV was detected among prisoners in Jimma Town. However, HIV prevalence was higher than that of the national report. It is crucial to build a system for monitoring, surveillance and preventive public health strategies to minimize the risk factors and block transmission of these infections among prisoners.
Health workers Motivation and Retention Strategies to bridge the gap in Human resource in Ethiopia

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\textbf{Abstract}
Ensuring health care workers job satisfaction and motivation in developing countries are important if they must be retained and deliver efficient health services either in the public or private sectors. As the backbone of the health system, health workers usually account for the largest share of public expenditure on health. The aim of this review is to map and describe the available evidences on mechanism and strategies of motivating and retaining health care worker to bridge the gap in human resource for health in Ethiopia. Scoping review methodology of WHO TAC and JBI was used to identify and collate evidence from studies included in the review, the follow of information is shown on the PRISMA follow diagram and four data bases were searched. A total of seven studies were included in the review and the studies are cross-sectional study design. The result of the study reveals that out comes including; pleasant nature of work, fair payment/salary, conducive working condition, fair supervision accessible administration &policies, fair workload, care to standard, better achievements, job content are factors directly associated with health care workers motivation to their job, each factor are measured using 5-point Likert scale having different items. Salary, incentives, house allowance/provision of house, relationship with supervisors, opportunities to get training were factors positively associated with motivation and retention of health care workers. Majority of health care workers leave their job to learn or look for better payment. Further studies of high quality designs such as RCT are required to inform practice.

\textbf{Keywords:} Health care workers, motivation, retention, Ethiopia.
Evaluation of the Genotoxicity of improper handling of Mineral Water bottled in Polyethylene Terephthalate (PET)

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Abstract

The worldwide consumption of bottled mineral water increased dramatically every year. The most common bottling materials are Polyethylene Terephalates (PETs). However, less attention is given to the chemicals that could migrate from packaging material into the water and induce adverse effects on human health. The aim of this study is to investigate the possible toxicological effects of chemicals released from PET bottles to the contained in it due to prolonged storage and exposure to direct sunlight. In testing for the effect of prolonged storage, samples were collected from three commercial bottled mineral water companies and stored at 5°C, room temperature (20°C) and 35°C in the PET bottle for 0, 1, 3, 5, 10 & 30 days. PET bottles’ containing water were exposed to direct sunlight and control samples kept in the shade. Allium cepa test was used to test genotoxicity. Chromosomal aberrations observed under the compound microscope were used as indicators to leaching of genotoxic chemicals into water. Mitotic Index (MI) and chromosomal aberrations (CAs) were determined. For statistical analysis, one-way analysis of variance (ANOVA) and Dunnet’s multiple comparisons test were used. P < 0.05 considered statistically significant. The higher chromosomal aberrations and the lowest mitotic index were significantly observed at high temperature (35°C) for one month at p<0.000. The lower mitotic index correlated with growth cycle disturbance leads to cell growth reduction. The most frequent chromosomal aberrations scored were bridges and fragments in anaphase and are the indicators of clastogenecity. Further investigation is recommended to describe the mechanism and rate of migration of chemicals from water samples supplied in PET bottles.

Key words: Allium cepa test, bottled mineral water, PET bottle, genotoxicity.
Prevalence and Intensity of Soil Transmitted Helminthiasis among pregnant women attending Antenatal care clinic, Jimma University Hospital

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Abstract

Soil Transmitted Helminthiasis (STH) infections is one of neglected tropical disease and posing major health problem among WHO identified vulnerable groups; pregnant women, pre-school children and children. The aim of this study was to assess the prevalence and intensity of STH among pregnant women attending the antenatal care clinic in Jimma University Specialized Hospital. Facility based cross sectional study was conducted on 200 pregnant women attending Jimma University Specialized Hospital (JUSH) Antenatal care clinic for their regular check up during study period March -May 2013. Semi structured questionnaires were used to assess the socio-demographic characteristics and the risk factors among the study participants and parasitological examination of stool samples were conducted using Mini-FLOTAC technique. The data were analyzed using SPSS version 20 statistical tools and Multivariate logistic regression analysis was performed to identify the associated risk factors. Overall prevalence of STH among the study participants were 37% (74/200). T. trichiura was the predominant STH, 29% (58/200), followed by A. lumbricoides 17% (34/200) and hookworm 11% (22/200). In logistic regression, there was positive association between hand washing habit after toilet “Never washed” (AOR: 16.7, (95% CI: 5.9-47.6), P=0.0001) and “Sometimes washed” (AOR: 1.8, 95% CI, 0.83-3.9) and STH infections. Regarding the courses of pregnancy, pregnant women in the first trimester, (AOR: 1.21, 95% CI, 0.39-3.8) were more likely infected than the second trimester. The prevalence of STHs among the pregnant women in the current study was high indicating its public health importance. It is recommended that all pregnant women visiting antenatal clinic shall be screened also for STH infections for proper management and as well it might worth to include those segment of population in mass drug administration program once a year.

Keywords: Prevalence, Intensity, STH, Mini-FLOTAC, pregnant women
Psychological morbidity and substance use among patients with hypertension: a hospital-based cross-sectional survey from Southwest Ethiopia

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Abstract

Psychological morbidity and substance use disorders have been linked to cardiovascular diseases; affecting patients’ medical outcome and quality of life. However, little is known about psychological morbidity and substance use among patients with hypertension in Ethiopia. Therefore, we aimed to assess psychological comorbidity and substance use among hypertensive patients in Southwest Ethiopia. A cross-sectional study was conducted among 396 hypertensive patients on follow-up at Jimma University Teaching Hospital in Ethiopia during the study period. Structured questionnaires were used to assess alcohol use, khat chewing and cigarette smoking. Psychological morbidity was assessed using the Kessler-6 scale. Multiple logistic regression analysis was carried out to identify the independent association between outcome and explanatory variables. The prevalence of psychological morbidity among hypertensive patients was 31.6%. Of the total participants, 31 (7.8%) of them had alcohol use disorders and 79 (19.9%) of them were using khat regularly at the time of the study. Singles were more likely to have psychological morbidity than married participants (AOR=5.18; 95% CI: 2.02, 13.28), whereas those who were able to ‘read and write’ were less likely to have psychological morbidity than non-literate ones (AOR=0.46; 95% CI: 0.24, 0.88). However, no association was seen between psychological morbidity and substance use (khat chewing, alcohol use and cigarette smoking). Psychological morbidity and substance use are prevalent among hypertensive patients on follow-up at the hospital. The findings suggest that there is a need to integrate mental health services into the existing hypertension clinics to address the mental health needs of persons with hypertension.

Keywords: ‘Psychological morbidity’, ‘Substance use’, Hypertension, Ethiopia, ‘mental health service’
Emergence of Multidrug Resistant, Extensively Drug Resistant and Pan Drug Resistant Bacteria Isolates from Patients with Health Care Associated Infections at Jimma University Medical Center.

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Abstract

The rate of resistant microorganisms which complicate the management of health care associated infections (HAIs) increased worldwide, the case is more worse in developing countries. Therefore, the objective of this study was to describe microbiological features and resistant profiles of bacterial pathogens of HAIs in Jimma University Medical Center (JUMC). Institution based longitudinal study was carried out on admitted patients from May 16, to September 16, 2016 in JUMC. From patients who have been infected in the hospital, different clinical specimens were collected from patients developed hospital acquired infections. The specimens were processed to identify bacterial etiologies of the infection following standard microbiological methods. Antibacterial susceptibility of the organisms was determined in vitro by Kirby-Bauer disk diffusion method following Clinical and Laboratory Standards Institute guidelines. Totally 126 bacterial etiologies were isolated from 118 patients with health care acquired infections. Of these 100 (79.4%) were gram negative and the remaining were gram positive. The most common isolates were *Escherichia coli* 31 (24.6%), *Klebsiella* species 30 (23.8%) and *Staphylococcus aureus* 26 (20.6%). Of 126 bacterial isolates, 38 (30.2%), 52 (41.3%), and 24 (19%) were multidrug-resistant (MDR), extensively drug resistant (XDR), and pan-drug resistant (PDR) respectively. More than half of isolated gram-negative rods (51%) were positive for extended spectrum beta-lactamase (ESBL) and/or AmpC; and 25% of gram negative isolates were also resistant to carbapenem antibiotics. The pattern of drug resistant bacteria in patients with healthcare associated infection at JUMC is alarming; which increases hospital stay and produces unpleasant patient outcome. Therefore, significant efforts to prevent HAIs and drug resistance are a must in the study setting.
Quality of Anthelminthic Medicines Available in Jimma Ethiopia

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Abstract

Soil-transmitted helminthiasis and schistosomiasis are major public health problems in Ethiopia. Mass deworming of at-risk population using a single dose administration of 400 mg albendazole (ABZ) or 500 mg mebendazole (MBZ) for treatment of common intestinal worms and 40 mg of praziquantel (PZQ) per kg body weight for treatment of schistosomiasis is one of the strategies recommended by World Health Organization (WHO) in order to control the morbidity of soil-transmitted helminthiasis and schistosomiasis. Since storage condition, climate, way of transportation and distribution route could all affect the quality of medicines, regular assessment by surveys is very critical to ensure the therapeutic outcome, to minimize risk of toxicity to the patient and resistance of parasites. Therefore, this study was conducted to assess the pharmaceutical quality of ABZ, MBZ and PZQ tablet brands commonly available in Jimma town (south west Ethiopia). Retail pharmacies (n =10) operating in Jimma town were selected using simple random sampling method. Samples of anthelminthic medicines available in the selected pharmacies were collected. Sample information was recorded and encompassed trade name, active ingredient name, manufacturer’s name and full address, labeled medicine strength, dosage form, number of units per container, dosage statement, batch/lot number, manufacturing and expiry dates, storage information and presence of leaflets/package insert. Moreover, a first visual inspection was performed encompassing uniformity of color, uniformity of size, breaks, cracks, splits, embedded surface spots or visual contaminations. Finally, physico-chemical quality attributes investigated encompassed mass uniformity, quantity of active pharmaceutical ingredient (API), disintegration and dissolution, all following Pharmacopoeial test methods.

Results: The physical characteristics of dosage form, packaging and labeling information of all samples complied with criteria given in the WHO checklists. The mass uniformity of tablets of each brand of ABZ, MBZ and PZQ complied with the pharmacopoeial specification limits, i.e no
more than 2 individual masses >5% of average tablet weight, and none deviate by more than 10%. The quantity of APIs in all investigated tablet brands were within the 90–110% label claim (l.c.) limits, ranging between 95.05 and 110.09% l.c. Disintegration times were in line with the pharmacopoeial specification limit for immediate release (IR) tablets, ranging between 0.5 and 13 min. However, the dissolution results (mean ± SD, n =6) of one ABZ brand (i.e. Wormin®, Q= 59.21 ± 0.99% at 30 min) and two PZQ brands (i.e. Bermoxel®, Q =63.43% ± 0.7 and Distocide®, Q= 62.43% ± 1.67, at 75 min) showed poor dissolution, failing the United States Pharmacopoeia (USP) dissolution specification limit. The results of the present study showed that all the samples of each brand of ABZ, MBZ and PZQ tablets complied with the pharmacopeial specification acceptance criteria for packaging and labeling information, mass uniformity, amount of API and disintegration. However, one third of samples failed to comply with the pharmacopoeial specification limit set for dissolution test. In general, the results of this study suggest that anthelminthic medicines circulating in the market could have risk of reduced efficacy. Therefore, poor quality of medicines could influence the chemotherapeutic intervention approach in reducing morbidity caused by soil-transmitted helminths and schistosomiasis. Thus, continuous monitoring, in a systematic way, the quality of anthelminthic medicines circulating in the market is recommended.

**Keywords:** Anthelminthics Ethiopia, Pharmaceutical quality, Survey
Healthcare Associated Infection and Its Risk Factors among Patients Admitted to a Tertiary Hospital in Ethiopia: Longitudinal Study.

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Abstract

Healthcare associated infection (HAI) is alarmingly increasing in low income settings. In Ethiopia, the burden of HAI is still not well described. Longitudinal study was conducted from May to September, 2016. All wards of Jimma University Medical Centre were included. The incidence, prevalence and risk factors of healthcare associated infection were determined. A total of 1015 admitted patients were followed throughout their hospital stay. Biological specimens were collected from all patients suspected to have hospital acquired infection. The specimens were processed by standard microbiological methods to isolate and identify bacteria etiology. Clinical and laboratory data were collected using structured case report formats. The incidence rate of hospital acquired infection was 28.15 [95% C.I:24.40,32.30] per 1000 patient days while the overall prevalence was 19.41% (95% C.I: (16.97-21.85). The highest incidence of HAI was seen in intensive care unit [207.55 (95% C.I:133.40,309.1) per 1000 patient days] and the lowest incidence was reported from ophthalmology ward [0.98 (95% C.I: 0.05,4.90) per 1000 patient days]. Among patients who underwent surgical procedure, the risk of HAI was found to be high in those with history of previous hospitalization (ARR=1.65, 95% C.I:1.07, 2.54). On the other hand, young adults (18 to 30-year-old) had lower risk of developing HAI (ARR=0.54 95% C.I: 0.32,0.93) Likewise, among non-surgical care groups, the risk of HAI was found to be high in patients with chest tube (ARR=4.14, 95% C.I: 2.30,7.46), on mechanical ventilation (ARR=1.99, 95% C.I: 1.06,3.74) and with underlying disease (ARR=2.01, 95% C.I: 1.33,3.04). Furthermore, hospital aquired infection at the hospital was associated with prolonged hospital stay [6.3 more days, 95% C.I: (5.16,7.48), t=0.000] and increased in hospital mortality (AOR, 2.23, 95% CI:1.15,4.29). This study revealed high burden and poor discharge outcomes of healthcare associated infection at Jimma University Medical Centre. There is a difference in risk factors between patients with and without surgery. Hence, any effort to control the observed high burden of HAI at the hospital should consider these differences for better positive out put.

Keywords: Health-care associated infection, nosocomial infection, Jimma, Ethiopia, Africa
Dyslipidemia and Associated Factors among Women Using Hormonal Contraceptives in Harar Town, Eastern Ethiopia

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Abstract

Dyslipidemia is an abnormal amount of cholesterol and triglycerides in the blood which has many adverse health impacts including atherosclerosis. Hormonal contraceptives affect lipid metabolism and can enhance the risk of vascular disease in the presence of other risk factors. Even though there are different strategies to overcome dyslipidemia, its magnitude among contraceptive users in Harar Ethiopia is not described well. Moreover, follow up of contraceptive users regarding any biochemical changes during the use of the drug is not commonly undertaken. This study is therefore designed to uncover the prevalence of dyslipidemia and its predisposing factors among hormonal contraceptive users so that policy makers should focus on the problem.

A facility based cross sectional study was conducted from April – June 2014. Contraceptive users from three health centers and one hospital were consecutively included in the study. Socio demographic data and anthropometric measurements were obtained. Venous blood of 10ml was drawn from each study subjects and lipid profile and fasting serum glucose were measured photometrically. Prevalence of dyslipidemia was determined using descriptive statistics and logistic regression analysis with 95% confidence interval using SPSS, version 20 for windows was used to infer associations and predictions. A total of 365 hormonal contraceptive users were included for the determination of the prevalence of dyslipidemia and it was found to be 34.8%.

The mean levels ± standard deviation of Total Cholesterol, Low Density Lipoprotein-C and High Density Lipoprotein-C, the Total Cholesterol to High Density Lipoprotein-C ratio, and Triglyceride were 186±27mg/dl, 121±31mg/dl, 45.21±7.7mg/dl, 4.44, and 108±3.45mg/dl, respectively. Age, fasting blood sugar, drinking coffee twice and eating no vegetables 4 times per week were identified as predictors of dyslipidemia among women using hormonal contraceptives. This study identified that hormonal contraceptives users living in Harar town have high rate of dyslipidemia. The results of this study emphasize the urgent need for a public health strategy for the prevention, early detection, and treatment of dyslipidemia.

Key words: Prevalence, Dyslipidemia, Hormonal contraceptives, Risk factor, Ethiopia
Developing and Validating a Multi-Dimensional Performance Instrument for District Health Care Systems in a National Region in Ethiopia: A Mixed-Methods Study

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Abstract

District health care systems are at the forefront of health care delivery in Ethiopia as they are the major providers of primary health care. Performance of health care system represents the interplay between indicators of quality (effectiveness, patient safety, timeliness and patient-centeredness) on the one hand and, equity and efficiency on the other hand. Currently the performance monitoring through tools that are one dimension focusing on effectiveness is common practice in Ethiopia. For example, the effectiveness of maternal health services in terms of utilization rate of antenatal care over a year in a given district is compared to another district. However, one-dimensional indicators focused on effectiveness are not complete as a measure of performance.

Objectives: To develop and validate a multi-dimensional instrument to measure the performance of district health care systems in a national region of Ethiopia.

Methods: In this study, we employed sequential exploratory mixed methods design which began with qualitative method and followed by quantitative method. It involved narrative systematic review, in-depth interview and document review followed by internet-based Delphi. The study was set up in Oromia National Regional State of Ethiopia. PubMed, Organization for Economic Cooperation and Development, Agency for Healthcare Research and Quality, and Google Scholar were searched for expert opinions, policy documents, literature reviews, process evaluations, and observational studies. Participants were national- and local-health care systems. Moreover, twenty seven interviews were completed with participants from women development teams, health posts, health centers, district hospitals, district health offices, and district
administrations. Furthermore, five relevant national and sub-national documents were reviewed. Internet-based Delphi was completed with 13 participants. The systematic review findings were synthesized narratively. Inductive analysis of interviews was done. Indicators which scored ≥75% of the votes during internet-based Delphi were retained.

Results: Full text records synthesized for the systematic review were thirty four. Performance of health care systems was defined narrowly as goal attainment and broadly as comprising access, capacity, quality, equity, efficiency, and outcomes of health care. The in-depth interview and document review revealed that district health offices were responsible for creating capacity for health care and regulation of providers. Health centers were providers of curative health care. Health posts did health promotion and provided preventive health care. Women development teams participated in identification of people with signs of illness and diffused health ideas.

Based on the systematic review and in-depth interviews, 256 indicators were identified. One hundred and fifty nine indicators were found to have face value. The overall set of indicators was found to have had content validity.

Conclusions: Performance of health care systems is defined in a diverse way. It has multiple elements. Indicators that have face and content value for measuring the performance of district health care systems are identified. The feasibility of these indicators must be tested in districts in Ethiopia.

**Key words:** Performance, District, Health Care System, Mixed Methods, Ethiopia
Parallel Session 3: Organized by College of Natural Sciences

Plenary

Uses and Misuses of Statistics in Research

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Abstract
We use data to study and describe (or summarize) past occurrences (descriptive statistics) and to evaluate patterns and create predictive models of future events (inferential statistics). Statistics plays an important role when it comes to the conclusion of almost all research projects in all disciplines. There is high potential that statistics can be easily misused in scientific research. In this talk we will explore some common misuses of Statistics in research and discuss on the way forward.

Entanglement Amplification of Intracavity Photons in A Non-Degenerate Parametric Oscillator (NDPO)

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Abstract
Applying the solutions of the quantum Langevin equations, the antinormally ordered characteristic function, defined in the Heisenberg picture, of the intracavity photons produced by a non-degenerate parametric oscillator (NDPO) coupled to a two-mode squeezed vacuum reservoir is obtained. With the aid of the resulting characteristic function, the Q function which is then used to calculate the entanglement of the intracavity photons using the von-neumann entropy (VNE) is determined.

Keywords: Squeezed vacuum; Parametric oscillator; Q function; Entanglement,
PACS numbers: 42.50.Dv, 42.50.Ar, 42.50.Gy, 03.65.Ud
Determination of Selected Heavy Metals in Water, Sediment and Fish Tissues of Gilgel Gibe (I) Hydroelectric Dam and Its Potential Tributaries, southwest Ethiopia

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Abstract
In this study, the concentration levels of selected heavy metals including chromium (Cr), cobalt (Co), copper (Cu), cadmium (Cd) and lead (Pb) of water, sediments and fish tissues (gill, liver and muscle) of Gilgel Gibe (I) Hydropower Dam reservoir and its potential tributaries were analyzed using flame atomic absorption spectroscopy (FAAS). Water and sediments samples were collected from the dam reservoir and its four main tributaries: Nada Gudda, Nada Kallo, Gilgel Gibe and Nadie rivers. Gill, liver and muscle of fish samples were obtained from the two main species of the reservoir, namely, Nile tilapia, (Orochromis niloticus) and Labeo barbus, (Labeoberbus intermedius), which are also locally named as Qoroso and Abba Samuel, respectively. All samples were collected in May 2017. Prior to their quantitative analysis, water samples were prepared by wet (acid) digestion, whereas, sediment and tissues of fish samples were prepared using microwave assisted extraction (MAE) procedures. The concentrations (mg/L) of the selected heavy metals in water samples are ranging from Cr (0.20-0.56), Co (0.02-2.85), Cu (0.06-0.26), Pb (0.47-3.22) and Cd (0.06-1.18). The concentrations of the metals in sediment and tissue of fish samples in mg/kg are ranging from Cr (15.76-38.76), Co (4.25-37.60), Cu (4.08-19.48), Cd (< LOD-10.4) and Pb (9.30-34.53) as well as Cr (25.06-28.92), Co (3.98-7.60), Cu (31.32-46.09), Cd (1.78-1.94) and Pb (16.61-18.54) respectively. The concentrations order of all the studied metals is water < fish < sediment, indicating the bioaccumulation and adsorption of the heavy metals. One way ANOVA test at p ≤ 0.05 demonstrated the presence of significant variations in the heavy metals contents in water, sediments and tissues of fish samples. The concentrations of the toxic heavy metals, Cd and Pb, in the studied samples were above the permissible limits for human consumptions. Thus, continual monitoring is recommended to take remedial action for safety of the consumers and the reservoir environment.

Keywords: Heavy metals, Dam reservoir and its tributaries, Sediments, Fish tissues
Phytochemical Screening of Some Selected Traditionally Used Medicinal Plants and Its Metal Complexation for Antibacterial Activities

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Abstract

Traditional medicines provide fertile ground for modern drug development, but first they must pass along a pathway of discovery, extraction, isolation, characterization and mechanistic studies before eventual deployment in the clinic. Thus, the objective of this study was to isolate and characterizes bioactive natural products from the roots of \textit{Kniphofia} species. The plants were collected and shade dried in the laboratory. The air dried roots were extracted sequentially with petroleum ether, chloroform, acetone and methanol solvents by maceration method. Then, the crude extracts were tested against pathogenic bacteria. Meanwhile, the biological activity results of \textit{Kniphofia pumila}, \textit{Clutia abyssinica} and \textit{Rhamnus staddo} A.Rich were done against \textit{E.coli} (ATCC25722), \textit{H.pneumonia} (DSM19613), \textit{S.aureus} (ATCC25925) and \textit{S.typhimurium} (ATCC13311). The \textit{Kniphofia} crude extracts zone of inhibition has displayed that 16 ±0.45, 15.8± 0.45, 14.7± 0.39 and 14.7± 0.39 in mm against \textit{S. aureus} (ATCC25925). But, the other crude extracts were not active against \textit{E.coli} (ATCC25722), \textit{H. pneumonia} (DSM19613), and \textit{S.typhimurium} (ATCC13311) as compared to the positive standard drug Gentamicin and DMSO as negative control. The activities of the crude extract complexes with Zn, Ni and Cu metals have shown potency against the mentioned microbial with an average greater than 11± 0.45 mm in zone of inhibition. In line with this, the crude extracts that have shown better antibacterial activity was subjected to chromatographic separation for purification. Then, the acetone extract was subjected to fractionation using Column Chromatography packed with silica gel and eluted with petroleum ether containing increasing amounts of ethyl acetate and has resulted GZ-1. Meanwhile, the antibacterial activities of the isolated compound (GZ-1) were carried out. Equivalent to this, the activities of the GZ-1 from \textit{Kniphofia} and the metal complexes against \textit{E.coli} (ATCC25722), \textit{H. pneumonia} (DSM19613), \textit{S. aureus} (ATCC25925) and \textit{S.typhimurium} (ATCC13311) was performed. Hence, GZ-1 was not active over all the microbes whereas, the metal complexes of GZ-1 has displayed significant zone of inhibition except on \textit{H. pneumonia} (DSM19613). Therefore, GZ-1 was characterized by using NMR spectroscopic techniques such as \textsuperscript{1}H-NMR, \textsuperscript{13}C-NMR and, 2D NMR, so as to establish the structure of the isolated compounds. Finally, from the NMR data analysis GZ-1 was identified as 3’-acetyl-2’, 6’-dihydroxy-4-methoxyphenyl-1, 8-dihydroxy-3-methylanthraquinone, trivial name knipholone.
Phytochemical Investigation of Roots of *Kniphofia isoetifolia* and Evaluation of its Antibacterial Activities

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Abstract

In an effort to address the problem of microbial diseases and the associated complications, the discovery of biologically lead antimicrobial compounds with novel mechanism of action from natural sources, especially from plants which have documented traditional uses cannot be over emphasized. The genus *Kniphofia* Moench, with species close to 70, is traditionally used to treat wide ranges of ailments including menstrual pains, infertility, abdominal cramps, wounds, malaria, chest complaint and hepatitis B. *Kniphofia isoetifolia*, an endemic species in Ethiopia, is known for wounds healing applications in Southern Ethiopia. To investigate the roots of *Kniphofia isoetifolia* and evaluate the extracts and its constituents for antibacterial activity. The roots of *Kniphofia isoetifolia* was extracted with chloroform/methanol (1:1 v/v), and the resulting crude extract was partitioned between EtOAc/H2O. The ethyl acetate extract afforded four compounds after chromatographic purification, and their identification was based on spectroscopic analyses. The extracts and pure compounds were evaluated for *in vitro* antibacterial activity on four bacterial strains namely *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Enterococcus faecalis*. The purification of the extract of roots of *Kniphofia isoetifolia* resulted in identification of four compounds (1–4). This is the first report on the phytochemical investigation of *Kniphofia isoetifolia* and occurrence of compound 1 in the genus *Kniphofia*. The extracts and isolates demonstrated antibacterial activity. The Compound 3 in some cases demonstrated comparable zone of inhibition with gentamycin. This is the first report of the occurrence of naphthoquinone derivative, 3,5,8 trihydroxy-2-methylnaphthalene-1,4-dione (1) in the genus *Kniphofia* which appears to have a chemotaxonomic significance to narrow down the gap between Alooideae and Asphodeloideae subfamily. The two dimeric anthraquinones (3, 4) showed strong activity with highest zone of inhibition recorded for asphodeline (3) against *E. faecalis*.

**Keywords:** antibacterial; inhibition zone; *Kniphofia isoetifolia*; quinones; roots.
Modelling Time to recovery of Fasting blood sugar level of adult diabetic patients who were under follow up at Mettu and Jimma University Specialized hospital diabetic clinics

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Abstract

Diabetes Mellitus is described as a chronic metabolic disorder that is characterized by elevation of blood glucose concentration and caused by relative or absolute deficiency of insulin. It is a life-long challenge that requires behavioral change and adequate self-care practice for better glycemic control. Several factors are known in the various studies as influencing factors but never deals with how patients progress over time by controlling their fasting blood sugar level. To fit an appropriate survival models and identify associated factors of time to control of fasting blood sugar level of adult diabetic patients. A total of 399 Adult diabetic patients from Mettu Karl and Jimma University Hospital were included for this study. Data were obtained from retrospective follow up diabetic patients charts from September, 2010 to August 2015. For time to control of fasting blood sugar level is a continuous time-varying variable, A multi-state survival model approach will be used to model the time to control over the different treatment level and covariates over time. From 399 diabetic patients, 317 (79.4\%) were from Jimma center and 227 (71.6\%) recovered their fasting blood sugar level to normal range. From 82 diabetic patients included from Mettu center, 25 (30.5\%) were type I diabetic of which 18 (72\%) recovered their fasting blood sugar level to normal range, Whereas 57 (69.5\%) were type II of which 45 (81.8\%) recovered. The overall average age, weight, DBP and SBP of patients at baseline is 44.81 years, 61.73 Kg, 78 and 121 mmgh with 14.49, 13.14, 10.49 and 17.68 standard deviations respectively. A standard and multistae cox proportional survival model gives the same result except Sex is not significant in the standard cox model. Therefore, fitting the data using Multistate Cox-PH model is appropriate in order to identify the prognostic factors which affect time to recovery of FBS level of patients. Body weight (Kg) at baseline (P-value= 0.0329), SBP (mmgh) at baseline (p-value=0.0174) and Sex Female (P-value=0.0404) are significantly associated covariates with the time to recovery of FBS level of diabetic patients

\textbf{Key Word:} Diabetes Mellitus, Fasting Blood Sugar level, Survival analysis, Multistate models
Joint-Mixed Effect Model for Longitudinal Data Analysis on Hypertensive Patients at Jimma University Specialized Hospital

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Abstract
Hypertension is a chronic disease that has a major health problem in adults and the elderly and is associated with increased risk of cardiovascular diseases and much other morbidity. According to World health organization hypertension is the seventh leading cause of death in Ethiopia. Hypertension is also called high blood pressure, described by two numbers SBP and DBP. Hence, longitudinal data analysis was applied to identify the main associated risk factors for the progress of SBP and DBP. The main objective of this study was to build a joint mixed-effect model in which both the longitudinal SBP and DBP measurements are simultaneously linked with unobserved random effects through the use of shared parameters and identify the associated factors in hypertensive patients. The hypertensive patient’s data was used from Jimma University specialized hospital hypertensive clinic. In this study a prospective study design was employed and used a follow up records of hypertensive patients during follow up time for 6 months in Jimma university specialized hospital. The data included 1,100 individuals with a minimum of three measurements per individual. Two outcome variables; systolic and diastolic blood pressure measured at least three times on each patient who were 18 years old or older those treated with antihypertensive drugs from March 01, 2016 to August 30, 2016 were used in this study. First, each of the outcomes is analyzed separately using linear mixed model. Then, a joint model was considered to study the joint evolution and identify the potential risk factors affecting the two end points. The estimated parameter for intercept of SBP is 135.51 with standard error of 2.901 represents an estimate of the average level of SBP during the first follow up time and 84.50 is the estimated parameter for intercept of DBP with standard error of 1.901 represents an estimate of the average level of DBP at time zero. AOE between the random slope for DBP and the random slope for SBP is 0.8561, this indicate the larger positive value suggests a positive strong association between the evolution of systolic and diastolic blood pressures. On average both SBP and DBP measures slightly decrease in a linear pattern over time. The joint model is compared with the separate model, the joint model fitted the data better than the separate model. The result from the joint model suggested a strong association between the evolutions and a slowly increasing evolution of the association between SBP and DBP.

Key Words: Joint Modeling; Longitudinal Data Analysis; Linear Mixed Model
Knowledge Based System for land coffee matching Jimma zone

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**Abstract**

Agriculture is a backbone for developing countries including Ethiopia. Agriculture is the art of producing crops and livestock. Crop production is the process of growing and harvesting of crops for source of food as well as income generation. Coffee is very common crop in most countries in the world and among export items. Unfortunately, productivity and quality of coffee is still quite low. This is because of choosing an appropriate land unit for coffee plantation based on agro-ecology, which is one of the main problems that farmers and land managers are facing. However, in developing country, like in Ethiopia where there is lack of professionals and intelligent tools for decision making, it is very difficult to give effective and efficient decision to solve these problems. Therefore, the aim of this research was to develop knowledge based system for coffee land matching which can support development agents and other professionals. In the study domain experts from Ministry of Agriculture, Jimma Agriculture and veterinary Medicine, Gomma Agricultural Office and Mana Agricultural Office were consulted. For this study the researchers used knowledge engineering approach. As a result, the researchers were able to develop knowledge based system for land coffee matching which can help professionals and farmers for decision making in selecting appropriate land for coffee cultivation. It is recommended that developing case based reasoning, neural network and hybrid reasoning be done using different algorisms in the future. In addition, chemical requirements and socio-economic factors be considered because these aspect was not included in this study. Moreover, it is recommended to develop knowledge based system for other varieties of *Coffee arabica* and *Coffee robusta* which needs different requirements.
The Syntax of Negation Phrase in Afan Oromo

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Abstract
Afan Oromo is one of the languages under Cushitic family of the Afro-Asiatic Phylum. Negation is considered a head of its own projection in recent generative syntax. The head of the negative phrase shows all the properties of other functional categories. The negative markers are not described as a functional category according to their syntactic characteristics in the available grammar books of the language. There is a gap to teach about such functional elements in Afan Oromo grammar at higher level in particular and to use the language in some language related applied fields in general. This work is about the description and explanation of the syntax of negation in Afan Oromo. The Generative Linguistics Theory (specifically the Minimalist Program) is used as a theoretical framework to explain the described data. Data is collected through interview and recording of speech texts from selected native speakers followed by transcription, description and explanation. The analysis showed that based on the explanation of theoretical frame work negative markers like- {hin-…-n} or {hin-} as in {Inni hin-deem-n-e} and {Isiin hin-deem-tan} are attached to the verb and this morphological element can head the negation phrase (NegP). Moreover, copulas like {dha} and {-ti} can have a negative form {miti}. The researchers proposed that the phrasal projection of NegP is projected in functional layer of the clause or sentence as a grammatical feature of negation in Afan Oromo. Finally, the affirmative interpretation is replaced by negative counterpart in the complementtizer phrase (CP) layer of the clause.

Key Terms: Afan Oromo, generative linguistics, functional category, Negation, Negation phrase, syntax
An Exploration of the Extent of Job Satisfaction of Academic and Non-academic Staffs: The Case of College of Social Sciences and Humanities (CSSH), Jimma University

Yonas Berkesa

Abstract

Job satisfaction describes how content an individual is with his/her job. The happier people are within their job, the more satisfied they are said to be. Satisfied employees help in improving organizational performance. This study aims at exploring the extent to which the academic and non-academic staffs of College of Social Sciences and Humanities (CSSH) at Jimma University (JU) are satisfied with the various job satisfaction factors such as work itself, supervision, co-workers, pay, promotional opportunities and working conditions. A mixed approach of both quantitative and qualitative techniques was used, while the analysis of primary data was done using SPSS. The target population consists of teachers and administrative workers of the CSSH, from which sample was deduced and data were collected using availability sampling technique. Five-point Likert-type scales were used to measure respondents’ perceptions. In addition, semi-structured interview was used to collect data from the respondents. While quantitative data were analyzed using descriptive statistics, the qualitative data were analyzed thematically. The findings of the study indicated that the most dissatisfying extrinsic factors among the academics, when rank-ordered from most dissatisfying to least dissatisfying are salary, working conditions, job policies and relationship with boss, and the dissatisfying intrinsic factor is achievement. Similarly, college incentives (fringe benefits) and salary (extrinsic), and career development (intrinsic) were the dissatisfying factors. This study is beneficial for faculty members of universities, policy makers, management and even students, if the job satisfaction could be achieved.

Key phrases: academic staff, non-academic staff, job satisfaction ,College of Social Sciences and Humanities, Jimma University
Science Fiction in Ethiopia: Genre Study of Some Selected Novels

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Abstract
In Ethiopia, there are literary works of diverse nature published under the main stream of literary fiction. The literary genre in which these works are written is not studied in detail. If they are studied properly, the works normally fall under a particular literary genre and sub-genre such as romance, historical, detective, science, etc. It is essential and the responsibility of literary scholars to study the features of these works and classify them under one genre or another. Then the works could be read and appreciated in their respective category. This study focuses on identifying works that fall under science fiction genre and pinpointing the features they possess so as to be grouped under the genre. The investigators realize that Ethiopia is not advanced much in science and technology, but this does not affect the production of science fiction in the country. There is no boundary to the human imagination. Researches focusing on exploration of works from particular genre such as historical, detective, fantasy, science fiction, etc. are seldom frequent. That is why the investigators in this study focused on genre study, particularly science fiction. Towards this end, initially a gross survey of Ethiopian literature written in English, Amharic, Afan Oromo and Tigrigna were made. The investigators have identified four novels which fulfill the characteristics of science fiction: Yebihon Alem, Aliweledim, Dertogada, and Emegua. Descriptive survey and document analysis were the research design and methodology used in this study respectively. As can be inferred from the title itself, Degu Kumbi’s Yebihon Alem, presents a hypothetical world. Aliweledim by Abbie Gubegna impresses us with unborn child’s impressions about injustices in the world it is going to inherit and its reluctance to come to it. Dertogada by Esmaike Werku on the other hand intrigues our mind with new technological innovations and surreptitious intelligence activities among big nations of the world. Emegua as a science fiction reveals endless quest for scientific knowledge and experiences of a different world within our world, the earth.

Key words: genre, science fiction, Ethiopia, Dertogada, Yebihon Alem, Emegua, Aliweledim
The Implementation of Peer Led Team Learning Principles and It’s Challenges: The Case of Undergraduate EFL Classes in Selected Universities In Ethiopia

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Abstract

This research attempted to assess the implementation of peer led team learning principles and its challenges in undergraduate EFL Classes with reference to selected universities in Ethiopia. To this end, descriptive survey research design was employed. Likewise, English majoring students, which involved 94 participants and 23 EFL instructors, were the subjects of the study. Questionnaire and classroom observation were administered as instrument to collect the required data from the participants. To achieve this objective, relevant data were collected using a five point Likert scale close- ended questionnaire. Results of the quantitative data were analyzed via percentage, mean and two tailed Pearson correlation using SPSS version 23. The qualitative data gathered through the general open-ended questionnaire and observation schedule were thematically organized and analyzed. Findings of the quantitative data indicate that most of the respondents show acceptable degree of cooperative learning practices which is 3.2163 for students and 3.0193 for instructors based on a five point Likert scale. Similarly, their responses using the same scale on their views on team learning is high (with mean values of 3.414 and 3.3986 for students and instructors respectively). However, statistical result of the challenges they encounter is high as well (mean value of 3.4261 for students and 3.0978 for instructors). In the case of the correlation between their views and practices, there is positive relationship measured by a two tailed Pearson correlation; however, it is strong for the learners (r = .676) but weak for the instructors (r = .367). Results of the qualitative data, on the contrary, show that many of the students and instructors think team learning is pedagogically useful; however, many of them believe that there are different challenges. Results of the classroom observation, similarly, support this since both students and instructors were not actually implementing and practicing it in the actual classroom. This implies that further experimental study need to be conducted on the practical worth of collaborative learning in the Ethiopian context.

Keywords: cooperative learning principles, views on team learning, practice of team learning and challenges of team learning
A Critical Analysis of Stakeholders’ Discourses on the Road Safety Problem in Ethiopia

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Abstract
A significant step to addressing the road safety problem in Ethiopia is the formulation of a strategic plan/policy based on UN/WHO’s recommendation of 2011-2020 as Decade of Action for road safety. A key notion of the policy to ensuring road safety effectively is stakeholders’ collaboration based on the philosophy of shared responsibility and safe systems approach, understanding the road and its environment, road users and vehicles as a whole. Thus, how road safety stakeholders in Ethiopia incorporated and/or excluded knowledge/practices introduced by the approach, and what the knowledge/practices incorporated and/or excluded could have contributed to the country’s road safety should be among the key issues that need exploration. To do so, using critical discourse analysis as theory and method, road safety policy and other relevant documents and in-depth interviews of key stakeholders have been analyzed qualitatively. As depicted in road safety policy documents and discourses of key players, the recontextualization of road safety knowledge/practices in Ethiopia is in line with the source documents; stakeholders’ collaboration is taken as fundamental to address the problem comprehensively, working on five pillars: road safety management, safe roads, safe vehicles, safe road use behavior and post-crash care. However, the claimed collaboration is only among few government institutions, mostly in the form of submission to dominant players. Although road safety is conceptualized as a serious problem that demands timely addressing through concerted and collaborative effort of all concerned, stakeholders have different, mostly narrow and/or contradictory, pictures of what road safety is and how it should be addressed; their conceptualization of the problem is not based on the knowledge/belief system of the adopted approach. Intervention practices have perpetuated the traditional/individual user approach, targeting road users alone, taking them as sole causes of road traffic accidents and hence objects of intervention. As a result, unlike the seemingly continuous efforts of curbing the problem, change in both road safety knowledge and practice has been so insignificant in Ethiopia. The study has further revealed that policy documents that have been prepared based on lessons from good practice countries and conceptualization of the problem on ground could still remain tokenistic. However, if the emerging road safety discourses were cultivated, shaped and strengthened, they could contribute to changing the road safety problem so widespread in the country.

Key Phrases: Road safety policy, Road safety conceptualization, Recontextualization, Stakeholders’ collaboration, Shared responsibility, Safe systems approach, Individual user approach.
Discriminatory Discourses of Leprosy-Affected Communities and the Underpinning Social Constructs: Addis Ababa & Kuyara in Focus

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Abstract
This study is a critical examination of discriminatory discourses and the underpinning social constructions about leprosy-affected people. The study is conducted to explore justifications for discriminatory social relations and the inherent image of leprosy-affected people (LAP) and their families. It was also meant to investigate the discursive manifestations and strategies of discriminations in various social affairs. Two research sites in Ethiopia, Kuyara and Addis Ababa, were selected based on convenience and the social or historical importance. A total of 70 non-Leprosy-Affected Persons and Leprosy-Affected Persons, who were selected purposefully, involved in the qualitative data. The data was analyzed thematically. The result revealed that leprosy affected persons are referred to as unclean, weak, lame, and broken (amputated), worthless and unable to work or they are described with dehumanizing expressions and traits of low qualities. They are socially constructed as genetically contaminated (YEQOMATA ZER) compared with the non-LAP as the people of the ‘pure gene’. The community in general considered them vectors of the disease, incapable, people who deserve punishments and bear children of their own kind. The disease is also perceived as incurable. The LAP themselves consider the isolation/self concealment mechanism of getting relief. Various discriminatory discourse strategies are prevalent including self-denial or concealment, dehumanization, delegitimizing, restriction, and many others. Illogical justifications and lack of information about leprosy was deduced from the data gathered. Data from all the informants showed that the problem of explicit discrimination is not as intense as it was in the past. The stakeholders are suggested to plan social behavioral change communication education program (SBCCEP) where the LAP play the leading role. False justifications, materialized misunderstandings, illogically explained topics in the social or medical genre and power relations (restrictions, self-concealments, absence of bottom up resistance, legitimization of submissiveness) should be tackled by cumulative effort of LAP, health professionals, religious leaders, community of ‘healthy people by means of awareness creation trainings, media campaigns’, narrowing social gaps between LAP and non-LAP in general.

Key phrases: leprosy-affected, Discriminatory discourses, Justifications, social construction, strategies
Investigating Factors that Impede Proper Prescription Writing: The Case of Jimma University Specialized Hospital

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Abstract
Prescription is a written order by the prescriber to the dispenser on how the drug should be dispensed. It serves as a means of communication among the prescriber, dispenser and drug consumer pertaining to treatment. That is why doctors are legally obliged to write prescription clearly. However, most of the time prescriptions are found to be unclear. The main objective of this survey study, therefore, was to investigate the factors that affect proper prescription writing in Jimma University specialized hospital. To achieve the main objective, four specific objectives related to knowledge and perception on importance of good prescription and consequences of sloppy prescription writing, the practice of good prescription writing and other factors that affect the proper prescription writing were formulated. While all (50(100%)) pharmacists were included in the survey, 100 (25%) physicians were selected using convenience sampling. Data were collected via questionnaire and document analysis, and the data were analyzed using percentage and mean value. The result of the survey showed that most of the physicians have knowledge on the importance of clear prescription writing and positive perception regarding the negative impact sloppy prescription writing has on pharmacists and patients. Nevertheless, the magnitude of writing clear prescription was low as 54.8% of the sample prescriptions were proved to be illegible. Nonetheless, physicians write clear prescription only sometimes as 70% of the pharmacists reported. The major factors that affect the proper prescription writing, according to the physicians, are shortage of time (69%), difficulty of some medicine names to spell (80%), and lack of feedback from pharmacists (52%) on their (physicians’) unclear prescription writing. Therefore, as illegible prescription may pose a medical threat to the treatment of a patient, the University, the administrative bodies of the hospital, the Ministry of Health, physicians, pharmacists and other concerned bodies should work further to alleviate the problem.

Key words: prescription, illegible, proper, sloppy, physicians, pharmacists, treatment
The Effects of Using Topical Structure Analysis (TSA) on the Writing Performances and Conceptions of Jimma University Students In “Basic Writing Skills Class”

Aberash Tibebu (PhD Candidate)

Abstract
This study investigated the effects of using topical structure analysis (TSA) on the writing performances and conceptions of Jimma University students in “Basic Writing Skills Class”. Methodology: The study adopted quasi-experimental design with two groups and a pre-and a post-study test, and collected quantitative and qualitative data using four methods: essay tests, close ended questionnaires, semi-structured interviews and classroom written inquiries. Seventy pre-med students in the Department of Medicine were divided into control and experiment groups by randomly assigning each student to one of the groups before they began Basic Writing Skills Class. The two groups were placed in the same conditions and taught the same syllabus designed by the Department of English and Literature in Jimma University. The only difference was that the experiment group was taught TSA as learning and revision technique while coherence, which is one of the contents of “Basic Writing Skills”, was introduced simultaneously. Also, a pre-and a post-essay tests were given to the subjects in both groups. Analysis: The essays were analyzed using the procedures of TSA as well as using quantitative and qualitative methods. The analysis of the test scores revealed that the post-test scores of the experimental group were higher than their pre-test scores and the pre-and the post-test scores of the control group. The analysis of the topical structure of the essays in the pre- and the post-tests also showed better writings of the group in terms of local coherence, development and clear focus which was resulted from adding more sequential and extended parallel progressions in their post-test essays. Moreover, the outcomes of the analysis of the qualitative data and the quantitative data showed the group’s better awareness of coherence and its importance. The evidence from such analysis also indicated that the group had positive attitude and high motivation towards learning and using the technique. Finally, the discussions of the findings of the study suggest various pedagogical implications that reflect the benefits of considering TSA in teaching writing in the context of EFL classes in Ethiopian universities and other similar contexts. Suggestions for further research that focus on exploring further benefits of TSA, and testing its application in various genres other than exposition were given along with the limitations of the study.

Key Phrases: Topical Structure Analysis, Effect, Writing Performances, Conceptions, Basic Writing Skills, Students, Jimma University
Cooperation and Problematic Relationships between Customary and Formal Legal Systems among the Tulama Oromo of Ethiopia*

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Abstract
The 1995 Constitution of Ethiopia and the 2001 Revised Constitution of Oromia recognize customary laws in dispute settlement relating to personal and family matters, with the consent of the parties to the dispute. Criminal and serious civil cases continue to be exclusively under the jurisdiction of the formal legal system. The data generated through interview (20 informants), focus group discussion (6 FGDs), observation and document analysis were analyzed thematically. Taking the Tulama Oromo of Ethiopia as a case in point, the findings show that customary law often operates ‘beyond its legal mandate.’ It also illustrates the formal and informal relationships between customary and formal legal systems since 1991, which can be characterized as cooperative and problematic, though cooperation seems to prevail. The cooperative aspects of the relationship between the two systems include case transfer and notification of decision of the transferred cases of settlement to one another’s jurisdiction, joint dispute settlement, the elders’ double role in both legal systems and collaboration in de-escalation and crime prevention. Problematic aspects include mutual undermining, confusion and dispute over jurisdiction, lack of mutual trust, double jeopardy and failure of both systems to settle certain disputes. To address the difficulties that exist due to the coexistence of customary and formal legal systems in the study area, the paper recommends the state of Ethiopia/Oromia has to create a system, which allows disputants to file most customary disputes to the forum of their own choice and establishes clear institutional linkages between the two systems.

Key phrases: Legal systems, Cooperative, Problematic, Oromo, Ethiopia

* This abstract is part of my PhD dissertation in Social Anthropology at Addis Ababa University.
Retrospective Experience as a Conceptual Tool of Originality: With reference to Haile Gerima’s Cinematic Narratives

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Abstract

Retrospective Expression as a source of Originality, in Haile Gerima’s films is the core subject matter of this specific study. Hence, some of these movies have been taken as a source of data analysis and interpretation. That is why, Gerima’s Cinematic Narratives are inspected critically through Retrospective experience and Resistance manifestations as a major conceptual framework of the data analysis to depict the conception of originality. Moreover, the purposive sampling method of research study is employed to analyze the data, since this method is more relevant to the already mentioned data. In relation to the method, the study is examined through originality and prospective concepts and theories. The elements of the movie like culture, folklore, religion, traditional games, stories, riddles and socio-political phenomena are evaluated critically. Eventually, the data are analyzed through the concepts of Retrospective experience and Resistance manifestations narrated in the movies. The finding shows the originality of the cinematic narratives through mental time travel of the filmmaker. Thus, the entire analysis and interpretations depict the originality of these art works.
The Perils of Chronic Illnesses: Patients Lived Experience of Healthcare Seeking, Lifestyle Modifications, and Livelihood Impacts in Central and Southwestern Ethiopia

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Abstract

Chronic illness is one of the chief health and development challenges of contemporary society. Chronic illnesses, in particular cardiovascular diseases, diabetes, cancers, and chronic respiratory diseases, have become the major cause of morbidity and mortality globally. Chronic illness claimed 60% of all deaths worldwide and strikingly, 80% of these deaths occur in developing countries, making such illnesses one of the major development challenges of the global south countries. As in any other developing countries, Ethiopia is challenged by the rampant chronic illness which created a double tragedy on the society and the health care system which is already threatened by acute illnesses. The main objective of this study was to investigate patients’ experience and perils of living with chronic illnesses. Both quantitative and qualitative research methods were employed in a triangulation fashion. Accordingly, sample survey, key informant interview, and Illness narratives were used to collect empirical evidences of the study. Survey respondents were selected by using accidental sampling technique. Accordingly, 150 chronic illness outpatients visiting health facilities in the data collection period were surveyed in the study. The informants of qualitative studies were recruited by using purposive sampling technique based on availability basis. The qualitative data was collected from participants until saturation of key themes were achieved. Thus, 16 illness narratives and 7 key informants were participated in the qualitative studies of the project. Descriptive and inferential statistics were employed to analyze the quantitative data, and the qualitative data were summarized and presented concurrently alongside with the quantitative data by hiring thematic analysis technique. The study unearthed that people from all walks of life are vulnerable to chronic illnesses. The meanings patients develop towards their illness is mediated by the information they do have on the particular illness, the discovery of the illness, the experience of their intimate social circles about the illness at hand, the type of the chronic illness itself, and the nature of service provision including the behavior of the physicians. Place of residence and educational attainment showcased significant association with different indicators of health seeking behavior of chronic illness patients. Chronic illness has a devastating impact on the livelihood of the patients. It make victims vulnerable for co-morbidities and their treatment is very expensive, which in turn impoverished the households of the patient. Lifestyle modification is in the front line treatment strategies in the process of chronic illness control and management. However, chronic illness patients reported that they are struggling to adapt and practice the desired modified lifestyles in their everyday life. Finally, the study identified that the status of intervention strategies devised to control the prevalence and spread of chronic illness is very inadequate. In sum, taking in to account all the devastating consequences of chronic illness, the attention given from the government and other concerned stakeholders is wanting. The problem
of chronic illness is not just a health problem; rather it affects the overall functioning of the society. Thus, chronic illness has to be a national agenda and action oriented commitment is required from the government, NGOs and other concerned bodies to arrest the evils of chronic illness and to create chronic illness conscious society.

**Land Tenure and Challenges of Tenure Security: The case of Dedo District, South Western Ethiopia**

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**Abstract**

This study examined rural land tenure issues using mixed research approach. Survey data was collected, using structured questionnaire, from 203 randomly selected respondents and qualitative data was generated through FGDs and interviews. Quantitative data was analyzed using descriptive statistics while qualitative data were analyzed thematically. The finding shows that informal means of land access predominates in the area though some deviates from the Federal rural land administration proclamation. Women’s access to land is not a norm; it is possibility. Established customs held about women victimize their land right mainly those who are divorced. Attributed to land fragmentation, competition over land is soaring mainly between natives and illegal settlers. Land expropriation for mining industries also invoked tenure insecurity. Land certification was perceived to enhance tenure security but manipulation by local elites and fraud compromised land rights of rural poor. Conflicts arising from traditional boundary surveying and false certification were found to affect sustainable land utilization, and this calls for robust land management strategies, which integrates customary land tenure to emerging land administration technologies.  

**Key phrases:** Land tenure, tenure security, land tenure security
Community-Based Health Insurance in Ethiopia: Breadth of Benefit, Population Uptake and the Prospect in Averting the Problem of Poor people’s Access to Health Services in Districts of Jimma Zone, Oromia Regional State

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Abstract
To alleviate households’ financial barriers in times of illness, the government of Ethiopia has launched a pilot Community-Based Health Insurance (CBHI) scheme in 2011 in 13 districts of 4 regional states, and the scaling up begun in 2016. The study was aimed at investigating the benefits members of CBHI get, the extent of households’ (HHs) enrollment, and the schemes’ potential in mitigating the financial barriers of the poor population in times of illness. While quantitative data were collected from 757 HH respondents, qualitative data were generated from 14 key-informants and 19 FGDs. Quantitative data were analyzed using descriptive and inferential statistics and the qualitative data were analyzed thematically. The finding shows that CBHI members are entitled for free health care services in local and referral hospitals with prior agreements made. However, transportation costs, foreign referrals, cosmetic surgery/prosthesis and insured accidents, maternal and child health (MCH) diseases related to epidemic breakdown are not included in the CBHI benefit package. The latter two health care services are freely provided through other arrangements. The overall HHs’ enrollment rate is about 41%. There is no significant association between enrollment to CBHI schemes and HHs’ living standard as well as between rural and urban residents. However, there is significant association between family size and enrollment to CBHI schemes. Main reasons for enrollment to CBHI schemes include low CBHI payment and shortage of money in times of illness or injuries. Unaffordable CBHI payment and lack of awareness were given as the main reasons for HHs non-enrollment to the schemes. The majority of pilot CBHI district and CBHI scaled up districts have plan to renew their CBHI membership. From the non-enrolled HHs, the majority of the respondents had future plan to enroll to the CBHI schemes. Delays in releasing budgets from the central and regional offices, low awareness creation activities, favoritism in the process of screening the needy, and transportation problem during referrals, extra payment to purchase drugs and poor were the main reported problems. The findings show that CBHI is beneficial for HHs by reducing health costs. However, it needs giving attention to the very poor HHs. Moreover, it requires working on the availability of drugs to prevent CBHI members from additional health costs.

Key words: Community-Based Health Insurance, Premium, Affordability, Enrollment/Non-enrollment, Membership renewal
Parallel Session 5: Organized by College of Education and Behavioural Sciences

Schools Climate and Student Achievement in Secondary Schools of Ethiopia.

Abeya Geleta (PhD)

Abstract

A correlation research design was employed to examine if a relationship exists between organizational school climate and student achievement in Ethiopian secondary schools setting, and to investigate whether the various elements of school climate have independent effects on student achievement. Organizational climate was measured using the School Climate Index (SCI) developed by Tschannen-Moran, Parish and Dipaola and student achievement was measured by students test scores at the Ethiopian General Education Leaving Certificate Examination (GELCE) in the year 2014/15. A total of 32 schools, 973 teachers and 14882 students were participated in the study. Descriptive statistics such as mean and standard deviation, Pearson $r$ correlation coefficient and multiple regression analysis were applied for the data analysis. The results indicate that school climate has a significant and positive relationship with student achievement in Ethiopian secondary schools, but nonetheless, a weak one. The collegial leadership, teacher professionalism, and academic press were significantly and moderately correlated to students achievement while the community engagement sub scale was not. The four factors used both for the SCI as predictor variables in the regression model were shown to have a significant relationship with student achievement when viewed as a whole, but they generated more varied results when examined individually. Teachers professionalism is the most positive predictor of student achievement in Ethiopian secondary schools. Similarly collegial leadership and academic press are also found to be significant predictor of academic achievement. This study found no independent effect of community engagement on student achievement. It is recommended that school leaders should design school improvement plans that entail the school climate construct. School leaders need to find ways of including the community in the life of the school and foster positive relationships with the community. Principals in particular need to be mindful that the climate of a school affect achievement and the former can be enhanced to improve results.

Key words: Ethiopia; school climate; student achievement; collegial leadership; teachers professionalism; academic press; community engagement.
Deans’ Leadership Effectiveness in Oromia Teacher Education Colleges.

Abebe Hunde (Assi.Prof.), et.al

Abstract

The main objective of this study was to scrutinize the effectiveness of deanship in Teachers' Training Colleges (TTCs) of Oromia Regional State and to identify factors that hamper deans’ effectiveness in these TTCs. It was delimited to TTCs located in central and southwest by category into first, second and third generations in accordance with their date of establishment. Descriptive survey method was employed. Mixed approach research design was utilized. Data were collected from teachers using questionnaire and from deans and stream heads through interview and FDG. The collected data were analyzed using percentage, standard deviation, weighted mean and one-way ANOVA for quantitative data as well as narration for interview and FGD questions. 93.5% of the respondents were males and the rest 6.5% females. Regarding deanship effectiveness, statistically significant differences exist between the TTCs at P<0.05. For the sake of confidentiality, the TTCs were randomly renamed as TTC1, 2, 3 and 4. Statistically, the leadership in TTC1 was relatively highly effective; TTCs 2and4 relatively moderately effective. The TTC3 was relatively less effective with all mean values below average. Leadership in TTC1 seems more committed, participatory, transparent and democratic when compared with others. Most of the TTCs leadership was affected by staff turnover which in turn hinders the college deans from setting management strategies for quality training. The situation at TTC3 reported unique in such that the leadership seems less visionary, less committed, less participatory and non-transparent in managing college activities. In order to fill the gaps between TTCs’ leadership effectiveness, the assignment of deans of the colleges should be merit based with strong criteria of selection focusing on visionary and committed behavior of the applicant. College deans with knowledge and skill gaps should get the necessary training that enable them carry out their responsibilities. TTCs should be encouraged to develop the culture of experience sharing in order to learn from one another. Evaluation of deans’ effectiveness should be carried out in line with the responsibilities vest on them and the attempts made for quality education and training.
Educational Leadership Practices and Challenges: The case of Woreda Education Offices of Jimma Zone.

Mitiku Bekele (Ph.D), et al

Abstract

The purpose of this study was to assess the practices and challenges of educational leadership in Woreda Education Offices of Jimma Zone. It took into account variables such as setting goals that improve teaching and learning; promoting collaborative learning culture, allocating and aligning resources with the educational priorities of the Woreda, and effective use of data to improve the teaching and learning. A mixed research approach was utilized for this research study. To answer the basic research questions of this study, data were collected from Zone Education department Heads and experts, the Woreda education officers and school principals. Rules and regulation, guidelines, polices and directives of Ministry of Education as well as relevant documents of Regional Educational Bureau and Zonal Education Department were used as source of data. Questionnaires and FGD were employed as data collection instruments. The study revealed that the educational leaders in the Woreda education offices of the Jimma Zone were found to be inadequate in setting goals that lead to the improvement of the teaching and learning. The extent to which the educational leaders align resources to areas of priorities is also below the expected level. Moreover, leadership practices to create professional learning community were not adequate. Their practice of use of evidence or data to make quality decision is also poor. Lack of commitment and motivation, lack of adequate finance, facilities and leadership competences are some of the challenges for leadership practices in the zone. Thus, it is recommended that the Zonal Education Bureau in Collaboration with the Regional Educational Bureau and the Jimma University to work on the leadership challenges identified to bring about leadership effectiveness in the zone.
Developing Special Needs Education Trainees Mathematics Pedagogical Content Knowledge through Heuristic Diagnostic Mathematical Problem Solving Approach.

Adugna Asfaw Emana (Ph.D.)

Abstract
This study examined and developed mathematics pedagogical content knowledge of special needs education trainees through heuristic diagnostic mathematical problem solving approach. A college special needs education trainees ($N = 76$, $n = 40$ in the experimental group and $n = 36$ in the control group) for primary school level, participated in the experiment, conducted for 60 hours. The researcher hypothesized that special needs education trainees mathematics pedagogical content knowledge can be developed through heuristic diagnostic mathematical problem solving approach than the traditional mathematical problem solving approach. A Nonequivalent Pretest–Post-test Control Group Quasi-Experimental Design was employed to conduct the study. The assignment of the respondents was guided by the probability principle-simple random sampling technique was assumed. To collect the data the instrument Mathematics Pedagogical Content Knowledge measures was used. The hypothesis that there was no significant difference in the mean Mathematics Pedagogical Content Knowledge measures achievement among special needs education trainees taught Mathematics Pedagogical Content Knowledge and its sub components with heuristic diagnostic mathematical problem solving approach and traditional mathematical problem solving approach was rejected. The results of the study revealed that heuristic diagnostic mathematical problem solving approach had the highest efficacy in improving the achievement of special needs education trainees taught Mathematics Pedagogical Content Knowledge and its sub components.
Drop Out Among Primary School Students: Causes, Experiences and Probable Measures to Minimize: In Case of Bench-Maji Zone Shey-Bench Wereda.

Addisalem Taye (Lecturer)

Abstract
The main purpose of this study was to assess the causes, experience and probable measures to minimize dropout among primary schools in Benchi-Maji zone Shey Bench Wereda. The study mainly attempted to research major reason that leads students to drop out, the experiences of drop outs while they were out of school and views of students, parents and teachers on probable measures to be taken to reduce dropout. This study is aimed to aware different stakeholders such as students families, teachers, and school administrators to know the root causes of the problem and to recommend possible mechanism of prevention. In order to achieve the stated objectives, mixed research design particularly concurrent or triangulation approach were used. Closed ended questionnaire, semi structured interviews and FGDs were used to collect qualitative and quantitative data from a random sample of n=422 participants. To analyze the quantitative data, descriptive statistics (percentages) and the qualitative data were translated, transcribed, interpreted concurrently with quantitative data and presented in a triangulation method. The results indicated poverty, lack of money to purchase stationery materials, absence of motivating parents, peer pressure and difficulty with instructional language are among the major reasons of dropout among primary school students. With regard to the experience of dropouts, majority of dropouts engaged in helping families, leave the area in search of jobs, and create different work opportunities to deal with life. In addition working with financial aid organizations, GOs, NGOs, eliminating illiteracy of the society through awareness creation programs, developing good interpersonal relationship with students, participating community in educational programs are among major mechanisms identified by stake holders to minimize dropout among primary schools. Finally based on the findings, conclusions and recommendations were made.

Keywords: dropout, experience, primary school, children
Interrupting the Cycle of Poverty and Ensuring Sustainable Development through Early Childhood Interventions.

Berhanu Nigussie Worku (Asso. Prof.) et.al

Abstract
Children living with foster families in a resource-limited setting such as Ethiopia are at risk of developmental problems. It is not yet clear whether intensive home-based developmental stimulation assisted by play can reduce children’s developmental problems. The main objective of this study was to examine the effects of play-assisted intervention integrated into basic services on the developmental performance of children living with foster families in extreme poverty. A randomized single-blind controlled trial design was used. Using computer-generated codes, eligible children of 3-59 months in age were randomly allocated to intervention (n=39) and control (n=39) groups. Personal-social, language, fine and gross motor outcomes were assessed using Denver II-Jimma, and social-emotional outcome was obtained using an adapted Ages and Stages Questionnaire: Social-Emotional (ASQ: SE). Intervention effects were examined using Generalized Estimating Equations (GEE). Statistically significant intervention effects were found for language (P=0.0014), personal-social (P=0.0087) and social-emotional (P<0.0001) performances. At the midline of the study, language and social-emotional benefits from the play-assisted stimulation had already been observed for the children in the intervention group. Intensive home-based play-assisted stimulation reduced the developmental problems of children in foster families in the context of extreme poverty. Longer follow-up may reveal further improvements in the developmental performance of the children. Further, if the poorest and most marginalized children and families are supported early in life with play-based interventions, the cycle of poverty may be interrupted, sustainable development ensured, and developmental outcomes of the children improved.

Keywords: Developmental performance, Developmental stimulation, Extreme poverty, Foster family, Home-based, Play-assisted stimulation, Sustainable development
Assessment on Prevalence of Depression, Anxiety and Stress among Criminal Detainees: In Case of Mizan Teferi Criminal Correction Center

Addisalem Taye (Lecturer)

Abstract
An estimated 450 million people worldwide suffer from mental or behavioral disorders. These disorders are especially prevalent in prison populations. Many of these disorders may be present before admission to prison, and may be further exacerbated by the stress of imprisonment. However, mental disorders may also develop during imprisonment itself as a consequence of prevailing conditions and also possibly due to torture or other human rights violations. The main purpose of this study was to assess the prevalence of depression, anxiety and stress among prisoners who found in Mizan Teferi criminal correction center. The study mainly attempted to answer research questions such as the prevalence of depression, anxiety and stress among prisoners, risk factors of mental health problems in prison center and gender difference in depression, anxiety and stress. In order to achieve the stated objectives, mixed research design particularly triangulation approach was used. For this reason, questionnaire, an in depth interview and FGD were used to collect qualitative and quantitative data from a random sample of 347 prisoners. To analyze the quantitative data, descriptive statistics (percentage, mean, and standard deviation) and inferential statistics (independent t-test and ANOVA) were used, and the qualitative data were translated, transcribed and interpreted accordingly. The results indicated the severity and prevalence of depression, anxiety and stress is higher among prisoners. A symptom of depression, anxiety and stress was highly prevalent among prisoners who are serving less than one year period than those who stayed for long period. According to the survey conducted depression, anxiety and stress was prevalently found among females prisoners than their male counter parts. Prisoners with murder cases shows symptom of depression, anxiety and stress than other criminal offenders. Isolation from immediate family members, the living situation in the prison center feeling of guilty for committing the crime, absence of freedom and isolation from the social gathering where identified as the most common reasons for mental health problem in prison center.

Keywords: Depression, anxiety, stress, prisoners, causal factors.
Leadership Development in Ethiopian Public Universities (EPU): Towards Designing a Multidimensional Leadership Development Model (MDL).

Frew Amsale (Assi. Prof.)

Abstract (Research Proposal)
In this rapidly changing world where knowledge and information place tremendous influences, the development of any nation and its capacity to compete, by large, determined by the country's capability to the effective and efficient utilization of the available knowledge. Consequently, great emphasis is placed on the roles of universities towards effective and efficient utilization of available knowledge. Such are, however, not only very burdensome roles for most universities particularly for those in the developing countries but also hardly possible to utilize knowledge without a strong university leadership. The situation of most African universities, in which the Ethiopian's are no exception, is palpably clear that the quality of their education and research is being declining and their contributions to the domain of knowledge as well as to the development of the continent has becoming limited. The situation signals for the need of appropriate and considerable measures (Teferra, 2010) among which is the development of strong and effective leadership at all levels is central. Hence, studying leadership and leadership development in African HEIs becomes imperative and timely. It is with this conviction that, this study will involve systematic and scientific investigations of leadership development theories and practices and aspires to come up with a multidimensional leadership development model that can work for Ethiopian Public Universities. Accordingly, a Design Based Research approach that involves series of qualitative and quantitative methods will be employed. The DBR will have four phases that will involve context analysis and critical review, model development, iteration and refinement and upgrading and institutionalization. Data will be collected from university leaders, instructors, administrative staff members, policymakers at the national level, university stakeholders. Besides, policy documents at Macro and Micro levels will be consulted. Literature pertaining to leadership development in general and leadership development in universities, in particular, will be systematically and critically reviewed. Both probability and non-probability sampling techniques will be applied to select the samples of the study based on the nature and the purpose of the particular data needed. Variety of qualitative and quantitative data analysis techniques will be employed. The study will come up with, but not limited to, the following outcomes. These are (1) "proto-theory" of multidimensional leadership that can fit to the Higher Education Institutions in Africa countries, (2) prototype of multidimensional leadership development approach/model for Higher Education Institutions in Ethiopia (3) scientific articles to be published in a reputable and high impact factor journal.
The Correlation of Perceived Discrimination and Psychological Well-Being among the Manjo Ethnic Minority in Kaffa Zone, Ethiopia.

Bizuayehu Dengechi (Lecturer), et.al

Abstract

The purpose of this study was to examine the correlation between perceived discrimination and psychological well-being of Manjo ethnic minority in Kaffa zone, Ethiopia. One hundred and forty nine (149) study participants from the Manjo ethnic minority were randomly selected and filled out the perceived discrimination and psychological well-being questionnaire scales. Pearson Product moment correlation was computed to determine the strength and direction of relationship between their perception of discrimination by others and the psychological well-being report. Perceived discrimination is a variability of thought that results from an act of segregation and distancing of an individual or group of individuals mainly because of bias and prejudice. The psychological well-being variable was measured by six dimensions, which are named as autonomy, environmental mastery, personal growth, positive relationship with others, purpose in life and self-acceptance of individuals. The result of the study showed the presence of a strong and significant negative correlation between the Manjos’ perception of discrimination they experience from other ethnic groups and the corresponding psychological well-being state.
Parallel Session 6: Organized by College of Business and Economics

The Impact Of Fair Trade Certification On Small Household Coffee Farmers And Cooperative Unions In Ethiopia

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Abstract

Since more than one third of Ethiopia’s foreign exchange is attributed to coffee product and the production process engages almost one fourth of the working population of the country, in Ethiopia coffee production is one of the most important sectors of livelihood. And the largest portion of coffee production comes from small holder farmers. Small-scale coffee farmers producing for fair trade market outlets are frequently considered to benefit from better prices and stable market outlets. Nevertheless, some empirical studies are verifying this notion adversely. This study, therefore, tried to assess the impact of fair trade certification on the livelihood of small-scale coffee producers using both descriptive and econometrics techniques. The research applied cross-sectional study procedures for the selected 383 respondents in order to deal with economic, social and environmental influences of fair trade introduction in the study area of Jimma Zone, Ethiopia. The study investigated that the introduction of fair trade certification among small-scale coffee producers matters the question of income increment, social responsibility and development, and biodiversity conservation significantly and positively. Therefore, extension of fair-trade certification should be well thought-out as one of sustainable development riding engines and instruments among policy makers.

\textbf{Key Words:} Fair Trade Certification, Cooperative Unions, Coffee, Ethiopia
Financial and Marketing Challenges of Smallholder Farmers: A Study on Members of Agricultural Cooperatives in Southwest Oromia, Ethiopia

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Abstract
Smallholder agriculture plays a great role in food self-sufficiency, employment creation and economic growth. However, studies conducted in Ethiopia indicated that access to finance and output marketing are two of the critical problems affecting the productivity of smallholder farming in the country in general and in Oromia regional state in particular. The main objective of this study is to investigate how smallholder farmers in southwest Oromia zones finance their farming activities and examine problems associated to agricultural input/outputs marketing. To achieve this objective, 400 sample smallholder farmers who are members of agricultural cooperatives were selected from three zones (Jimma, Buno Bedele & Illu Aba Bora) and survey was conducted. Both structured and unstructured interviews were made with farmers and officials of selected primary cooperatives operating in the three zones to scrutinize the issue in depth. In addition, secondary data were collected from Regional and Zonal Cooperative agencies, Central Statistical Authority and Ministry of Agriculture. The data collected were analyzed using both descriptive and inferential statistical tools to come up with appropriate conclusions and recommendations. The finding of the first study showed despite the expansion of cooperatives and MFIs to rural area, there is still a challenge to get credit from these formal financial sources. Some of the problems include, absence of interest free loan for Muslims, long lending procedure, problems related to repayment period. Because of these problems, smallholder farmers tend to prefer informal sources. However, the use of both formal and informal financial sources was found to have a positive significant effect on agricultural productivity. Further, the second study showed the majority of smallholder farmers are using cooperatives for purchase of agricultural inputs. However, smallholder farmers are not selling their agricultural output through cooperatives. Sales value through cooperatives was significantly affected by Crop price of cooperatives, availability of another marketing agent, access to MFIs credit and possession of Livestock. To alleviate the challenges of smallholder farmers, expansion of cooperatives to rural area should be made. Cooperatives should establish marketplaces and warehouse relatively closer to the farmers than other marketing agents in order to increase their sales, as these marketing agents are competing rivals to cooperatives. Further, awareness of smallholder farmers should be increased so that they can effectively control and use their cooperatives to their advantages.

Keywords: Access to finance, input/output Marketing cooperatives, smallholder farmers, southwest Oromia
Socio-Economic Impacts of Khat on Producers and Consumers in Southwest Ethiopia: In the case of Jimma Zone of Oromia regional state

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Abstract

The purpose of this mega research was to investigate the socioeconomic impact of khat production and consumption by taking the case of Jimma Zone of Oromia regional state, Ethiopia. Cross sectional data was gathered from sample respondents (khat consumers and khat producers/traders) from three districts of the zone using structured questionnaire administered through trained enumerators. Respondents were selected using multistage sampling technique. Descriptive statistics and econometric analysis techniques were employed for data analysis. This study result indicates that, khat chewing have negative role on improving respondents saving habits, social life participation. This directly affects economy/income of khat consumer respondents. These negative impacts affect income of consumer directly; this means it affects economic empowerment of respondents. These indicated result of impact on micro level leads to macro level. In spite of the fact that, individual or micro level saving affected negatively by khat chewing and alcohol drinking is directly affects national development by affecting investment. As a result national economy may be affected because of the stated impact that affects saving habits of respondents, which help as engine for growth and development at national level. In addition, khat has a negative impact on consumer’s participation in social life. Khat chewing has also a positive relationship with cigarette smoking and drinking alcohol. This result indicated that there was no clear cut inference that can be drawn regarding the effect of khat production on the various economic and social outcomes considered in the study. While khat production was found to be positively related to better living condition as measured by housing improvement, it was not the case with regard to improvements in household income and housing quality as measured by type of floor. However, khat producing households were generally found to be better in terms of food consumption (consumption of protein rich food items such as meat, egg and fish as well as in terms of overall dietary diversity. This could be due to the immediate but seemingly temporary effect in terms of increasing income on a temporary basis. Given the implication of these aspects of food consumption for food security at household or individual levels, care must be taken as to what policy implication should be drawn as inferences from these findings may be misleading. The reason for this is that despite the positive implication for food consumption and hence food security, khat production could have an aggregate effect of reducing crop production due to the inherent trade-off between khat and crop production. This could lead to fall in food availability at macro/national level, which is a key dimension for food security at national level. The net effect thus could well be negative at different levels including at household level and hence the inferences here should be seen from such perspective. Finally,
the study found an evidence of better participation in social life among khat producers than non-producers. Generally, from empirical analysis of this study, it is to note that the socioeconomic impact of khat on consumer needs more attention from policy makers in particularly. But this mega research project study find that socioeconomic impacts of khat have negative effects on consumer and positive impact for producers. These two contradictory results over the word were still not solved. The number of khat producer and consumers are increase from time to time.

Key words: Khat Impact, Socioeconomic, Consumer, Producer, Logistic regression model

Policy Model of Tax and Subsidy for Achieving a Tobacco-Free Nation

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Abstract
Tobacco use or cigarette smoking has predominantly unenthusiastic effects on human wellbeing causing diminished overall health welfare, minimized labor productivity, and efficiency, and augmented health care cost. Recognized health and socio-economic outlays of smoking, countries began to intervene in the tobacco market through tax and price measures with the intention of reducing tobacco exposure and consumption. However, these interventions have featured some controversies on essential issues like freedom and utility concern from consumers and unemployment worries from producers and vendors. Therefore, to address these arguments the researcher developed intervention policies entitled “Policy Model of Tax and Subsidy to Achieve Sustainable Tobacco Control” well-thought-out tax and subsidy policies as a complement rather than substitute strategies to have a comprehensive campaign on controlling tobacco consumption and exploitation. Furthermore, the developed model can openly apply to other damaging products like khat, cocaine, etc.
Supply Chain Management Practice in Ethiopia: The Case of Selected Manufacturing Firms

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Abstract

Now a days firms are not only competing as autonomous units instead they entered in to an era of competing among different supply chains, leading them to work as a team in the form of network of business relationship. As competition becomes stiff, firms must be more involved in how their suppliers and customers conduct their businesses. To succeed in today’s challenging business environment, firms must be able to effectively integrate the internal function within a company and effectively link them with the external operations of supply chain members. Due attention should be given by firms to supply chain management practices as it has significant influence in enhancing SCM functions and ultimately performances. Accordingly, the objective of this study is to examine the practices and effect of supply-chain management on firms’ competitive advantage; and to look at the effect of inventory management on firms’ performance. Moreover, the study attempted to identify major challenges of supply-chain management in selected manufacturing firms in Ethiopia. To attain the objectives quantitative approach was employed. Moreover, a descriptive inquiry along with causal research design was used. Primary data were obtained from survey questionnaires. Large manufacturing firms; 2 textiles and 2 sugars were selected as samples using purposive sampling technique. In addition, 4 officials from each of the eight departments’ viz., General Managers, Purchasing managers, Technical managers, Operation managers, Quality managers, Transport managers, Sales and IT managers were selected from the four firms included in the study. Hence, a total of 128 respondents from each of the three studies were judgmentally selected. The collected data were analyzed using SPSS 20.0 version using descriptive statistics, Correlation analysis and multiple regressions analysis. Accordingly, based on the regression result it is revealed that the supply chain dimensions included in the study viz., customer relationship management, customer service management, level of information sharing, demand management process, environmental issues, and supplier relationship management were positively and significantly affect firms competitive advantage. Regarding the effect of inventory management on the financial performance of Ethiopian manufacturing firms, the result disclosed that lean inventory system, stocking inventory and strategic supplier partnership have positive and significant influence on the financial performance of manufacturing firms in Ethiopia. Inversely, there is weak positive relationship between information technology and firms’ performance. Among the supply side problems, price of materials, achieving and verifying scorecards and financial stability of suppliers were identified as major challenges. Moreover, planning for output on customers’ forecast was rated as the major internal problem of supply-chain management. On the other hand, rapid changes in demand and too dependent on the business were identified as the major customer-side challenges of firms. Finally, it is suggested that manufacturing firms should create close relationship with customers to differentiate their products from competitors. Moreover, manufacturing firms are recommended to apply information technology like electronic data interchange within and among the supply chain umbrellas as a whole.
Foreign Direct Investment in Ethiopia

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Abstract

This study examined the foreign direct investment (FDI) outlook in Ethiopia: evidence taken from Oromia region, special zones. Ethiopia, one of the fastest growing economies in the world projected to join the lower-middle income countries by 2025, is keep transforming all sectors for better performance and is running a mega projects. In addition to the internal operations, foreign direct investment (FDI) is a catalyst for the economy. Recurrently, the country is keep promoting investment opportunities and signing bilateral agreements to ease trade and investment and to remove double taxations with different countries. Concerning methodology of the study, the researchers have used different methods for each study. Data were collected from primary (feigner investors and local firms) and secondary sources are used as well. The economic stability, geographical location, inexpensive and sufficient labour, growing local market are the leading factors attracting foreign investors to invest in Ethiopia. Trade regulation and custom clearance, limited infrastructure, limited access to foreign exchange and local finance, restrictions of preferred business sectors are some obstacles of foreign investment in Ethiopia. Local companies are also benefited from FDI in knowledge transfer and equipment/technology transfer. To improve the inflow of foreign direct investment (FDI) more, government should therefore invest more in infrastructure and improving policy and regulatory environment, tax reforms, investors’ tax friendly and legal systems, removal of capital controls are essential to FDI attraction and contribution to growth in the economy.

Keywords: Foreign Direct investment, opportunities, challenges, Determinants, Oromia Special Zone
Strategic Human Resource Management Practices and Organizational Performance of Manufacturing Companies in Ethiopia

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Abstract
The purpose of this study was to examine the impact of Strategic HRM practices on organizational performance of manufacturing companies in Ethiopia. In addition, this study also aimed to examine the impact of HRM practices on employees’ work outcomes of manufacturing companies in Ethiopia. The study was explanatory design. A total of 380 employees and managers from 24 manufacturing companies in Addis Ababa responded to the questionnaire about Strategic HRM practices, work outcomes and organizational performance. Both descriptive and inferential statistical analysis techniques used. As inferential statistics Pearson correlation, Hierarchical regression and Structural Equation Modeling were used. The findings revealed that HRM practices: compensation, training & development, and performance appraisal have significant impact on work outcomes of manufacturing companies in Ethiopia. Interestingly, compensation found to have highest impact on work outcomes. Moreover, the findings of hierarchical regression and structural equation modeling showed that SHRM practices do not directly impact organizational performance. SHRM practices first impact work outcomes and then work outcomes impact organizational performance of manufacturing companies in Ethiopia. Moreover, as compared to SHRM practices, work outcomes found to have highest impact on organizational performance. If manufacturing companies to increase their work outcomes, they should improve the compensation, training & development and performance appraisal SHRM practices. Some improvements should be on other SHRM practices such as recruitment & selection, and strategic HR alignment. To achieve lasting results and to contribute effectively to the success of the manufacturing companies, employees must be committed, intends to stay and satisfied. To do so, companies should change employees’ behavior through a systematic set of high performance SHRM practices.

Keywords: HRM, Organizational Performance, SHRM, Work outcomes, Manufacturing companies
Parallel Session 7: Organized by Jimma Institute of Technology

Experimental Evaluation of Bamboo as Fiber in Concrete

Asanti Keno, Dr. Temesgen Wondimu, Engr. Nataraj P.

Abstract
Over the years, the prices of raw materials have been rising from time to time in the construction industries. The use of synthetic fiber was more dominant in reinforcement of concrete than naturally available fiber. There was no emphasis tried to develop for low cost locally available materials and sustainable constructions. The plain concrete possess a very low tensile strength, limited ductility, and little resistance to cracking. Hence to overcome to all these type of problems the alternate ways like bamboo fiber reinforced concreting method has been used. The aim of this research was to determine the experimental evaluation of bamboo as a fiber in concrete to improve the mechanical properties of concrete and to see the effects of fibers on the concrete strength. In this research, mechanical properties of natural bamboo fiber reinforced concrete were examined using the cube crushing test, split tensile test and bending test. Experiments were conducted on concrete beams, cylinders and cubes with various percentages of natural bamboo fibers of 0.5%, 1%, and 1.5% by weight with different bamboo fiber lengths of 30mm, 45mm and 55mm. For each combination proportions of concrete has three beams, cylinders and cubes were tested in laboratory for their mechanical properties. By the testing of cubes, cylinders and beams it was found that there was an increment in the various properties and strength of concrete by the addition of natural bamboo as a fiber in concrete up to some percentage beyond that the strength starts to drop. The compressive strength of bamboo fiber in the concrete was not significantly affected. The 0.5% of bamboo fiber volume content added with concrete attains the highest compressive strength for 28th day curing at the length of 30mm length. The Flexural strength and the Tensile strength were seen to increase considerably with fiber percentage and length up to 22.2% and 15.9% respectively as compared with the control concrete of 0% fiber content. During failure, fiber pull-out was observed and the concrete composites behaved in a ductile manner with the fibers being able to sustain some load even when cracks had developed fully across the specimen. From the research, it was concluded that the greater improvement in flexural and tensile behavior of BFRC outshine the minimal reduction of compressive strength at higher fiber content.

Key words: Bamboo fiber, Compressive and Flexural strength, crack mode, Bamboo Fiber reinforced concrete
Evaluation of the Effect of Rubber Modified Bitumen on Asphalt Performance

Biruk Yigezu, Dr. Ing. Kassa Tadele, Anteneh Geremew

Abstract
In recent years, the quality of many of the major trunk roads in the world has been compromised, as the roads have experienced deterioration, which has given rise to the need for periodic maintenance and rehabilitation. These roads show early signs of distress such as rutting and fatigue cracking. The pavement distress is due to change in weather and high traffic loads. Modified bitumen is assumed to be one of the most important solutions for pavement distress. The aim of this research is on evaluation of the effect of the waste rubber tire modified bitumen on asphalt performance, to investigate physical properties such as the stability and flow and to compare rubber modified with unmodified. Common laboratory tests was performed on the modified bitumen asphalt mix using various sizes of crumb rubber and thus analyzed. Marshall Stability Method was used to determine the Optimum Binder Content (OBC) and to evaluate the properties of the crumb rubber. This study, also attempts to evaluate the rutting potential of the asphalt concrete mixes prepared with crumb rubber modified bitumen using DYNA-Track Single Wheel test. A comparative study is made among the unmodified and modified bitumen samples using various percentage of waste rubber tire bitumen particles. The results of the study revealed that as rubber content increase from 0 to 20% penetration decreased from 68.5 to 58.5 mm. Similarly, for the same percentage increase in rubber content ductility decrease from 100 to 75 cm. Asphalt mixes with crumb rubber 15% have higher stability 14.36KN, which is two times more than the minimum specification and lower marshal flow. From this study it is concluded that recycled crumb rubber can therefore be beneficial to the performance of the asphalt concrete pavements as well as provide a means of safe disposal of these non-biodegradable wastes

Key words: Crumb rubber, Rutting, HMA, Marshal Stability method, DYNA-Track Single Wheel test, Optimum Binder Content (OBC), Permanent deformation, Fatigue Cracking
Investigation of Road Failures in Jimma City

Desalegn Ayele

Abstract
Efficient transportation reduces the cost of raw materials, labor and other products, reducing the cost of production directly. But the safety and efficiency of transport is reduced due to road failure in the global, national as well as local level. The aim of this thesis is to identify the road failure types and its remedial measures in Jimma City and to make recommendations for Jimma City Administration and Ethiopian Roads Authority (ERA). The samples were collected from selected road segment such as pavement condition, type and level of severity of pavement, base and sub base quality and thickness. Field density test was carried out using the sand replacement method. Ten pits are excavated manually with the size of the 1m×1m with the depth range of 0.4 to 1.5m. Geotechnical characteristics of the Soil such as Atterberg limits, grain size, free swell, and compaction and CBR results were determined. Rutting, potholes, alligator crack, as well as longitudinal cracks were observed on the pavement surface. Thickness of base course and sub base course is thin layered, the soil material is high expansive because of clays of high plasticity, the grading value of material is courser and poor graded. On the basis of the results of this research, it can be concluded that material used for sub grade is week, insufficient thickness of sub base and base material used, problem of compaction, poorly graded particle was used. The researcher recommends the pavement could be rehabilitated with over lays; the sub grade material could be removed and replaced, modify the existing road base and sub base thickness with granular overlay, make suitable compaction, better quality control for material, control drainage problem, proper pavement preservation techniques, guidelines and policy could be implemented.

Keywords: Efficient transportation, Road failure, granular overlay, week sub-grade, poor graded, grain size.
Integration of Electrochemical with Advanced Oxidation Processes (AOPs) for the Removal of Pollutants from Industrial Effluents

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Abstract
Distillery industrial effluents are highly colored, high Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD) and acidic in nature. Due to the stringent environmental rules and regulation the effluent can be treated before letting out to the environment. The aim of the present investigation is to treat the distillery effluent using electrocoagulation, peroxi-electrocoagulation and ozone enhanced electrocoagulation process, respectively. In the experiment, Fe is used as anode and cathode. The Fe is dissolved and form feroxy hydroxyl radicals and settles down in the electrocoagulation process. In the peroxi-electrocoagulation process hydrogen peroxide (H\textsubscript{2}O\textsubscript{2}) has been added externally to enhance the electrocoagulation process. In the ozone-enhanced electrocoagulation process, ozone is diffused through the electrocoagulation and enhances the conventional electrocoagulation process. The effect of operating parameters on percentage color and COD removal has been critically studied. All the three processes the percentage color and COD removal of the distillery effluent has been compared and the best method also been reported. The experimental results indicated that the optimum operating condition for each process the color and COD removal efficiency is in order of peroxi–electrocoagulation>ozone–electrocoagulation>electrocoagulation.

Keywords: Ozonation, Electrocoagulation, Peroxi – Electrocoagulatio, Ozone – electrocoagulation, Distillery effluent, Color and COD removal.
Miscibility and Phase Separation of Polyaniline and Polypyrrole Blends

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Abstract
Recently, polymer blend is one of hot research areas for polymer scientists and engineers in order to develop a new polymer material and its wide-range scientific and technological applications. Polymer blends have a broad range of applications, e.g., drug delivery, encapsulation, supercapacitor, sensor, optoelectronics, etc. Nevertheless, the inclusive application of polyaniline/polypyrrole (PANI-PPy) compound is limited by the miscibility and solubility of polymer compounds in a common solvent. This property affects the optoelectronic, mechanical and morphological properties of this compound material. Hence, enhancing the miscibility and compatibility properties of PANI-PPy should be significance. Thermodynamic miscibility means mixing of the components on a molecular level, resulting in a homogeneous structure. According to the principle of thermodynamics, when the free energy of mixing is negative, the thermodynamic miscibility and homogeneity can be reached. In this work, we study the miscibility and phase separation of PANI-PPy, depending on the weight fraction of the two polymers. The polymer blend samples were prepared by solution processing method. The polymer PPY blended with PANI as a function of composition using the solvent dimethyl sulfoxide (DMSO). Characterization of the polymer blends has been conducted using Fourier Transform Infrared Spectroscopy (FT-IR), x-Ray Diffraction (XRD), Differential Scanning Calorimetry (DSC), and scanning electron microscopy (SEM). The PANI-PPy blends were successfully obtained by solution processing. The crystallinity of the blend is negligible and it is in amorphous state. The results obtained indicate that the polymer blend 50:50 (wt. %) PANI-PPY has one glass transition temperature, which means that the polymer blend is miscible and has no phase separation.

Keywords: Conducting Polymer Blends; Miscibility; Phase Separation; Glass Transition Temperature; Polymer Electronics
Polymer Semiconductor Thermodynamics and Electronics

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Abstract

Polymer semiconductor transports charges based on its electronic structure of carbon with \( \text{sp}^2\text{p}_z \) configuration, allowing \( \pi \)-conjugated systems. These functional properties of organic chain molecules have generated “Polymer Electronics” having main applications in Organic Photovoltaics (OPV), Organic Light-Emitting Diode (OLED), Organic Field-Effect Transistor (OFET), Organic Spintronics (PSP), etc. In this study, we study the phase diagrams for four conjugated polymer/fullerene blends of interest for polymer solar cells, namely semicrystalline poly(3-hexylthiophene) (P3HT):methanofullerene [6,6]-phenyl C61-butyric acid methyl ester (PCBM), poly(2-methoxy-5-(3′,7′-dimethyloctyloxy)-\( \text{p} \)-phenylenevinylene) (MDMO-PPV):PCBM, poly(2-methoxy-5-(2′-ethylhexyloxy)-\( \text{p} \)-phenylenevinylene) (MEH-PPV):PCBM, and poly(2,6-4,4-bis-2-ethylhexyl-4H-cyclopenta2,1-b;3,4-bdithiophene-alt-4,7-2,1,3-benzothiadiazole) (PCPDTBT): PCBM have been constructed based on X-ray scattering data and differential scanning calorimetry (DSC). The phase behavior of the blends is directly correlated with electrical properties, e.g., charge transport and solar cell performance. In general, after phase separation of materials, a high performance of OPV devices and ambipolar charge transport behavior of OFET devices are observed. Finally, the phase behavior of P3HT solution itself was studied using, UV-Vis spectroscopy, thermo-optical analysis, x-ray scattering, etc. and then the relation between phase behavior and electrical properties of OFET devices was studied.

Keywords: Polymer Semiconductor; Thermodynamics; Phase Diagram; Electronics: Organic Photovoltaics; Organic Field-Effect Transistor
Partial Replacement of Cement by Coffee Husk Ash for C25 Concrete

Abebe Demisew, Dr.-Ing. Fekadu Fufa, Sintayehu Assefa

Abstract
Concrete is a mixture of aggregates and binders. From concrete ingredients the binder and the most costly and environmentally unfriendly element is cement and it is one of the environmental unfriendly processes due to the release of CO$_2$ gases to the atmosphere and environmental degradations. Coffee husk is an agricultural by product of coffee bean, which is a result of dry process. Coffee husk usually considered as a type of agriculture waste; as its quantity rises, the treatment/disposal of it will become an environmental problem. In Ethiopia enormous amounts of coffee husk is generated annually from different coffee pulpler. Conversely, it has poorly been utilized or left to decomposed or otherwise dumped in the environment. As a result, this research was conducted to produce coffee husk ash concrete from coffee husk. Due to the booming of the construction activity in the country, there is high demand of cement. This research was therefore, aimed to examine the potential of coffee husk ash as partial replacement for ordinary Portland cement (OPC) in C-25 concrete production with investigation of optimum ratio of replacement and engineering properties of C-25 concrete. Coffee husk samples were collected from different coffee treatment centres in Jimma Zone, Jimma City and it was carbonized at 550 °C temperature for 3 hours in an oxygen-deficient environment and its chemical and physical properties were investigated. After that, the pastes containing OPC and coffee husk ash at 2, 3, 5, 10 and 15% of replacement were investigated with zero percent of coffee husk ash as a control mix. Six different concrete mixes were prepared for 25MPa concrete with water to cement ratio of 0.5 and 360 kg/m$^3$ cement content. The properties of these mixes have then been assessed both at the fresh and hardened state. The results of the concrete work have shown that, up to 10% replacement of the coffee husk ash achieved a higher compressive strength at all test ages i.e. 7, 14, and 28 days of age by compressive test machines. However, the results of the cube compressive strength and densities show that the compressive strength and density reduces as the percentage of coffee husk ash increases. It can therefore, be concluded that 10% replacement of cement by coffee husk ash results in a similar concrete properties with control test and it is the optimum replacement.

Keywords: Coffee husk ash, Compressive strength, Concrete, Environment
Effect of Alkalization and Polyaniline Coating on the Surface of Sisal Fiber: Morphology and Mechanical Property Study.

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Abstract
Sisal fiber (Agave sisalana) was extracted by manual process and subjected to surface modification upon alkali treatment to improve surface adhesion between the fiber and polymer-matrix. The surface of sisal fibers was further modified with conducting polyaniline, through \textit{in situ} oxidative polymerization which is reported in this work for the first time. The free and polyaniline modified sisal fibers were characterized by thermal, spectroscopic and microscopic instruments such as: thermogravimetric analysis (TGA), Fourier transform infrared (FT-IR) spectroscopy, energy dispersive X-ray (EDX) spectroscopy, scanning electron microscopy (SEM) and X-ray diffraction (XRD). The results were used to explain some of the thermal, structural and morphological aspects of sisal fibers (SF) and polyaniline coated sisal fibers (PAni/SF).

From FT-IR spectra, alkali treatment was effective method to remove lignin and hemicellulose from surface of SF. This process also facilitates exposing cellulosic surface for further modifications. SEM micrographs of SF confirmed removal of different impurities and cracks from the surface upon coating of PAni through \textit{in situ} oxidative polymerization. Detection of intense peaks of Cl and N from EDX spectra confirmed, PAni was successfully deposited on the surface of SF. This in turn proved the introduction of active surface functionalities to the system.

\textbf{Keywords:} sisal fiber; polyaniline; surface modification; \textit{in situ} method
Irrigation Potential Assessment on Shaya River Sub-Basin in Bale Zone, Ethiopia.

Nasir Gabi, Tame Adugna, Tolera Abdissa

Abstract
The population of Ethiopia largely lives rural and depends on agricultural for their livelihoods. But agricultural production has not kept pace with population growth leading to sever chronic malnutrition and hunger, and periodic crises induced by drought. The growing population will result in considerable additional demand of food. Most of the demands will be met by the products of irrigated agriculture and this increase needs to be accomplished under increasing scarcity of water. This study was initiated to assess the land resources potential of the Shaya River sub basin in Bale Zone of Oromia for irrigation and providing geo-referenced map of these resources using Geographic Information System. By delineating the boundary of the study area, irrigation suitability of each physical land parameters was classified based on the Food and Agricultural Organization guideline for land evaluation in to highly suitable (S1), moderately suitable (S2), marginally suitable (S3) and marginally not suitable (N) suitability classes independently, where the final potentially irrigable land was identified by weighting the factors of suitability. The main suitability factors used to identify the potential irrigable land were slope, texture, depth, drainage characteristics, land use/cover and distance to water source. Irrigation water requirement of five commonly grown crops were computed from climate data input using FAO Penman-Monteith in CROPWAT 8.0 software and the capacity of low flow as well as 90% time of exceedence flow of the available surface water in the respective sub basins is estimated. The command area was identified by comparing the irrigation water demand and water potential of the water source in the study area. The suitability analysis of the parameters indicates that 66.38% slope, 98.20% soil, 92.93% land use/cover of the study area were classified as potentially suitable for irrigation development in the study area. By weighing analysis of all parameters 22.05% of the study area was found to be highly suitable, 25.27% moderately suitable and 16.20% marginally suitable whereas about 33.57% was restricted for irrigation developments. By comparing the irrigation water demand and available monthly flow of the river, the total irrigation potential command area was found as 71,046.03ha. So expand irrigation to technology, provision of storage reservoir has to be implemented in the river sub basin.

Key words: FAO, GIS, Irrigation potential, Land suitability, Shaya river basin, Soil analysis
Biogas Production From the Blends of Wastewater and Macro Algae

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Abstract

Energy is the fundamental requirements for the economic development of the world. It can be obtained from renewable and non-renewable sources. Energy from non-renewable sources has been exploited to assure and sustain the need for sustainable development. However, non-renewable energy sources have been depleted and forced researchers to search for alternative cost effective and environmental friendly energy sources. Thus, energy production from biomass has obtained considerable attention. The aim of this study was to investigate the enhancement of biogas production through Anaerobic Digestion from blends of Wastewater and Macro algae. The Macro algae are functioned as a co-substrate. A single factor experimental design with three level of mix in triplicate of each level was used with the response variable; quantity of biogas varies with the variation of mix ratio. Series of laboratory scale batch anaerobic co-digestion of the Wastewater and algae biomass were carried out under mesophilic condition for 21 days. Biogas production rates from Wastewater alone, and different blends of Wastewater and Macro algae (MA) were analysed. In addition, the nutrient values and reduction in volume of the Wastewater after digestion were determined. The results show that CH$_4$ productions of 39.7%, 51.7% and 57.9% were obtained for Wastewater (WW) alone and for WW: MA mix ratios of 3:1 and 3:2, the values of TS, VS and COD also reduced by 43.11%, 40.09% and 71.99% at optimum mix ratio respectively. At optimum mix ratio 1732.77, 77.14 and 174.26 kg/year of Urea, diammonium phosphate and potash fertilizer respectively were obtained. The results indicate that biogas production can be improved through co-digestion of WW and MA as a co-substrate; thus warranting further investigation for practical application in the energy production.

Keywords: biogas; anaerobic co-digestion; Wastewater; Macro algae
Evaluation of the Water Allocation Strategies In Koftu Irrigation Scheme

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Hydraulics and Water Resources Engineering, JIT

Abstract
This study was carried out to evaluate the present status of water allocation and distribution strategies of Koftu irrigation scheme. The main focus of the study was to bridge the information gap with special reference to the mechanisms used to allocate and distribute water by ensuring adequate, reliable and fair water distribution among water users without disputes to sustain the scheme. The relevant data were collected from the schemes from February to April 2017 and in October 2017 for this purpose. The study employed surveying the key informant and expert interview, group discussion, personal observation, household interview and flow measurements were used to collect primary data. In addition, relevant literature and essential documents that were used for the study were reviewed. Findings showed that the irrigation systems relative water supply and irrigation supply were 2.06 and 2.49 respectively for the scheme. These values showed that the scheme withdraw more water than demanded. And also the result shows that the reliability of the scheme was 0.8. The value of adequacy and equity of water is decreased based on the location of the farm plot which is TC1, TC2 and TC3 are 1.03, 0.82 and 0.61 and 0.98, 0.79 and 0.65 respectively these were happen because of the siltation problem, which lead to the fluctuation of water distribution. The internal rules of the IWUA such as rules for water distribution, an organization of collective maintenance work, mechanisms for recovering the irrigation service fee, sharing of information within the IWUA, discipline, and permissions. And also they are organized in different development groups (garee misoomaa) to fulfill the mechanisms developed by IWUA There is limited water disputes which are happened by water scarcity, water theft, lack of proper control of water distribution and competition due to increasing number of water users. Whenever these disputes over irrigation water have occurred, the WUA addresses through Water users’ committee immediately. In order to sustain the scheme without fail the beneficiaries need the institutional support such as organization and management, maintenance and increase the scheme’s capacity beyond their regular maintenance. Finally, the paper draws a number of conclusions about necessities of some readjustment points of the surveyed small scale irrigation scheme and come up with the option.

Key Words: Allocation, Irrigation, Small-scale, Equity, Adequacy, Reliability and WUA
Hydraulic modeling and water supply distribution system network case study of Jimma Town, Ethiopia.

Dawd Temam, Tamene Adungna and Hassen Ahmed
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Abstract
Water supply distribution system modeling is a method of representing the real system, analyzing and approximating the real water supply distribution system behavior and operating conditions using computer softwares to solve short comings facing water utilities. Some districts like Saris/Sar Sefer/ and some high elevation areas in Jimma Town are facing lack of an access of potable water supply. As a result, the people living in these areas are travelling more than a kilometer to fetch water from springs around Jimma Town, but there are no real evidences which show the real causes of the problems; because there were no studies conducted on the distribution system of Jimma Town. So to identify the main causes for the water shortage at the mentioned areas, to assess the operating condition and hydraulic behavior of the distribution system, to identify problems related to flow and pressure, to evaluate and improve the current performance of the distribution system and to simulate the future condition of the system, it is found crucial to prepare this hydraulic model for Jimma Town Water Supply distribution system. The objective of this study is to model the entire water supply distribution network of Jimma Town from the treatment plant Clear water well to the customers and to analyze and evaluate the performance of the system under various physical and hydraulic conditions including fire flows. The model is prepared using the combination of waterGEMS, AutoCAD, waterCAD and GIS softwares. This study is conducted with the aim of enabling JWSSE operators to ensure the safety of the distribution system without wasting time and energy; because it is possible to manage the system simply on a computer using the model once the WDN model is linked to GIS, water billing and other information management systems of the utility. To prepare the model, different primary and secondary data were collected and analyzed. Then after running the model for both steady state and EPS, low pressure values around Gebrel Tank, high velocity and head loss through the gravity main, and low velocities through most of the pipes were observed. Finally, it’s concluded that even though the main problem of potable water shortage is pressure deficit, the main from the old treatment plant to Gebrel Tank might be closed. Then solutions are suggested using different scenarios.

Keywords GIS, Hydraulic Modeling, Scenario, Simulation, Water Distribution Network, Water GEMS
Parallel Session 8: Organized by College of Law and Governance


Abiot Desta\(^1\) and Girma Defere\(^2\)

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Abstract

The foundation for building a democratic developmental state (DDS) is the ability of the state to establish a nationalist educated workforce that staff the state bureaucracy, the private sector, and the civil society with the aim to create and constitute a coherent set of strategic partnerships amongst societal domains representing political, economic, and the associational spheres while at the same time enjoying reasonable degree of autonomy and independence: authoritative and functional. This study assessed the state of ‘Embedded Autonomy’ in policy formulation and implementation in the DSS model of Ethiopia. Three key institutions which represent the society’s major spheres of influence were examined: the National Planning Commission representing the state, the Ethiopian Chamber of Commerce and Sectorial Associations representing the private sector, and the Ethiopian Federal Charities and Societies Forum representing the civil society. The Ethiopian Charities and Societies Agency was considered as an “intermediary space” between the state and the civil society and included as a part of the study institutions. The study employed the qualitative research strategy and Evans’ (1995) conception of ‘Embedded Autonomy’ as a conceptual framework. Demonstrated by, amongst others, low level of rationalization of state bureaucracy corresponded by low level of networking with dominant socio-economic classes, the DDS model of Ethiopia shows a low level of ‘embedded autonomy’ thereby featuring certain attributes of a predatory state. This is, however, not to relegate the emerging scenarios of restructuring, institutionalization, and acts of punishing rent seekers, which can show some commitments of the government to take the ideals of a developmental state on board thus signifying the belief that DDS can offer an alternative ideological orientation for development of Ethiopia but that prevailing barriers need to be removed if the hope for change along this ideation is to be realized. We, thus, recommend that the government should play a leading role in strengthening and sustaining the already initiated measures of creating structures and institutions; invest in not merely access to but determinedly in quality of higher education with a particular aim of rationalizing the bureaucracy; and ensure sustainable alliances with the private sector and the civil society.

Key words: Democratic Developmental State, Embedded Autonomy/Policy Formulation and Implementation/Ethiopia
The Role of Micro-finance in Improving the Lives of Microfinance Client Households: A Case Study of Six Selected Woredas in Kaffa Zone, SNNPRS

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Abstract
This study assesses the role of micro-finance of programs in improving the lives of microfinance client households, selecting six woredas of Kaffa Zone, SNNPRS as study areas. Such assessment focuses on the outreach of the microfinance programs in the study area, the impact on household incomes of the clients, the effect on employment, issues of gender empowerment, and investigating the problems associated with the operation of the microfinance programs.

The study has a cross-sectional study design and mixed approaches of quantitative and qualitative approaches. The study uses both primary data, though it is predominantly based on primary data. The major instruments of data collection used in this study are questionnaire, key informant interviews, and focus group discussions (FGD). The study population of this study is microfinance clients Bonga area, Gimbo, Decha, Tello, Menjio, and Chena Woredas. As questionnaire respondents a total of 300 microfinance clients were selected from the study population. The data collected from the respondents using the above mentioned instruments were analyzed using proper techniques.

The findings of this research show that the poorest sections of the society have adequate access to microfinance services; the microfinance programs have brought significant increase in the income of their clients, both nominal and real net income increase; the programs have resulted in the creation of employment opportunities, for the microfinance clients, their family members and other people as well; after using microfinance services women clients have managed to improve their condition, with some reservations; and some problems are encountered in using microfinance services as effective tools of poverty alleviation.
Determinants of Household Food Security in Kemisse Special Zone: the case of Dawachefa Wereda

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Abstract

This study was conducted to investigate the determinants of household food security in Dawachefa wereda kemisse special zone. To achieve the objectives of the study descriptive case study was used by the researchers. The necessary data for this study was collected from primary and secondary sources. In this case, primary data were collected from respondents through interview, focus group discussion and personal observations.

On the other hand, this study used non-probability sampling technique to select the target sites. Among the non-probability sampling techniques researchers used purposive (judgmental) sampling to get the resourceful persons on the issue at hand and to identify the study areas. Consequently, the data gained from respondents through primary and secondary sources were analyzed qualitatively in words.

Furthermore, the finding of this study shows that the main factors contributed to food insecurity in Dawachefa wereda were environmental crisis, variability of rainfall, increased soil erosion and socio-economic factors such as traditional farming system and practices, Population pressure, poor asset base of the rural households, poor infrastructure, inappropriate production systems and low level of education were the main one.

The study also found some limitations with regard to good governance like, challenge of democratic institutions of governance, challenges in implementing poverty-focused growth policies in the area, lack of good-governance, participation and empowerment.

Finally, this research paper identified coping mechanisms and survival strategies to mitigate the impact of food shortage, such as diversification of productive activities, risk management and natural resource conservation.
The Humans and Biotechnological Innovations: What Role for Fundamental Human Rights Norms?

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Abstract
Undoubtedly, much hope has been placed in the promise that biotechnology offers in addressing critical socio-economic and health problems challenging humanity. There are already strong empirical evidence recording impressive achievements and breakthrough in the area. For this reason, countries around the world are increasingly giving attention to biotechnological innovations although the level and magnitude varies according to their level of development. However, this field is not a risk-free enterprise. The gravity of the risks involved is quite significant especially because the human person is involved both as an object and the subject (as the means and end) in the process. In both respects, the life, dignity, and welfare of the human being are directly and seriously engaged. This, in turn, implies that countries must take a strict and careful approach in the legislative, institutional policy frameworks concerned with biotechnological innovations and applications. This presentation, therefore, aims to highlight the implications of fundamental human rights norms in striking the balance between humanity’s urgent need for biotechnological innovations and the security that should be put in place so as to avoid unnecessary risks on the one hand and promote human welfare on the other.

Key words: human rights, autonomy, human dignity, right to life, human welfare, biotechnology, biotechnological risks
A Comparative Assessment of the Role of Private Investment in Poverty Reduction in Illubabor and Jimma Zones, Oromia National Regional State

Kaleb Amanu and Bizuayehu Daba

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Abstract
The research was assessing the role of private investment in poverty reduction in Jimma and Illubabor zones comparatively. There was almost little study was done by other researchers in this areas and the research intended to fill such hole. For this purpose, necessary and careful literature reviews were done before. This research is workout by using a qualitative approach of research methodology and as far as the sampling technique concerned, we employed non probability sampling technique. From non probability sampling, purposive sampling technique was chosen. To this effect, Jimma and Illubabor Zones were purposively selected because of their prominence to Jimma university and which helps to save time and to implement one of the well known axiom of JU and that is “we are in the community” to promote the livelihoods of the community. Finally, the data gathered by using primary and secondary sources and the results proved that private investment is very important for the alleviation of poverty. For sure, there is a complementary relationship between private investment and poverty reduction. Moreover, the study finally recommends that Jimma and Illubabor zones should seriously work in creating enabling environment for private investment.

Keywords: Comparative, Determinants, Private Investment, Poverty Reduction
Land Dispute Management in Oromia Regional State: Specific Reference to the Case of Dispute Between Individual and State

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Abstract
Land is a major source of disputes in the world. Land dispute composes various type of disputes which ranges from the simple boundary dispute to the wider ownership rights claim. Land conflicts in general have negative effects on individual households as well as on the nation’s economy. The land dispute should, therefore, be seen carefully to minimize the negative impact it brought to an individual and the stability of the country in general. In Ethiopia, the right to own rural and urban land as well as natural resources belongs to the state and the peoples. Land is an inalienable common property of the nations, nationalities and peoples of Ethiopia and shall not be subject to sale or to other means of transfer. Accordingly, the individuals have only holding rights over the land not the ownership rights. Land is a source of dispute in Ethiopia like another part of the world. The dispute is a bit serious in our country due to absence of good land administration. The issue of the land dispute between the individual and the state in Ethiopia arises when there is expropriation by the state land under the holding of individuals. There is no absolute right over the property and this is true for land regardless of the kinds of rights exercised over it. The writer prefers to appraise the land dispute settlement mechanism in case state involved due to the fact there is a separate scheme for the settlement unlike that of dispute between individuals. The appraisal of the existing legislations governing the dispute settlement mechanism and the practices in Oromia regional state in line with property rights theories demonstrates as, there is a limitation on the subject matter of the complaint, the administrative organ to hear grievance is not an independent as they are politically appointed persons, individual disputant is required to hand over the land to lodge an appeal. The existing dispute settlement mechanism in general can be said inappropriate as the land taker is empowered to handle the dispute. This in turn is making the land holders to face multifaceted social and economic hardship. The dispute settlement scheme must be, therefore, rectified by establishing an independent organ empowered to hear the grievance which may be a specialized court for this purpose.

Key words: land, land dispute, dispute settlement mechanisms, administrative organ
When Large-scale Land Acquisition Meets Local Conflict: Experiences from Gambela Regional State, Ethiopia

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Abstract
This study examines the arrival of the (trans)national investment companies in Gambela Regional State of Ethiopia where the Anyuaa and Nuer ethnic groups struggle over land and natural resources. The study aimed to explore the implication of the convergence of the large-scale land acquisition and resource based local conflict towards the local community in the region. A qualitative research approach was taken to carry out the study. Accordingly, findings from in-depth qualitative interviews, focus group discussions and key informant interviews show that the (trans)national investment companies contributed for the escalation of the conflict in the region. The arrival of the (trams)national companies, through the country’s pro-large-scale investment policy, in the region where land has been contested by groups organized along ethnic fault-lines, created the competition and struggle over land increasing the number of competitors on the same land. The study concludes that the nexus between the large-scale land transfer and resource-based conflict in the region resulted de-peasntization and proletariansation of the rural poor in the region. Therefore, apposite land policy and governance is needed since such policy and governance not only contributes for sustainable development and manage the conflict but also helps to empower the rural poor beyond its role to redress the damage done.

Keywords: Anyuaa; Ethiopia; Gambela; Large-scale land acquisition; Local conflict; Nuer
An Examination of the Treatment of Persons Sentenced to Death in the Ethiopian Criminal Justice System

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Abstract
Capital punishment is the ultimate punishment that could be imposed on criminals. Currently many countries around the world use capital punishment for various kinds of crimes ranging from adultery, treason, drug related crimes to murder. The Ethiopian criminal code also sanctions death penalty for selected serious crimes. In older days the sentence and execution was simultaneous. People sentenced to death used to be executed within minutes or hours of their sentence. With the development of human rights and complexity of the legal systems, the stay for the execution has risen from few days, in some extreme circumstances, to 38 years in countries like Yemen. Prisoners sentenced to death wait for long years to get executed. The wait by itself without the addition of other factors is a violation of human rights of persons sentenced to death. During their wait for execution, prisoners suffer various forms of human rights violations. These groups of prisoners are kept isolated and are prohibited from leaving the room for up to 20hrs in a day. In addition, prisoners in some prison administrations are also required to clean the execution room or watch other prisoners getting executed. The length of time they spend in prison to get executed, the harsh conditions they live in while waiting for their execution and other procedural elements such as absence of prior notification before their death results in death row phenomena. The death row phenomena is a violation of the human rights of prisoners as it violates the right to life, the right against degrading and inhumane treatment and the right to timely trial of prisoners. In Ethiopia, even though the regulation provides for segregation of death row prisoners in practice inmates are housed in the same prison conditions as other prisoners. Death row inmates enjoy all the benefits provided by the prison administration without any discrimination. The fear of dying is almost non-existent in Ethiopian prisons. As a result the psychological trauma felt by other prisoners in other countries does not exist in Ethiopian Prisons. Even though prisoner cannot be considered to have experienced death row phenomena, the government must provide a solution for the current dilemma where prisoners simply live in prisons without knowing what comes next. Accordingly the writer would like to recommend the following points. First, the researcher alone has counted more than 80 prisoners in death row. The country seems not ready to start execution. Even those accused of deliberate genocide have not been executed let alone criminals who killed one or two persons. Hence, death sentence should be commuted to life imprisonment paving the way for release and be productive member of the society again. Second, currently more than 140 countries have abolished a death penalty for all crimes (in 1977 it was only 16). It is time for Ethiopia as well to abolish a death penalty.

Key words: Death sentence, criminal code, Ethiopia

Recently the government has released more than 3000 inmates from Federal and Regional prison administrations. Prisoners sentenced for serious crimes have also been released. Criminals accused of killing innocent civilians in Guraferda of SNNPR have been released as well.
Realizing the Right to Equality and Non-Discrimination of Persons with Disabilities in Ethiopia: Assessing Policy and Practice Since the 2014 Universal Periodic Review

Zelalem Shiferaw¹ and Samson Alemayehu²

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²Head, DJNA

Abstract

Persons with disabilities (PWDs) are entitled to enjoy the rights guaranteed under international human rights instruments ratified by Ethiopia equally with others. Accordingly, the government of Ethiopia is expected to take measures that help to prevent discriminations against such group of persons which hinder their equal participation and enjoyment of human rights. In this regard, the government has taken remarkable steps to prevent discrimination of PWDs through ratifying the International Convention on the Rights of Persons with Disabilities (CRPD) and taking legislative and other measures. Nonetheless, recent findings reveal that much is expected of the government in preventing discrimination of PWDs and ensuring their full enjoyment of human rights equally with others. PWDs are discriminated against in various fields and prevented from freely exercising their human rights. The recommendation adopted by the Human Rights Council of the UN during the Universal Periodic Review (UPR) conducted in 2014 which the government accepted underscored that the government should, inter alia, mobilize effort to prevent discrimination against PWDs. This study has assessed the adequacy of legislative measures taken by the government to prevent discrimination against PWDs since the UPR of Ethiopia conducted in 2014. In addition, it has examined the responses of key government organs that are responsible for the protection of the rights of PWDs and other stakeholders.

Key words: Action Plan, Equality, General Principles, Non-discrimination, Reasonable accommodation
The Roles of Micro and Small Enterprises in Promoting Women’s Empowerment in Some Selected Towns of Jimma Zone, Ethiopia

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Abstract
The goal of this research was to assess the Roles of Micro and Small Enterprises in Promoting women’s Empowerment in some selected towns of Jimma Zone (Jimma, Agaro, Yebu and Serbo). The research design adopted was qualitative research method which was selected based on theoretical framework adopted in this research, research questions and participants of this research. The informants of the research include women and concerned local government institutions. So as to select these subjects, purposive sampling methods was used. Similarly, to collect data four data gathering tools, such as in-depth interview, focus group discussion, direct observations and documentary analysis were employed. The collected data were transcribed and analyzed through qualitative analysis methods by taking context of the research and the perspective of informants into ground. The study found out that Micro and Small enterprises has played significant roles in empowering some women entrepreneurs economically and socially by improving their livelihoods. The incomes they generated through their enterprises enhanced women’s economic decision making capacity, purchasing capacity on common household expenditures, control over income and savings, freedom of mobility and also boosting their social interactions or networking and friendships. The study also revealed that women entrepreneurs have been faced serious challenges against their business such as lack of appropriate working and selling places, market linkages, loan, and shortages of raw materials, frequent interruptions of electric power supply and market saturations. So, the researchers recommended that all concerned government institutions shall try their best in order to address such problems to advance women’s empowerment through micro and small enterprises to the best level.

Keywords: Women, Micro and Small enterprises, Empowerment, Jimma Zone
The Performance of Condominium Housing Program in Jimma Town, Ethiopia: A Case Study

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Abstract
The study was conducted in six condominium sites to assess the performance of condominium housing program in Jimma town, Ethiopia. Adopting a formula from Bernard (1995,) and Krejcie & Morgan (1970), out of 1029 households, 280 questionnaires were accidentally distributed among condominium residents of the study area. Besides, two focus group discussions with 11 participants from two condo sites, and an interview with two officials from Jimma town Housing Agency were also conducted. Moreover, field observation in the condo sites was held. The study reveals that condominium housing is not affordable to the poor section of the town. Most of the houses are rented, and a significant number of houses are transferred to third parties as well. Above all, most of the houses are transferred to people who are not from Jimma town, to Jimma University and to rich people of the town, not to the intended beneficiaries of the program. Furthermore, residents of the houses are suffering from problems related to infrastructure, and basic facilities such as access to road, water provision, waste management system etc. Thus, the government shall revise its policy regarding the financial capabilities of urban poor to repay the housing loans; there should be strict verification and coordination among cities and towns to avoid multiple registration for condo housing. Above all, the demand for condo housing is higher than the supply. Thus, the government should invest aggressively, and allow & encourage entrepreneurs to participate in supplying (affordable) houses to the poor with best possible quality.

Keywords: Affordable, Beneficiaries, Condominium, Jimma town, Multiple registration.
The Nexus between Globalization and Human Rights:  Africa in Perspective

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**Abstract**

The proliferations of scientific discovery and technological advancement have made the world much smaller and more interconnected culturally, economically, politically and in many other aspects. The consequences of this global transformations are much more enormous than anticipated. Unfortunately, even though for some, globalisation promises peace and prosperity on an unprecedented scale; for others, it brought injustice, inequality, poverty, national disintegration, conflict and gross violation of human rights. Africa, being part of the process, is experiencing both the positive and negative aspects of globalisation. Of the many aspects globalisation has in Africa, its impact on human rights is the focus of this paper. It addresses the positive and negative bearing of globalization on the enjoyment and protection of human rights and the mechanisms available in the continent to forestall the negative consequences thereof. The paper is a desktop research, solely depend on reviews of available literature.

Hence, although there are some positive aspects globalization has on the enjoyment and protection of human right in the Continent, the paper highlights more on its contribution for the violations of various fundamental human right principles, such as the right to life, the right to protection of health, the right to safe and healthy working conditions, freedom of association etc. The paper recommends that as some human right violation in this globalised era are committed by entities other than states; African human rights system needs to have human right instruments that can put responsibilities on these non-state actors. Besides, making globalization work in Africa needs the political commitment and cooperation between and among African states. African states must realise that globalisation is inevitable so that changing globalization for the better is unavoidable choice. Most of all, African states need to put human rights at the for front of any political and economic policies, hence, the continent will probably turn the impact of globalization positive in the long term.
Resolving Large Scale Conflicts: Political Vis-à-vis Judicial Solutions under the FDRE Constitution

Tadesse Simie

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Abstract

Ethiopia’s new era, a period that commenced following the end of the period of transition and with the entering into force in 1995 of a new constitution that established the FDRE, is believed to have been founded upon a promise of non-repetition of large scale conflicts. Such a promise was envisaged mainly in the decision of Transitional Government of Ethiopia to prosecute members and affiliates of the Dergue. The fact that the new constitution has incorporated human rights provisions like never before was also largely viewed as a guarantee that the era of violence has departed for good. In fact, the promise of non-repetition of violence is echoed in several paragraphs of the preamble of the constitution such as those vowing to rectify ‘historically unjust relationships’, to ensure lasting peace and consolidate prospects of democracy that ‘our struggles and sacrifices have brought about’.

Alas, the FDRE had begun witnessing a new episode of a trilogy of conflicts, even before the Dergue trials came to a conclusion. Large scale political, economic and ethnic violence that claimed numerous lives and displaced thousands, and even hundreds of thousands, of Ethiopians have occurred in several parts of the country on several occasions. To resolve these conflicts, the FDRE has proposed and implemented solutions of political nature in which it granted amnesty to alleged perpetrators, facilitated inter-ethnic peace dialogues, and applied traditional dispute resolution mechanisms. And, currently, both the Federal and regional governments are holding national peace conferences aimed at restoring peace and balance in the country. Notwithstanding the potential significance of political solutions, the FDRE Constitution imposes a ‘national obligation’ to bring to justice perpetrators of large scale or widespread atrocities that it refers to as ‘crimes against humanity’. This paper discusses the interplay between political and judicial solutions to resolve large scale conflicts.
Conference Program

Opening Session

Day 1: April 26, 2018

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<td>8:45-8:50</td>
<td>Introduction to the Conference Program</td>
<td>Mrs. Cherer Aklilu, Senior Director, Office of External relations and Communications</td>
<td>Mr. Ermias Admasu</td>
<td>JUCAVM Hall</td>
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<tr>
<td>8:50-9:00</td>
<td>Welcoming Speech</td>
<td>Dr. Tsige Ketema, V/president for Research and Community Services, JU</td>
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<tr>
<td>9:00-9:10</td>
<td>Opening Remarks</td>
<td>Prof. Fikre Lemessa, President of Jimma University</td>
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<td>9:10-9:30</td>
<td>Key-note address</td>
<td>Guest of Honor</td>
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Plenary Papers Presentation Session

Venue: JUCAVM Hall

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<th>Chairperson and Rapporteurs</th>
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<tr>
<td>9:30-10:00</td>
<td>Prospect of Biotechnology in the Context of the Bio-economy: Potential in Ethiopia</td>
<td>Dr. Kassahun Tesfaye</td>
<td>Chairperson Prof. Taye Tolemariam Rapporteurs Dr. Kenenisa Lemie Dr. Gemechis File</td>
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<tr>
<td>10:00-10:30</td>
<td>Application of Biotechnology in Various Sectors for Sustainable Development</td>
<td>Dr. Hailu Dadi Melka or Dr. Dawit Tesfaye Degefu</td>
<td>Dr. Fikadu Mitiku Dr. Mulumebet Abera</td>
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<td>10:30-11:00</td>
<td>Discussion</td>
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<td>11:00-11:20</td>
<td>Group Photo</td>
<td>Health Break</td>
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<tr>
<td>11:20-11:50</td>
<td>The Potential of Biotechnology in the Development of Ethiopian Agriculture</td>
<td>Prof. Kassahun Bante</td>
<td>Chairperson Prof. Deribew Belew Rapporteurs Dr. Fikadu Mitiku Dr. Mulumebet Abera</td>
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<tr>
<td>11:50-12:20</td>
<td>Enhancing the Use of Biotechnology for Improving Health Care in Developing Countries</td>
<td>Prof. Delenasaw Yewhalaw</td>
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<tr>
<td>12:20-13:00</td>
<td>Discussion</td>
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Lunch Break

Note: In the afternoon sessions, participants may join one of the eight Parallel Sessions based on their interest
### Parallel Session 1

**Organized by College of Agriculture and Veterinary Medicine**

**Day 1: April 26, 2018**

<table>
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<tr>
<th>Time</th>
<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson and Rapporteurs</th>
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| 15:00-15:20| Study of Reproductive Performances, Effective Population Size and Level of Inbreeding of Indigenous Sheep Types in Eastern Arsi Zone of Oromia Regional State, Ethiopia | Prof. Kirmani Manzoor Ahmed | **Chairperson:** Prof. Solomon Demeke  
**Rapporteurs:** Mr. Mulubirhan Beyissa, Dr Weyessa Geredaw and Mr. Sirawdink Fikreyesus | B2 26/27 |
| 15:20-15:40| Determinants of marketed surplus of potato producers in Dedo district of Jimma zone, Ethiopia | Mr. Abduselam Faris         |                              |       |
| 15:40-16:00| Acrylamide occurrence in *Keribo*: Ethiopian traditional fermented Beverage               | Mr. Kumela Dibaba          |                              |       |
| 16:00-16:20| Determinants of marketed surplus of rice among smallholder farmers in shebe sombo district of Jimma zone, Ethiopia | Mr. Ibrahim Aliyi           |                              |       |
| 16:20-16:40| Geographical origin differentiation of Ethiopian coffee via multi-elements and stable isotopes fingerprinting | Mr. Mohammed Worku         |                              |       |
| 16:40-16:00| Study on effect of estrus synchronization on pregnancy rate of cross bred cows in Jimma city | Mr. Sileshi Tadesse        |                              |       |
| 17:00-17:30| Discussion on presentations                                                                |                            |                              |       |

**Day 2: April 27, 2018**

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<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson and Rapporteurs</th>
<th>Venue</th>
</tr>
</thead>
</table>
| 8:30-9:10  | Linking Agricultural Education and Research                                                  | Dr Mendefro Nigussie      | **Chairperson:** Dr Gezahegn Berecha  
**Rapporteurs:** Dr Amsalu Nebiyou, Mr Tamiru Chalchisa, and Dr Takele Sori |       |
<p>| 9:10-9:30  | Value chain analyses of rice in shebe sombo district of Jimma zone, Ethiopia                 | Mr. Ibrahim Aliyi          |                              | B2 26/27 |
| 9:30-9:50  | Epidemiological investigation of cause of abortion in cattle at limu seka and chora boter districts of Jimma zone, southwestern Ethiopia | Dr Benti Deressa          |                              |       |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>9:50-10:10</td>
<td>Sero-prevalence of Q–fever in dairy farms and slaughter house of Jimma town, southwestern Ethiopia</td>
<td>Dr Feyissa Begna</td>
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<tr>
<td>10:10-10:30</td>
<td>Health Break</td>
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<tr>
<td>10:30-10:50</td>
<td>Survival and growth analysis of multipurpose trees, shrubs and grasses to rehabilitate badlands in the sub-humid tropics</td>
<td>Dr Ayalew Talema</td>
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</tr>
<tr>
<td>10:50-11:10</td>
<td>Effects of altitude, shade and postharvest processing method on biochemical composition and quality of green arabica coffee beans in southwestern Ethiopia</td>
<td>Mr. Mohammed Worku</td>
<td>Chairperson: Prof Kasahun Bante Rapporteurs: Dr Wakuma Bayissa, And Mr Akalu Dafissa,</td>
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</tr>
<tr>
<td>11:10-11:30</td>
<td>Value chain analysis of Potato in Dedo district of Jimma zone, Ethiopia</td>
<td>Mr. Abduselam Faris</td>
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<tr>
<td>11:30-12:30</td>
<td>Discussion on presentations</td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<tr>
<td>14:00-15:00</td>
<td>Preparation for general discussion Business discussion with External Stake holders with the Dean, Vice dean, Coordinator for Research and PGs and interested staff Ranking Best Oral Presenter of the parallel session Certificate award for Oral and Poster Presenters</td>
<td>Dean, Research and PGS coordinators</td>
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<td>15:00-15:30</td>
<td>Health Break</td>
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<tr>
<td>15:30-18:00</td>
<td>Presentation of Important Issues raised in Parallel Sessions and General Discussion Conference Evaluation Certificate award for best oral presenters</td>
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# Parallel Session 2

**Organized by Jimma University Institute of Health**

## Day 1: April 26, 2018

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<tbody>
<tr>
<td>3:00-3:20</td>
<td>Evaluation of the Genotoxicity of improper handling of Mineral Water bottled in Polyethylene Terephthalate (PET)</td>
<td>Dr. Alemauehu Addis</td>
<td>Dr. Mistire Wolde</td>
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<tr>
<td>3:40-4:00</td>
<td>Dyslipidemia and associated factors among women using hormonal contraceptives in Harar town, eastern Ethiopia</td>
<td>Mr. Waqitola Cheneke</td>
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<td>B1/26-27</td>
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<tr>
<td>4:00-4:20</td>
<td>Seroprevalence and risk factors of hepatitis B, hepatitis C and HIV infections among prisoners in Jimma Town, Southwest Ethiopia</td>
<td>Mr. Wakijira Kebede</td>
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<tr>
<td>4:20-4:40</td>
<td>Folk Practice During Birth Process and Justifications Beyond the Practice in Ethiopia: A Systematic Review</td>
<td>Mr. Sena Belina</td>
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<td>4:40-5:30</td>
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## Day 2: April 27, 2018

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<tr>
<td>8:30-8:50</td>
<td>Investigating Factors that Impede Proper Prescription Writing: The Case of Jimma University Specialized Hospital</td>
<td>Mr. Guta Legese</td>
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<tr>
<td>8:50-9:05</td>
<td>Healthcare associated infection and its risk factors among patients admitted to a tertiary hospital in Ethiopia: longitudinal study.</td>
<td>Dr. Solomon Ali</td>
<td>Dr. Kunuz Abdella</td>
<td>B1/26-27</td>
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<tr>
<td>09:05-9:20</td>
<td>Emergence of multidrug resistant, extensively drug resistant and pan drug resistant bacteria isolates from patients with health care associated infections at Jimma University Medical Center.</td>
<td>Mr. Mulatu Gashaw</td>
<td>Dr. Lelisa Sena</td>
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<tr>
<td>9:20-9:35</td>
<td>Psychological morbidity and substance use among patients with hypertension: a hospital-based cross-sectional survey from Southwest Ethiopia</td>
<td>Mr. Mathwos Soboka</td>
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<td>Health Break</td>
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<tr>
<td>10:30-10:45</td>
<td>Prevalence and Intensity of Soil Transmitted Helminthiasis among pregnant women attending Antenatal care clinic, Jimma University Hospital</td>
<td>Mr. Daniel Dana</td>
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<td>Dr. Berhanu Seyoum</td>
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<td>Dr. Ahmed Zeynudin</td>
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<tr>
<td>10:45-11:00</td>
<td>Determinants and Outcome of Safe Second Trimester Medical Abortion at Jimma University Medical Center, South West Ethiopia</td>
<td>Mr. Yibeltal Siraneh</td>
<td>B1/26-27</td>
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<td>11:00-11:15</td>
<td>Comparison of preservation and stool DNA extraction methods for the molecular detection and quantification of soil-transmitted helminth infections in stool.</td>
<td>Mr. Mio Ayana</td>
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<tr>
<td>11:15-11:30</td>
<td>Quality of anthelminthic medicines available in Jimma Ethiopia</td>
<td>Mr. Sileshi Belew</td>
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<td>11:30-11:45</td>
<td>Health workers Motivation and Retention Strategies to bridge the gap in Human resource in Ethiopia</td>
<td>Mrs. Abonesh Taye</td>
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<td>11:45-12:30</td>
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<td>14:00-</td>
<td>Preparation for general discussion</td>
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<td>Business discussion with External Stake holders with the Dean, Vice dean, Coordinator for Research and PGs and interested staff</td>
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<td>3:30-6:00</td>
<td>Presentation of Important Issues raised in Parallel Sessions and General Discussion</td>
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# Parallel Session 3

**Organized by College of Natural Sciences**

**Day 1: April 26, 2018**

<table>
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<tr>
<th>Time</th>
<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson and Rapporteurs</th>
<th>Venue</th>
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<tbody>
<tr>
<td>15:00-15:30</td>
<td>Determination of Selected Heavy Metals in Water, Sediment and Fish Tissues of Gilgel Gibe (I) Hydroelectric Dam and Its Potential Tributaries, southwest Ethiopia</td>
<td>Dr. Abera Gure</td>
<td>Chairperson: Prof. Ketema Bacha</td>
<td>JUCAVM Hall</td>
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<td>Rapporteur: Dr. Negera Abdisa</td>
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<tr>
<td>15:30-16:00</td>
<td>Phytochemical Screening of Some Selected Traditionally Used Medicinal Plants and Its Metal Complexation for Antibacterial Activities</td>
<td>Dale Abdisa</td>
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<tr>
<td>16:00-16:30</td>
<td>Phytochemical Investigation of Roots of <em>Kniphofia isoetifolia</em> and Evaluation of its Antibacterial Activities</td>
<td>Melaku Meshesha</td>
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<tr>
<td>16:30-18:00</td>
<td>Discussion</td>
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**Day 2: April 27, 2018**

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<th>Time</th>
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<tbody>
<tr>
<td>8:30-9:00</td>
<td>Misuse of Statistics in Research</td>
<td>Dr. Shibru Temesgen (AAU)</td>
<td>Chairperson: Dr. Chernet Tuge</td>
<td>JUCAVM Hall</td>
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<td>Rapporteur: Mr. Megersa Tadese</td>
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<tr>
<td>9:00-9:30</td>
<td>Modeling time to recovery (remission) of adult diabetic patients who were under follow up and under treatment</td>
<td>Tafere Tilahun</td>
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<tr>
<td>9:30-10:00</td>
<td>Joint mixed-effect model for longitudinal data analysis on hypertensive patients receiving treatment in Jimma University Specialized Hospital</td>
<td>Yasin Negash</td>
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<td>10:10-10:30</td>
<td>Health Break</td>
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<tr>
<td>10:30-11:00</td>
<td>Entanglement amplification of intracavity photons in a non-degenerate parametric oscillator (NDPO)</td>
<td>Dr. Tamirat Abebe</td>
<td>Chairperson: Dr. Chernet Tuge</td>
<td>JUCAVM Hall</td>
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<td>Rapporteur: Mr. Derse Tekestebrihan</td>
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<tr>
<td>11:00-11:30</td>
<td>Knowledge Based System for land coffee matching Jimma zone</td>
<td>Chala Diriba</td>
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<tr>
<td><strong>11:30-12:30</strong></td>
<td><strong>Discussion</strong></td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<tr>
<td>14:00-15:00</td>
<td>Preparation for general discussion</td>
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<td>College Dean</td>
<td>JUCAVM Hall</td>
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<td>Business discussion with External Stake holders with the Dean, Vice dean, Coordinator for Research and PGs and interested staff</td>
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<td>College Research and PG Coordinator</td>
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<td>Ranking Best Oral Presenter of the parallel session</td>
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<td>15:00-15:30</td>
<td>Health Break</td>
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<td>15:30-18:00</td>
<td>Presentation of Important Issues raised in Parallel Sessions and General Discussion</td>
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**JUCAVM Hall**
### Parallel Session 4

**Organized by College of Social Sciences and Humanities, Jimma University**

**Day 1: April 26, 2018**

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>15:00-15:15</td>
<td>The Implementation of Peer Led Team Learning Principles and It's Challenges: The Case of Undergraduate EFL Classes in Selected Universities In Ethiopia</td>
<td>Mr. Dawit Tesfaye &amp; Mr. Endalfer Melese</td>
<td>Dr. Jira Mekonin (Chair Person)</td>
<td>B1/21-22</td>
</tr>
<tr>
<td>15:15-15:30</td>
<td>Science Fiction in Ethiopia: Genre Study of Some Selected Novels</td>
<td>Mr. Belachew Weldegebrie</td>
<td>Dr. Yimam (Rapporteur)</td>
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</tr>
<tr>
<td>15:30-15:45</td>
<td>Cooperation and Problematic Relationships between Customary and Formal Legal Systems among the Tulama Oromo of Ethiopia</td>
<td>Mr. Melaku Abera</td>
<td>Dr. Tewodros Belayneh</td>
<td></td>
</tr>
<tr>
<td>15:45-16:00</td>
<td>Community-Based Health Insurance in Ethiopia: Breadth of Benefit, Population Uptake and the Prospect in Averting the Problem of Poor people’s Access to Health Services in Districts of Jimma Zone, Oromia Regional State</td>
<td>Mr. Bisrat Tesfa</td>
<td>Ms. Fitih Alemu (Rapporteur)</td>
<td>B1/21-22</td>
</tr>
<tr>
<td>16:00-16:15</td>
<td>An Exploration of the Extent of Job Satisfaction of Academic and Non-academic Staffs: The Case of College of Social Sciences and Humanities (CSSH), Jimma University</td>
<td>Mr. Yonas Berkesa</td>
<td>Dr. Alemayehu Fekede (Rapporteur)</td>
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<tr>
<td>16:15-16:30</td>
<td>Retrospective Experience as a Conceptual Tool of Originality: With reference to Haile Gerima’s Cinematic Narratives</td>
<td>Dr. Wondimu Legesse</td>
<td>Dr. Tewodros Belayneh</td>
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<tr>
<td>16:30-17:00</td>
<td>Discriminatory Discourses of Leprosy Leprosy-Affected Communities and the Underpinning Social Constructs: Addis Ababa &amp; Kuyara in Focus</td>
<td>Dr. Daniel Taye</td>
<td>Dr. Tewodros Belayneh</td>
<td></td>
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<tr>
<td>17:00-15</td>
<td>The Syntax of Negation Phrase in Afan Oromo</td>
<td>Dr. Tewodros Belayneh</td>
<td>Dr. Tewodros Belayneh</td>
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<td>17:15-17:45</td>
<td>Discussion</td>
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<tbody>
<tr>
<td>8:30-9:00</td>
<td>Plenary paper for the College by invited guest</td>
<td>Dr. Dejene Gemechu</td>
<td>Dr. Dejene Gemechu (Chair Person)</td>
<td>B1/21-22</td>
</tr>
<tr>
<td>9:00-9:15</td>
<td>Land Tenure and Challenges of Tenure Security: The case of Dedo District, South Western Ethiopia</td>
<td>Mr. DerejeTesema</td>
<td>Amenti Bahru (Rapporteur)</td>
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<td>Time</td>
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<td>9:30-10:10</td>
<td>Discussion</td>
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<td>10:10-10:30</td>
<td>Health Break</td>
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<tr>
<td>9:00-9:30</td>
<td>The Effects of Using Topical Structure Analysis (TSA) on the Writing Performances and Conceptions of Jimma University Students In “Basic Writing Skills Class”</td>
<td>Mrs. Aberash Tibebu (PhD Candidate)</td>
<td>B1/21-22</td>
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<td>Dr. Gebrtsadic Bossen</td>
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<td>Ms. Rahel G/Michael (Rapporteur)</td>
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<td>Mr. Ayehu Bacha (Rapporteur)</td>
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<tr>
<td>11:00-11:15</td>
<td>A Critical Analysis of Stakeholders’ Discourses on the Road Safety Problem in Ethiopia</td>
<td>Dr. Getachew Tilahun</td>
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<tr>
<td>11:15-11:30</td>
<td>Investigating Factors that Impede Proper Prescription Writing: The Case of Jimma University Specialized Hospital</td>
<td>Mr. Guta Legese (PhD Candidate)</td>
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<td>11:30-12</td>
<td>Discussion</td>
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<td>12:30-14:00</td>
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<td>14:00-15:00</td>
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<tr>
<td></td>
<td>Certificate award for best oral presenters</td>
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</tbody>
</table>
## Parallel Session 5

### Organized by College of Education and Behavioral Sciences

#### Day 1: April 26, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson &amp; Rapporteurs</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00-15:20</td>
<td>Schools Climate and Student Achievement in Secondary Schools of Ethiopia</td>
<td>Abeya Geleta (Dr.)</td>
<td></td>
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</tr>
<tr>
<td>15:40-16:00</td>
<td>Educational Leadership Practices and Challenges: The case of Woreda Education Offices of Jimma Zone</td>
<td>Mitiku Bekele (Dr.)</td>
<td>Mebratu Tafesse &amp; Fedilu A/Gumbul</td>
<td>B2/23</td>
</tr>
<tr>
<td>16:00-16:20</td>
<td>Leadership Development in Ethiopian Public Universities (EPU): Towards Designing a Multidimensional Leadership Development Model (MDL).</td>
<td>Frew Amsale</td>
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<tr>
<td>16:20-17:30</td>
<td>COMMENT AND GENERAL DISCUSSION</td>
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#### Day 2: April 27, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson &amp; Rapporteurs</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-8:50</td>
<td>Developing Special Needs Education Trainees Mathematics Pedagogical Content Knowledge through Heuristic Diagnostic Mathematical Problem Solving Approach.</td>
<td>Adugna Asfaw (Dr.)</td>
<td></td>
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</tr>
<tr>
<td>8:50-9:10</td>
<td>Drop Out Among Primary School Students: Causes, Experiences and Probable Measures to Minimize: In Case of Bench-Maji Zone Shey-Bench Wereda.</td>
<td>Addisalem Taye</td>
<td>Wudu Melese (Dr.) &amp; Woldu Assefa</td>
<td>B2/23</td>
</tr>
<tr>
<td>9:10-9:30</td>
<td>Interrupting the cycle of poverty and ensuring sustainable development through early childhood interventions</td>
<td>Berhanu Negussie</td>
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<tr>
<td>9:30-10:10</td>
<td>COMMENT AND GENERAL DISCUSSION</td>
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<tr>
<td>10:10-10:30</td>
<td>Health Break</td>
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<tr>
<td>10:50-11:10</td>
<td>Assessment on prevalence of Depression, Anxiety and Stress among criminal detainees: In Case of Mizan Teferi criminal correction center</td>
<td>Addisalem Taye</td>
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<tr>
<td>11:10-12:30</td>
<td>COMMENT AND GENERAL DISCUSSION</td>
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<tr>
<td>12:30-14:00</td>
<td>Lunch Break</td>
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<tr>
<td>14:00 - 15:00</td>
<td>Preparation for general discussion Business discussion with External Stakeholders with the Dean, Vice dean, Coordinator for Research and PGs and interested staff Ranking Best Oral Presenter of the parallel session Certificate award for Oral and Poster Presenters</td>
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<td>B2/23</td>
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<tr>
<td>15:00 - 15:30</td>
<td>Health Break</td>
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<tr>
<td>15:30-18:00</td>
<td>Presentation of Important Issues raised in Parallel Sessions and General Discussion Conference Evaluation Certificate award for best oral presenter</td>
<td></td>
<td>JUCAVM Hall</td>
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</table>
# Parallel Session 6

**Organized by College of Business and Economics**

**Day One April 26, 2018**

**Venue: B2/24**

<table>
<thead>
<tr>
<th>Time</th>
<th>Mega Project</th>
<th>Specific study</th>
<th>Presenters</th>
<th>Chairperson/Reporter</th>
</tr>
</thead>
</table>
| 15:30 - 16:00| The Impact Of Fair Trade Certification On Small Household Coffee Farmers And Cooperative Unions | **Study 1:** Economic impact of fair trade certification on small holder coffee producers and cooperative unions  
**Study 2:** The impact of fair trade certification on social responsibility and development of small holder coffee producers and cooperative unions  
**Study 3:** Environmental and natural resource management impact of faire trade certification | Mr. Fikadu Gutu  
Dr. Wondaferahu Mulugeta  
Mr. Sisay Tola | Mr. Kenenisa Lemie  
Dr. Kenenisa Lemie  
Mr. Tesfaye Melaku |
| 16:00 - 16:30| Socio-Economic Impacts of Khat on Producers and Consumers in Southwest Ethiopia: In case of Jimma Zone | **Study 1:** Does Khat have a socio Economic Impacts on Producers?  
**Study 2:** What are the socioeconomic impacts of Khat on Consumers | Dr. Jemal Afita  
Mr. Fekadu Gutu |

**April 27, 2018 (Day Two)**

**Venue: B2/24**

<table>
<thead>
<tr>
<th>Time</th>
<th>Mega Project</th>
<th>Specific study</th>
<th>Presenters</th>
<th>Chairperson/Reporter</th>
</tr>
</thead>
</table>
| 8:30 – 9:10  | Strategic Human Resource Management Practice and Organizational Performance of Manufacturing companies in Ethiopia | **Study 1:** The Effect of Strategic Human Resource Practices on Employees Work Outcomes in Manufacturing Companies in Ethiopia | Mr. Wubshet Mengesha  
Mr. Belay Chekol  
Mr. Seid Hussen | Dr. Zerihun Ayenew  
Mr. Reta Megersa  
Mr. Seid Hussen |
| 9:10 – 10:00 | Supply Chain Management Practice in Ethiopia: Case of manufacturing Firms | **Study 1:** Relationship between Supply Chain Management Practice and Competitive Advantage of Manufacturing Firms  
**Study 2:** The Effect of Inventory Management on Financial Performance of Manufacturing Firms  
**Study 3:** Challenges and Prospects of Supply Chain Management in Manufacturing Firms in Ethiopia | Mr. Seid Hussen  
Dr. Arega Seyoum  
Mr. Mohammed Yassin |  
Mr. Reta Megersa  
Mr. Mohammed Yassin |
| Health Break (10:00 – 10:30) |  |  |  |  |
| 10:30 – 11:10| Financial and Marketing Challenges of Smallholder Farmers in South West Ethiopia | **Study 1:** Access to Finance of Smallholder Farmers: The Case of Selected Primary Cooperatives in South-west Ethiopia  
**Study 2:** Assessing the Role of Cooperatives in Facilitating Output Marketing Services | Dr. Deresse Mersha  
Dr. Zerihun Ayenew | Dr. Arega Seyoum  
Ms. Haymanot Alemayew |
| 11:10 – 12:00| Foreign Direct Investment in Ethiopia | **Study 1:** Prospects and Challenges of FDI in Ethiopia: Evidence from Oromia Special Zones | Mr. Tesfaye Hailu |  |
**Book of Abstracts of the 9\textsuperscript{th} Annual Research Conference of Jimma University**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:15 – 13:15</td>
<td><strong>Study2</strong>: Determinants of FDI in Ethiopia</td>
<td>Mr. Million Gezaw</td>
</tr>
<tr>
<td>13:15 – 14:00</td>
<td><strong>Study3</strong>: The effect of FDI on Local Companies: Evidence from Oromia Special Zones</td>
<td>Mr. Wondmu Abule</td>
</tr>
<tr>
<td>14:00 – 14:30</td>
<td>Lunch Break</td>
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<tr>
<td>14:00 – 14:30</td>
<td>Policy Model of Tax and Subsidy for Achieving a Tobacco-Free Nation</td>
<td>Mr. Sysay Tola</td>
</tr>
<tr>
<td>14:30 – 15:30</td>
<td>Policy Model of Tax and Subsidy for Achieving a Tobacco-Free Nation</td>
<td>Dr. Deresse Mersha.</td>
</tr>
<tr>
<td>14:30 – 15:30</td>
<td>Discussion with External stakeholders, Preparation for General discussion and Ranking best oral Presenters</td>
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<tr>
<td>15:00 -15:30</td>
<td>Health Break</td>
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<tr>
<td>15:30-18:00</td>
<td>Presentation of Important Issues raised in Parallel Sessions and General Discussion</td>
<td>JUCAVM Hall</td>
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<td></td>
<td>Conference Evaluation</td>
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<td>Certificate award for best oral presenters</td>
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</table>
## Parallel Session 7

**Organized by Jimma Institute of Technology, Jimma University**

**Day 1: April 26, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson and Rapporteurs</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00-15:15</td>
<td>Miscibility and Phase Separation of Polyaniline and Polypyrrole Blends</td>
<td>Tekalign Aregu</td>
<td>Dr. Dejene and Dr. Olu Femi Emmanuel</td>
<td>B2/26-27</td>
</tr>
<tr>
<td>15:15-15:30</td>
<td>Polymer Semiconductor Thermodynamics and Electronics</td>
<td>Jung Yong Kim</td>
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<tr>
<td>15:30-15:45</td>
<td>Effect of alkalization and polyaniline coating on the surface of sisal fiber: morphology and mechanical property study.</td>
<td>Tesfamariam Teklu or Lodrick M. Wangatia</td>
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<tr>
<td>15:45-16:15</td>
<td>Integration of electrochemical with advanced oxidation processes (AOPs) for the removal of pollutants from industrial effluents</td>
<td>Dr. P. Asaithambia</td>
<td></td>
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<tr>
<td>16:15-16:30</td>
<td>Biogas production from the blends of wastewater and macro algae</td>
<td>Wagari Mosisa</td>
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<tr>
<td>16:30-17:30</td>
<td>Questions and general discussion on the papers</td>
<td>For all presenters</td>
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**Day 2: April 27, 2018 Afternoon**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson and Rapporteurs</th>
<th>Venue</th>
</tr>
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<tbody>
<tr>
<td>8:30-8:45</td>
<td>Hydraulic modeling and water supply distribution system network case study of Jimma Town, Ethiopia.</td>
<td>Dawd Temam</td>
<td>Dr. Kinde Aniley and Dr. Tofic Jemal</td>
<td>B2/26-27</td>
</tr>
<tr>
<td>8:45-9:00</td>
<td>Evaluation of the effect of rubber modified bitumen on asphalt performance</td>
<td>Biruk Yigezu</td>
<td></td>
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<tr>
<td>9:00-9:15</td>
<td>Experimental evaluation of bamboo as fiber in concrete</td>
<td>Asanti Keno</td>
<td></td>
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<tr>
<td>9:15-9:30</td>
<td>Evaluation of the water allocation strategies in koftu irrigation scheme</td>
<td>Deme Betele</td>
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<tr>
<td>9:30-10:00</td>
<td>Questions and general discussion on the papers</td>
<td>For all presenters</td>
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<tr>
<td>10:00-10:30</td>
<td>Health Break</td>
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<tr>
<td>Time</td>
<td>Session</td>
<td>Speaker(s)</td>
<td>Location</td>
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<tr>
<td>10:30-10:45</td>
<td>Partial replacement of cement by coffee husk ash for C25 concrete production</td>
<td>Abebe Demisew or Sintayehu Assefa, Dr. Kinde aniley and Dr. Tofic jemal</td>
<td>B2/26-27</td>
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</tr>
<tr>
<td>10:45-11:00</td>
<td>Irrigation potential assessment on Shaya river sub-basin in Bale zone, Ethiopia.</td>
<td>Nasir Gabi</td>
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<tr>
<td>11:00-11:15</td>
<td>Investigation of road failures in Jimma city</td>
<td>Desalegn Ayele</td>
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<td>11:15-11:30</td>
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<tr>
<td>11:30-12:30</td>
<td>Questions and general discussion on the papers</td>
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<tr>
<td>12:30-14:00</td>
<td>Lunch Break</td>
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<tr>
<td>14:00-15:00</td>
<td>✔ Preparation for general discussion</td>
<td>Dean/scientific director, Research and PGS coordinators</td>
<td>B2/26-27</td>
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<tr>
<td></td>
<td>✔ Business discussion with External Stake holders with the Dean, Vice dean, Coordinator for Research and PGs and interested staff</td>
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<td></td>
<td>✔ Ranking Best Oral Presenter of the parallel session</td>
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<td>✔ Certificate award for Oral and Poster Presenters</td>
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<tr>
<td>15:00-15:30</td>
<td>Health Break</td>
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<tr>
<td>15:30-18:00</td>
<td>Presentation of Important Issues raised in Parallel Sessions and General Discussion Conference Evaluation Certificate award for best oral presenters</td>
<td>JUCAVM Hall</td>
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</tbody>
</table>
# Parallel Session 8

## Organized by College of Law and Governance

### Day 1: April 26, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities/title of the papers</th>
<th>Presenter</th>
<th>Chairperson and Rapporteurs</th>
<th>Venue</th>
</tr>
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<tbody>
<tr>
<td>15:00 – 15:25</td>
<td>The Role of Micro-finance in Improving the Lives of Microfinance Client Households: A Case Study of Six Selected Woredas in Kaffa Zone, SNNPRS</td>
<td>Mr. Bisrat Gebru</td>
<td>Mr. Girma Defere (Chair) Mr. Tsegaye Dejene (Rapporteur)</td>
<td>B2/25</td>
</tr>
<tr>
<td>15:25 – 15:50</td>
<td>The Roles of Micro and Small Enterprises in Promoting Women’s Empowerment in Some Selected Towns of Jimma Zone, Ethiopia</td>
<td>Mr. Bizuayehu Daba</td>
<td></td>
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</tr>
<tr>
<td>15:50 – 16:15</td>
<td>A Comparative Assessment of the Role of Private Investment in Poverty Reduction in Illubabor and Jimma Zones, Oromia National Regional State</td>
<td>Mr. Kaleb Amanu</td>
<td></td>
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</tr>
<tr>
<td>16:15 – 16:40</td>
<td>Determinants of Household Food Security in Kemisse Special Zone: the case of Dawachefa Wereda</td>
<td>Fentaw Seid</td>
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<tr>
<td>16:40 – 17:05</td>
<td>An Examination of the Treatment of Persons Sentenced to Death in the Ethiopian Criminal Justice System</td>
<td>Mr. Yosef Alemu (Asst. Prof.)</td>
<td></td>
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<tr>
<td>17:05 – 17:30</td>
<td>The Nexus between Globalization and Human Rights: Africa in Perspective</td>
<td>Mr. Muhammad Hamid</td>
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### Day 2: April 27, 2018

<table>
<thead>
<tr>
<th>Time</th>
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<th>Presenter</th>
<th>Chairperson and Rapporteurs</th>
<th>Venue</th>
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<tbody>
<tr>
<td>8:30-8:55</td>
<td>Realizing the Right to Equality and Non-Discrimination of Persons with Disabilities in Ethiopia: Assessing Policy and Practice since the 2014 U-niversal Periodic Review</td>
<td>Mr. Zelalem Shiferaw (Asst. Prof)</td>
<td>Mr. Kassaye Muluneh (Chair)</td>
<td>B2/25</td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
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<tr>
<td>9:20 – 9:45</td>
<td>The Quest for Democratic Developmental State of Ethiopia: The State of Embedded Autonomy in Policy Formulation and Implementation</td>
<td>Mr. Abiot Desta</td>
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<tr>
<td>9:45 – 10:10</td>
<td>Land Dispute Management in Oromia Regional State: Specific Reference to The Case of Dispute Between Individual and State</td>
<td>Mr. Muhammad Kebie</td>
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<tr>
<td>10:10 – 10:30</td>
<td>Health Break</td>
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<tr>
<td>10:30 – 10:55</td>
<td>Resolving Large Scale Conflicts: Political Vis-à-vis Judicial Solutions under the FDRE Constitution</td>
<td>Mr. Tadesse Simie, Mr. Hizkiyas Teshome (Rapporteur)</td>
<td></td>
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<tr>
<td>10:55 – 11:20</td>
<td>When Large-scale Land Acquisition Meets Local Conflict: Experiences from Gambela Regional State, Ethiopia</td>
<td>Mr. Siyum Adugna (Asst. Prof.)</td>
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<tr>
<td>11:20 – 11:45</td>
<td>The Performance of Condominium Housing Program in Jimma Town, Ethiopia: A Case Study</td>
<td>Mr. Fisseha Mulu</td>
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<tr>
<td>12:30 – 14:00</td>
<td>Lunch Break</td>
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<tr>
<td>14:00 – 15:00</td>
<td>Preparation for general discussion Business discussion with External Stake holders with the Dean, Vice dean, Coordinator for Research and PGs and interested staff Ranking Best Oral Presenter of the parallel session Certificate award for Oral and Poster Presenters</td>
<td>Dean, Research and PGS coordinator</td>
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<td>15:00 – 15:30</td>
<td>Health Break</td>
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<tr>
<td>15:30 – 18:00</td>
<td>Presentation of Important Issues raised in Parallel Sessions and General Discussion Conference Evaluation Certificate award for best oral presenters</td>
<td>Main Hall</td>
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</table>
General Discussion and Closing Sessions

April 27, 2018

Presentation of Outstanding Issues from the parallel sessions and General discussion

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>15:30-15:40</td>
<td>Parallel Session 1 (JUCAVM) Coordinator</td>
<td></td>
<td>Mr. Kora Tushune and Dr. Tsige Ketema</td>
<td>JUCAVM Hall</td>
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<tr>
<td>15:40-15:50</td>
<td>Parallel Session 2 (JUIH) Director</td>
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<td>Rapporteurs: Dr. Sultan Suleman</td>
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<tr>
<td>15:50-16:00</td>
<td>Parallel Session 3 (CNS) Coordinator</td>
<td></td>
<td>Dr. Jemal Abafita</td>
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<tr>
<td>16:00-16:10</td>
<td>Parallel Session 4 (CSSH) Coordinator</td>
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<td>16:10-16:20</td>
<td>Parallel Session 5 (CEBS) Coordinator</td>
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<td>16:20-16:30</td>
<td>Parallel Session 6 (BECO) Coordinator</td>
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<tr>
<td>16:30-16:40</td>
<td>Parallel Session 7 (JIT) Director</td>
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<tr>
<td>16:40-16:50</td>
<td>Parallel Session 8 (CLG) Coordinator</td>
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<tr>
<td>16:50-18:00</td>
<td>General Discussion on outstanding issues and wrap up</td>
<td>Highlight by Dr. Tsige Ketema</td>
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<tr>
<td>18:00-18:15</td>
<td>Certificate award for best oral presentation Closing Speech</td>
<td>Dr. Temesgen Mereba</td>
<td>Facilituted by Mrs. Cherer Aklilu</td>
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<tr>
<td>Annual Research Conference</td>
<td>Theme</td>
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<tr>
<td>1st</td>
<td>Fostering the Synergy between Research and Teaching: A Key for Meeting the Relevance of Higher Education</td>
<td>April 8-9, 2010</td>
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<tr>
<td>2nd</td>
<td>Enhancing a Multidisciplinary Research: A Key to Invigorate Need Based and Demand Driven Research</td>
<td>February 17- 8, 2011</td>
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<tr>
<td>4th</td>
<td>Meeting National Development Challenges through Science, Technology and Innovations</td>
<td>February 7-8, 2013</td>
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<tr>
<td>5th</td>
<td>Leveraging Sustainable Development through Building a Green Economy in Ethiopia: Challenges and Opportunities</td>
<td>February 6-7, 2014</td>
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<td>6th</td>
<td>Research and Technology Transfer in Ethiopia: Current Priorities and Implementation Strategies</td>
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<td>7th</td>
<td>Gender Equality in Development and Nation Building: Opportunities and Constraints</td>
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<td>Strengthening University-Community Linkage: A National Framework for Research and Technology Transfer</td>
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<td>9th</td>
<td>Biotechnological Researches and Innovations for National Development: Prospects and Challenges</td>
<td>April 26-27, 2018</td>
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