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Theme:

Information & Communication Technology for Health and Well-being

ABSTRACTS FROM CONFERENCE PROCEEDINGS
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Information & Communication Technology for Health and Well-being

ABSTRACTS

from

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(ICITED2020)

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Edited by:

Abel Usoro
&
Kingsley Okoye

Foreword

IITEDA aims to promote the dynamic exchange of ideas among leading researchers, educators, developers, government, and practitioners who share their research, projects, and disseminate innovations in education, business, and government towards ICT for Economic Development particularly in alignment with the UN's 2030 Sustainable Development Goals (SDG). For academic researchers, this was a great chance for discovering new research directions while interacting with other researchers and professionals. For students, it was a great time for learning the latest technology and research trends and finding job opportunities. For industrial professionals, this was a wonderful opportunity for inspiring new ideas, recruiting students, and networking with researchers.

Gregory University hosted the 2020 conference held both In-person and Virtually following the current Covid-19 pandemic and contingency plans. Thanks to the University's administration, faculty, staff, and students. It was a great engaging, rewarding, challenging, and thought-provoking conference particularly in relation with its relevance at the unprecedented time of the pandemic and Global health.

Though the pandemic meant few submissions and presentations were made, here are some key concepts that emerged from the conference:

- Supporting the development of global access to social innovation ecosystems
- Role of ICT for e-health and prediction of uncertainties such as the pandemic
- Lessons from COVID-19 pandemic, natural medicine, ICT and health care delivery
- Effectiveness of institutional and regulatory agencies in achieving a greener planet
- Innovation towards achieving UN's developmental goals
- Impact of e-learning in higher education

The first keynote speech was titled "Natural medicine, ICT and health care delivery" and was delivered by Professor Maurice Iwu, the 3rd Chairman of Independent National Electoral Commission and President of Bioresource Institute of Nigeria. It was very interestingly revealing the amount of research and information technology that his institute has carried out in the area of health care delivery. The second keynote speaker was Tuija Hirvikoski, PhD, Director at Laurea UAS, Finland and President of EU ENOLL. The title of her speech was "The Living Labs (LL) as global co-Laboratories supporting the development of universal access to social innovation ecosystems". In her speech she presented her institution's living lab model for delivering social and sustainable development. The last, but not least keynote speaker, was Dr Taiwo Ajani, an Associate Professor and Program Coordinator of Computer Information System, Ferrum College, USA. In his speech titled "We are the Innovation to Achieving UN Developmental Goals", Dr Ajani emphasized the importance of Research Innovation in helping researchers find their place in the new modern-day world, and lets us move forward, collectively. The participants and delegates were thrilled and amazed at the outcome of the conference and the educational opportunity to present and discuss their different and several lines of research and ideas. Management discussions and plans were made for the next edition of the conference in 2021, and the journal publication of this year's conference.

Dr. Kingsley Okoye, *PhD, MSc, BSc, MIET, IEEE*
Conference Chair

Acknowledgement

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ICT and HR Training and Development: Lessons from COVID-19 pandemic

Obianuju E. Okeke-Uzodike

Department of Applied Management, Faculty of Management Sciences
Durban University of Technology, Riverside Campus, Pietermaritzburg,
KwaZulu-Natal, South Africa.
obianujuo@dut.ac.za
https://orcid.org/0000-0002-9301-7172

Background and gap in knowledge: Increasingly, universities across the globe are partially in a race to provide quality products and services. Universities are continuously driving this notion through training to ensure the academic needs of research as well as teaching and learning development are achieved. This is because academic staff development is seen as a vehicle of empowerment which helps individual staff members to acquire knowledge, understanding and skills needed to thrive in the fast changing environment. The Coronavirus (Covid-19) outbreak has caused Higher Education Institutions (HEIs), to embrace the use of remote learning policies to contain and reduce the transmission of the virus (Dhawan, 2020; Smith, 2020). Universities rapidly shifted from the traditional physical learning space to completely technologically driven platforms or blended learning (Hedding et al, 2020; Mulla et al, 2020). Academics are then forced to adapt to abrupt changes in their working lives and practices by embracing online and Working from Home (WFH) models of learning (Dhawan, 2020; Li, Ghosh, & Nachmias, 2020). To ensure continued staff development, the Faculty of Management Sciences of the Durban University of Technology adopted the use of various University available ICT-based learning platforms to manage the pandemic situation. Within the South African HEI system, studies exist that measured academic staff training and development during crisis, but research into training and development during Covid-19 pandemic is only starting to emerge. In view of this, the research adds to the growing body of knowledge towards understanding the future of training and development in changing times. The study seeks to address the questions:

- What are the views of the academic staff of the FMS at DUT on e-training and development during Covid-19?
- What are the challenges facing the e-learning system usage during Covid-19 pandemic?
- Where lies the future practices of training and development post-covid-19 pandemic?

Purpose: To provide insight into the research questions, the study measured two constructs, knowledge and practice within the academia. In addition, the study explored various challenges facing ICT-based learning from an academic staff point of view. Thus, the purpose of the article is to examine the views of academic staff, explore the challenges of ICT-based skills development programmes during corona virus era and ascertain the future practices of training and development post Covid-19 pandemic.

Design/methodology/approach: The article adopts a quantitative research approach and data were collected from 300 academic staff at Faculty of Management Sciences, Durban University of Technology. These staff members attended a series of capacity development workshops organized by the faculty during the Covid-19 pandemic.

Findings: Insights from the study point to academic staff's ability to manage rapid transition, and their work under abrupt conditions. Challenges noted from the study alluded to various aspects of internet connectivity disruptions as a factor of the nation's level of ICT development. Online training will increase and dominate post Covid-19 period.

Implications/value/originality: The article provides insight for the management practices on the need for agility in an unprecedented time. Post-Covid-19 pandemic will see an increase in the shift towards e-training and development which requires constant upskilling and reskilling of academic staff. This calls for rethinking learning strategies to support the changing work expectations of academic staff.

Limitations of the study: The study was limited to the academic staff of the Faculty of Management Sciences at the Durban University of Technology who participated in various online skills development workshops during the Covid-19 pandemic. The findings cannot be generalized within the Faculty and the University.

Keywords: ICT, Training, Development, Covid-19, Academic, South Africa

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Nri (Nli) Bu Ogwu: ICT and the Moral Question Concerning Pandemic Diseases

Chiedozie Okoro

Department of Philosophy, University of Lagos
chiedozieokoro@gmail.com, cokoro@unilag.edu.ng

Background: This research is on applied ethics also known as "case ethics" (Darwall 2003) or "practical and pragmatic" (Kant 1978) ethics, in which general ethical theories are used to examine specific moral problems aimed at deciphering how moral principles should direct the activities of professionals and public administrators in the management of human affairs. The Hippocratic Oath (Gupta 2015) establishes that medicine is a holistic practice founded on "moral principles" (Noble 2015) to preserve human life. Based on this, three basic concerns are raised in this research: (1) whether the goal and the moral principles guiding medicine have been followed in the management of Covid-19; (2) considering that food is medicine, and considering that diet in African countries, particularly Nigeria lacks those substances of food (Okeke et al, 2008; Okeke et al, 2009) that can boost the immune system to fight Covid-19, why has this aspect been de-emphasized in the dissemination of information about the control of Covid-19; and (3) the moral role of ICT experts (Karlsson 2003; Rogerson 2001 & 2011; Grodzinsky 2000) in disseminating information for the control of Covid-19.

Gap in Knowledge/Problem: Emphasis on the prevention of Covid-19 was one sided, stressing more of the use of face-masks, face-shields, sanitizers, washing of hands etc. Little emphasis was placed on promotion of food and diet that build the immune system to be resistant to Covid-19. Also, little emphasis was placed on educating the masses on the knowledge of the nature and source of Covid-19. At the initial stage, it was said that Covid-19 has no cure. When the issue of cure came into focus, it became highly politicised; in the process, psychological trauma became heightened thereby derailing medicine from its fundamental goal.

Purpose of Work: The research engages in ethical enquiry into the goal of medicine and how ICT can be deployed in facilitating this goal in tackling the menace of Covid-19.

Research Question: How could medical and ICT personnel be mobilised to strictly adhere to the moral principles of their professions for the effective control of Covid-19?

Design/Methodology/Approach: This research is a theoretical study of the manner the Covid-19 issue was handled in Nigeria. Deontological ethics is deployed as a methodological approach to evaluate compliance with the ethics of duty for duty sake by public administrators and, in particular, medical and ICT experts, in controlling the spread of Covid-19.

Findings: The use of smart technological devices to communicate vital information about Covid-19 in the rural areas is severely hampered by lack of light, fluctuating network services, illiteracy, high poverty rate etc. Granted that the population density in the rural areas is not as concentrated as it is in the cities, there is the need to device ways of disseminating vital information to the rural dwellers in order to effectively control the spread of Covid-19.

Originality: The research is an ethical analysis of Covid-19 from deontological perspective.

Limitations and future work: Being a theoretical research, analysis and evaluations are limited to argumentations and interpretations.

Keywords: Disease, ICT, Morality, *Nri* (Food), Pandemic.

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Benchmarking Machine Learning Approaches to Predict the Uncertainties of Pandemic Disease: An Explorative Study

Paresh Rathod
SID-Labs, Laurea University of Applied Sciences
Vanha maantie 9,F1-02650 Espoo, Finland.
paresh.rathod@laurea.fi

Abel Usoro
Ritman University, Ikot Ekpene, Nigeria
usoro.abel@ritmanuniversity.edu.ng

Research Gap: In recent times, the COVID-19 relevant disease remains one of the major global health challenges that needs vigilant attention. As a result the world health organisation (WHO) declared it as a pandemic. The WHO hypothesized that the health conditions of millions of people have been greatly affected. Consequently, thousands of people have lost their lives. On the one hand, as the uncertainties surrounding this pandemic grows, researchers, scientists and medical experts are in search of preventive measures and cures for the Covid-19 disease. On the other hand, there are remarkable efforts on measures to prevent future outbreaks by machine learning (Pinter et al, 2020). There are many machine learning studies and conceptual models on predicting the outbreak of such diseases. However, there is a lack of studies to assess the effectiveness and benchmarking of available models (Stein, 2002; Wiegand et al, 2019, Lu & Meyer, 2020).

Purpose of Research: To fill above mentioned gap, this research study explores the benchmarking of top five prediction models based on machine learning approaches. The paper is aiming to find a relevant effective and efficient prediction model and validate with comparative studies.

Method: In order to address the research problem, we are utilising benchmarking method that helps to identify the most effective prediction model. The solution aims to develop a conceptual model. To validate our proposed model, we are using COVID-19 as a pilot case study. The study is in the early phase and data has not been collected and analysed yet.

Findings: The initial finding of research study confirms various machine learning and prediction models available. However, it is difficult to identify the most reliable and effective model for such pandemic predictions. Therefore, our study aims to address the research problem, mainly identifying the most reliable machine learning prediction model.

Study implications: The proposed available best solution and technique will contribute to the investigation on the possible preventive measures and cure to minimize future impact of the disease on the society. The study outcome will also helps for crisis preparedness and management along with authorities' response and mitigation strategies.

Limitations of study and future work: Currently, the study is in the early phase forming the conceptual model to identify the most suitable benchmarking method for pandemic outbreak. Therefore, the study has not reached the phase when it collects and analyses data. The current study is only limited to COVI-19 cases. The future research work can validate and consolidate the aimed benchmarking conceptual model that can be utilised for any prediction model.

Keywords: Machine Learning, Prediction Model, Pandemic, COVID-19, Comparative Study, Benchmarking

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Tuesday, November 17, 2020

Stream: ICT and Health

ICT Applications Among Medical Personnel in Nigerian Tertiary Hospitals

Mohammed Bappa Adamu CLN
College of Humanities, School of Social Sciences,
Department of Information Studies,
University of Kwazulu-Natal, Pietermaritzburg Campus,
South Africa
mohammed.adamu1940@gmail.com

Comfort Onwayi Umoru,
Kogi State Polytechnic,
Library and Information Science, School of Management Studies,
Lokoja, Kogi State
angelcomfort708@gmail.com

Background: In today's competitive knowledge environment, increase in knowledge, advances in health care delivery and technology complexity have made it virtually impossible for a clinician or other health care providers practising alone to maintain the knowledge and skills necessary to provide quality health services required by the citizenry. Information and communication technology (ICT) has become part of the modern health technology in the health sector. Altman (2019) divided IT applications in the health sector into 3 categories, namely: (1) infrastructure, such as electronic health records (EHRs) as storage and retrieval systems, automated mechanisms for capturing data and an electronic library of medical literature; (2) performance enhancement, such as computer-based clinical decision support (CDS) systems, continuing medical and patient education; and (3) performance evaluation which involves demonstration and measurement of the cost, effectiveness and outcomes of different systems.

The gap in knowledge / Problem: The problem is to assess ICT applications among medical personnel in Nigerian tertiary hospitals in Nigerian. It aimed at finding out the extent to which ICT applications have been used by medical personnel in the hospitals to enhance their professionals callings.

Purpose of the work: The purpose of this paper is to investigate the level of ICT application among medical personnel in Nigerian tertiary hospitals. The study also intended to assess the level of ICT compliance among the health management as a whole.

Research question: What is the level of information technology in health service delivery in Nigeria?

Design/methodology approach: The population for the study was 479 health professionals comprising 204 medical Doctors, 180 Nurses and 95 health information management officers. A

descriptive survey research approach was adopted for data collection. The researcher used an interview guide from which he read questions to the respondents. Their answers were meticulously recorded on the spot. These answers were later analysed to derive the findings.

Findings: The study found out that the medical personnel used ICT applications in tertiary hospitals as a deliberate act to deliver health service. There was a moderate level of information technology application for the selected hospitals understudy.Also the usefulness of ICT was rated higher than ease of use of ICT in patients care.

Originality/Value: There has been no study carried out on ICT applications among medical personnel in Nigerian hospitals in Nigeria prior to this research. The study will help the policymakers and health decision makers to improve on ICT development in the country.

Limitations and future work: There are some gaps in the empirical literature from previous studies done in the area of ICT technology that were not addressed in the study.

Keywords: Technology application, Health services delivery. Federal tertiary hospitals, Nigeria

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Information Literacy Variables and Medical Students' Utilization of Information Resources in Federal University Libraries in South - South, Nigeria

Aniebiet Inyang Ntui
Department of Library and Information Science
University of Calabar, Cross River State, Nigeria
ntuinju@gmail.com

Affiong Emmanuel Effiong
Medical library, University of Uyo, Akwa Ibom State, Nigeria
ellalove668@gmail.com

Eseme Augustine Jonah
Akwa Ibom State Polytechnic, Ikot Osurua, Akwa Ibom State, Nigeria
esemejonah@gmail.com

Paper Type: Empirical research

Background: The primary purpose of the university library is to support the objectives of the parent institution. The objectives are to encourage and promote teaching, learning and research in a consistent manner. Libraries like other organizations are a part of larger social systems which have been created to conserve knowledge, preserve the cultural heritage and provide information (ALA, 2000). University libraries are meant to serve students, lecturers and other members of the university community. The basic and the most essential function of the libraries is to ensure maximum utilization of the accumulated recorded knowledge and information. The transmission of knowledge and information is, therefore, the fundamental task of libraries. According to Whittaker (1993), Information explosion has informed modern societies of the growing importance of special knowledge in accessing and utilizing information from different sources and formats. There is a growing need for people to acquire new skills of accessing information resources in new formats and such skills are acquired through information literacy. Information literacy lies at the heart of lifelong learning, it enables the students to take control of their information needs and become more independent, assuring personal control of their learning and becoming aware of effective processes for finding, analyzing and using information (Vasuderan, 2014). The study determined the influence of information literacy variables such as ability to use information access tools, ability to evaluate information resources and user education on medical students' utilization of information resources in federal university libraries in South-South Nigeria.

Research questions: Research questions raised to guide the study were: (a) to what extent does the ability to use information access tools influence medical students' utilization of library information resources?; (b) how does the ability to evaluate information influence medical students' utilization of library information resources?; and (c) to what extent does user education influence medical students' utilization of library resources

Purpose: The study was undertaken to determine how information literacy variables influence utilization of library information resources among medical students' in federal university libraries in South-South Nigeria. Specifically, to determine how the ability to use information

access tools and the ability to evaluate information influence medical students' utilization of library information resources.

Design/ Methodology/ Approach: the study adopted survey research design. The population of this study comprised of 1,141 medical students from the 4 universities namely: University of Port-Harcourt, University of Uyo, University of Calabar and University of Benin. Stratified random sampling and purposive sampling technique were used to select a sample of 456 from 1,141 population of medical students from universities under study representing 40% of the population. A well-structured and validated questionnaire "Information Literacy Variables and Medical Students Utilization of Library Resources (ILVMSULIRQ)" was the instrument used for data collection. A reliability test was conducted using Cronbach Alpha method and the reliability coefficient ranged from 0.71 to 0.87 after conducting a trial test outside the study area. Data were analyzed using simple regression analysis. All the hypotheses were tested at.05 level of significance.

Findings: There was a significant influence of ability to use access tools and user education on medical students' utilization of information resources. On the other hand, ability to evaluate information did not have significant influence on medical students' utilization of library information resources.

Originality/Value: Based on the findings of the study, it was recommended that National University Commission should separate the use of library as a course from the use of English so that adequate credit hours can be allocated for the use of library and this would enhance acquisition of information literacy skills thereby increasing accessibility and utilization of library information resources. Also, user education programs should be organized regularly by library management and staff for students to ensure their independence in information search and retrieval and to become lifelong learners.

Keywords: Information literacy, Utilization, Medical students, Federal University, Libraries.

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Wednesday, November 18, 2020

Exploring the Impact of Online Features on the User Acceptance of Internet Banking Websites in Nigeria: An Extended Study

Paulinus Ofem and Paschal Ochang

Department of Computer Science, Faculty of Science, Federal University of Lafia, P.M.B 146 Lafia, Nigeria

paulinus.ofem@gmail.com and pascosoft@gmail.com

Paresh Rathod

Research, Development and Innovations, Laurea University of Applied Sciences, Vanha maantie 9, F1-02650 Espoo, Finland

paresh.rathod@laurea.fi

Research Gap: An Internet banking website is a form of a Web system which represents the traditional banking halls. Owing to the rapid penetration of Internet services and the increased number of mobile phone users in Nigeria, Nigerian banks have invested heavily on e-banking services to meet customer needs. Given that these platforms are new and continue to evolve in a developing country like Nigeria, it is important to not only uncover any existing challenges to its adoption but ascertain its level of acceptance by bank customers.

Purpose of Research: This work, therefore, investigates the online features of e-banking websites and their relationships with the acceptable behaviours of bank customers in Nigeria. To the best of our knowledge, apart from our previous pilot study in Ofem et al. (2017), there is yet no other study that has considered the impact of online features of e-banking websites on users' acceptance in Nigeria.

Method: In order to address the research problem, we proposed a conceptual model which incorporated the online features of e-banking websites as constructs and the constructs of the popular technology acceptance model (TAM) by Davis (1989). The online features were adopted from Ahn et al. (2004) and included offline features of e-banking websites. To validate our proposed model, we carried out an online survey of 470 actual Internet banking customers and performed structural equation modelling (SEM) based on the data collected.

Findings: The results we obtained revealed that TAM, which mediated the online features of e-banking websites, remains a useful model for exploring and empirically forecasting the user acceptance of Internet banking websites. The result also showed that the online features of e-banking websites have a positive influence on customer acceptance. Our study targeted the Nigerian e-banking domain, where e-banking is still relatively new. The results obtained indicate that Nigerian Internet banking users are able to identify the online quality factors of Internet banking websites within the banking domain. This outcome is consistent with our initial pilot study and corroborates the results obtained by an earlier study by Ahn et al. (2004) in which

information quality, service quality and system quality were originally established to constitute the online quality factors.

Study implications: In the e-banking domain, the bank's client acts as a system user. The online features of any e-banking website play a very significant role in determining the behavioural intention of customer's continuous use of the Web platform for financial transactions. Our results also lend credence to the validity of TAM, which has severally been validated in other studies.

Limitations of study and future work: The current study only focused on the online features of e-banking websites. There is a need to also consider how the offline features of e-banking websites impact user acceptance behaviour. Our future study shall consider the offline features of e-banking websites. The study is also limited to the Nigerian bank customers.

Keywords: Internet banking websites, online features, technology acceptance model

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E-learning in Higher Institutions: A Pilot Empirical Study of Lecturers' Views of Web 2.0 Social Technology in Teaching and Learning

Razep Echeng and Abel Usoro
razep.echeng@iiteda.org and abel.usoro@iiteda.org
IITEDA, Scotland, UK

Background: Several Web 2.0 social technology applications have been developed to enhance teaching and learning (Ünal, 2020). However, literature holds that some teachers are not keen to use them especially the older teachers (Carm et al, 2020), whereas it is the quality use of these technology applications that leads to enhancing learning, increased interaction, learner satisfaction and increased learner achievements (Serdyukov, 2017). Improving collaboration in quality use of these technology platform for teaching and learning will also increase performance (Ünal, 2020). Hence, there is need to increase quality and effective collaboration especially in these period of pandemic with lockdowns that in most cases make remote learning and teaching to be mandatory (Joshi, 2021).

Gap in Knowledge/Problem: The problem is not in development of different Web 2.0 application platforms; it is rather in the quality utilization of these technology platforms by lecturers and students for educational purposes which are: active learning, collaborative learning, problem solving and others. Most existing research on quality use of e-learning tools are done, and rightly so, from the students' perspective. However, the lecturers' perspective should not be ignored (Pedro Isaias, Paula Miranda and Sara Pifano, 2020; Riyadh Alhassan, 2017). Hence, there is need to contribute to research on lecturers' view for quality use of Web 2.0 social technology applications in teaching and learning.

Purpose of Work: The research critically examined and analysed the views of lecturers who were actively using Web 2.0 social technology platforms for some of their teaching activities.

Research Question: How could lecturers be motivated and supported for quality utilization of Web 2.0 platform in teaching?

Design/Methodology/Approach: This research is an empirical study. The study used open and closed ended questions to collect data by a survey which was administered online to 100 lecturers in different university from different countries and varied teaching experience (5 - 30 years). The closed aspects of the questionnaire used Likert-scale items. This research used purposive sampling to administer questionnaire to lecturers who were actively using these social technologies in their teaching activities. These lecturers were selected during a technology conference in Greece. The conference delegates came from Greece, Scotland, Germany, Nigeria, England and other parts of Europe. Both quantitative and qualitative methods were used to analyse the data that were collected within a month.

Findings: Majority (77%) of lecturers agreed to the use social technology platforms because it enhanced their students' learning; increased enthusiasm to learn; improved students' learning satisfaction, enhanced easy learning for students; enhanced interaction with students; enhanced student participation; enhanced collaboration and improved performances.

However, these lecturers also felt overworked and saw the need for greater institutional support because of the multiple tasking and responsibilities. The three most significant aspects of support they required were greater time allocation, financial remuneration and technical assistance.

Originality: This research data come from many countries and contributes to an area of study with limited work.

Limitations and future work: Being a pilot study, the data collected is not large enough to enable generalisation of the results. Hence future work will require larger and wider collection of data for analysis and generalisation.

Keywords: Online teaching, collaborative learning, e-learning, Web 2.0, lecturer enthusiasm.

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