



জ্ঞান (Knowledge) Office of Research

Newsletter, Issue No-2, February 2020



OR-NSU is pleased to issue its second newsletter highlighting both faculty and student research, NSU funding for faculty research and travel grants, as well as external funding received for research projects. Our congratulations to NSU faculty for their response to calls for applications both internal and external to NSU. The funding awarded continues to grow commendably.

We continue to be encouraged by faculty initiatives in research and scholarly activity. The School Scientific Review Committees have been active in performing their functions in scientific merit review. School Research Coordinators have been productive assisting the school deans and department faculties in developing department-level research targets. The NSU Research Strategy Task Force has completed its charge of developing school research priorities and this report will be submitted to the Vice Chancellor in February 2020. The NSU Institutional Review Board/Ethics Review Committee (IRB/ERC) and the NSU Institutional Animal Care and Use Committee (IACUC) have performed ably in completing ethics clearance for faculty research projects. In short, NSU research endeavors are developing in good pace even as we are hopeful for needed structural changes to enhance faculty research productivity.

OR-NSU is working to facilitate faculty research and we welcome your observations and recommendations on a continuing basis.

My thanks to OR-NSU staff - Mr. Wilson Biswas, Secretary, Mr. Mostafizur Rahman, Officer, and Olior Rahman - for their continuing team effort in assisting faculty with both effectiveness and efficiency.

Dr. Norman K. Swazo
Director, OR-NSU

NSU Research: “In the Nations’ Service”



Project: Mindless Propaganda or Thoughtful Persuasion? Television Advertising and Broadcast Regulations in Bangladesh

Dr. Harisur Rahman - School of Humanities & Social Sciences

Dr. Harisur Rahman is Assistant Professor at the Department of Political Science and Sociology (PSS) at North South University in Dhaka, Bangladesh. His research interests include Film, Media, Communication and Cultural Studies, Media Anthropology, Business Anthropology, Advertising Research, Material Culture, Globalization, Consumer Culture, Visual Culture, South Asian Media and Cultural Politics. His book “Consuming Cultural Hegemony: Bollywood in Bangladesh” is currently under the production process at Palgrave Macmillan, New York.

Currently, Dr. Rahman is conducting three research projects. One research project deals with television advertising and broadcast regulation in Bangladesh. In Bangladesh most television commercial spots are occupied by globally and locally branded products in categories such as consumer goods, toiletries, and telecommunications. Unlike in the EU or North America, where advertising standards—whether voluntary or regulatory are in place, in Bangladesh these are absent. As a result, multinational and local companies promote their products through advertisements that defy standards of ethics and social responsibility. This study will contribute to understanding television commercial as a cultural representation in a postcolonial setting like Bangladesh. It will also act as a valuable guideline for Bangladesh ad makers and marketers to understand their audiences and meet their expectations. In addition, this research will provide valuable recommendations to the Bangladesh policy-makers to frame ad policy which will be logically grounded, ethically oriented, and socially informed.



Project: International Economics, Development and Interdisciplinary Research on Social Sciences

Dr. Gour Gobinda Goswami - School of Business & Economics

Dr. Gour Gobinda Goswami's primary area of research is International Economics, panel data, and big data. Dr. Goswami is working on a project under NSU-Bournemouth, UK joint collaboration, examining how to develop responsible project management through empirical research in the context of displaced Rohingyas. This project will help the Bangladesh government find direction about how to deal with emergency relief and rehabilitation. Dr. Goswami is also conducting another NSU-Manchester Metropolitan University, UK, project on determinants of happiness of children and young people in Bangladesh and South Asia. He is conducting another project to examine the role of private universities in raising the status of Bangladesh to middle-income category, from a Planning Division sponsored project of the Government of Bangladesh. In another project, Dr. Goswami is trying to conduct a cost-benefit analysis of nuclear power plants in Bangladesh.

Dr. Goswami is currently working on a project which deals with examining the role of political risk in deterring trade flow across borders by using a global data set including Bangladesh. Having done this modeling for the whole world, Dr. Goswami found strong linkage between political risk and trade flow. He found that by improving only the quality of bureaucracy countries can raise their bilateral trade flow by 2%, holding other things constant. Now Dr. Goswami is conducting a country study on this project, starting with Thailand. In Thailand he finds that involvement of the military in politics is primarily responsible for lower trade flow. This study will be followed up with studies of Bangladesh, China, India, Japan, and the UK.



Project: Remotely Accessible Cyber-Physical System Testbed and Open Architecture Synchrophasor Systems for Bangladesh's National Power Grid's Cyber Security and Reliability

Dr. Hafiz Abdur Rahman - School of Engineering & Physical Sciences

Dr. Hafiz Abdur Rahman's primary research area is in Infrastructure Systems' Monitoring and Protection, Embedded Systems and Internet of Things (IoT), Cyber-Physical Systems' Modeling and Simulation, and Data Networking and Information Security.

During the last couple of years, he has been working on "Smart Infrastructure Networks". The idea is to develop ICT based monitoring and controlling techniques to make different infrastructure systems and services secure and reliable. These infrastructures include electricity, telecommunication, health-care, wastewater management and computational infrastructures. These infrastructures are the life-line of modern societies.

One of his current research projects is entitled, "Remotely Accessible Cyber-Physical System Testbed and Open Architecture Synchrophasor Systems for Bangladesh's National Power Grid's Cyber Security and Reliability". The project has received a research grant of BDT 2,33,47,600 (two crores, thirty-three lakh, forty-seven thousand and six hundred) for two years from the Energy and Power Research Council (EPRC) of Ministry of Power, Energy and Mineral Resources, Government of Bangladesh. The usefulness of this research comes from the systems' ability for precise energy auditing, flow monitoring and rapid identification of instability in the national power grid, and to trigger remedial actions in-time to prevent major power system outages. This will enhance the security and reliability of the national power grid significantly. The system will bring huge utility to the Power Grid Company of Bangladesh (PGCB), the research community, and academia for vulnerability assessment, impact analysis, system testing, attack-defense exercises, and operator training.



Project: Gear for Automation

Dr. Lamia Iftekhar - School of Engineering & Physical Sciences

Dr. Lamia Iftekhar's primary areas of research are Control Systems and Robotics. Generally, the work is theoretical in nature, with mathematical and numerical analysis. However, since joining NSU, Dr. Iftekhar has been inspired by mentors and colleagues, as well as the motto of 'Advancing Technology for Humanity' of IEEE. IEEE is the world's largest professional organization, Dr. Iftekhar works to think with awareness and compassion about the local community, with special consideration to women's concerns and causes. Over the years, Dr. Iftekhar also developed a strong interest in curriculum development and pedagogical sciences.

One of her current research projects, which obtained an international grant from IEEE Robotics and Automation Society's Special Interest Group in Humanitarian Technology, interestingly combines most of her passions. She is developing an electronics and electrical systems curriculum for female workers in the garments industry of Bangladesh, customized to their educational and socio-economic background. This community is at high risk of losing jobs with the increasing adoption of automation by the textile industry worldwide. Her research aims to design a sustainable window of opportunity for the target group to expand their marketable skills, through creating a springboard curriculum for instilling prerequisite knowledge to avail an alternative vocational training course.

Using the grant, Dr. Iftekhar and her team have developed a unique visual curriculum utilizing prior experience of teaching robotics to young children. She has tested and refined it by conducting a series of lessons to groups of female workers. She is now seeking matching funding opportunities and local partnerships with those who can assist in taking the project to the next level.



Project: Reduction of Arsenic from Farmland Soil by Genetically Modified Microorganisms

Dr. Sabbir Rahman Shuvo - School of Health & Life Sciences

The role of the environment in the healthy living of humans is enormous. However, environmental pollution is a massive concern for Bangladesh in several sectors, like the food and the health sectors. One of Dr. Shuvo's primary research areas is using microorganisms to reduce environmental pollutions, mainly heavy metals contamination from the soil. In Bangladesh, the presence of heavy metals such as arsenic in the farmland reduces the production of crops, simultaneously making it toxic for consumption. Dr. Shuvo's research group is focusing on isolating novel microbes that are capable of reducing heavy metals from the soil. They are also interested to understand the genetic mechanisms behind this scavenging process. Currently, they are trying to elucidate the arsenic reduction mechanisms of *Citrobacter freundii* that are isolated from the tannery effluent in Savar. The bacterium can grow at a high arsenic concentration. Dr. Shuvo's research group hopes to transfer the arsenic reducing mechanism in the native soil microbes and make a bio-fertilizer that can cut the amount of arsenic from the soil.

- Although impactful science is often important, impact does not always track importance. - Arturo Casadevall
- Generating high-impact work is easier than doing important rigorous research, especially if it can be exaggerated, wrong or fraudulent. And low-impact but highly rigorous research should never be devalued, because it might be important in the future.- Arturo Casadevall

To see all NSU funded, and External funded research list, [Click Here](#) or Scan the Barcode:



Highlighting Student Research

Student Research 1

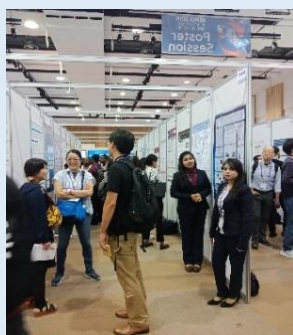
Congratulations to NSU students in Department of Environmental Science & Management and Department of Electrical and Computer Engineering for successful co-authorship and publication with NSU faculty member Dr. Mohammad Sujauddin (research team leader) in several journals:

1. Determining the potential role of the waste sector in decoupling of phosphorous: A comprehensive review of national scale substance flow analyses (*Resources, Conservation & Recycling*, ELSEVIER, Impact Factor: 7.044)
2. Unravelling the anthropogenic pathways of phosphorous in the food production and consumption system of Bangladesh through the lens of substance flow analysis (*Journal of Industrial Ecology*, Wiley, Impact Factor: 4.826)
3. Solving visual pollution with deep learning: A new nexus in environmental management (*Journal of Environmental Management*, ELSEVIER, Impact Factor: 4.865)
4. Human appropriation of net primary production in Bangladesh, 1700-2100 (*Land Use Policy*, ELSEVIER, Impact Factor: 3.573)
5. Forecasting river sediment deposition through satellite image driven unsupervised machine learning techniques, (*Remote Sensing Application: Society and Environment*, ELSEVIER, CiteScore: 2.51)

Names of Student Co-Authors:

Mr. Bidhan Bhuson; Ms. Shupa Rahman; Mr. Nahian Ahmed; Mr. Riasad Bin Mahbub; Mr. Amit Robert Baroi; Ms. Nidhi Gloria D'Costa; Ms. Ahmad Saraf Tuba; Mr. M. Nazmul Islam.

Student Research 2



A group of students from the Department of Pharmaceutical Sciences, North South University successfully presented their research work at the International Brain Research Organization (IBRO 2019), the 10th IBRO World Congress of Neuroscience, held at Daegu, South Korea, 21-25 September, 2019. NSU undergraduate students Farhana Yasmin and Sadia Yeasmin showcased their poster at IBRO 2019. Their research was done at the Behavioral Neuroscience lab at NSU under the supervision of Dr. Md. Ashrafur Rahman. The research was done with the help of three other undergraduate students: Israt Yesmin, Sadika Islam, and Abdul Kaium. The title of their poster was “Moringa oleifera ameliorates the cholinergic-mediated memory via modulating the oxidative stress biomarkers in dementia mice model”, focusing specifically on the treatment of memory loss. Their work had already won the first runner-up during the Pharmafest 2019, held by NSU.

CTRGC Funding Approved by School

The CTRGC approved 85 research proposals and 16 travel grants during the 53rd CTRGC meeting, which was held on 28 August 2019. Total BDT 35,502,600 was disbursed for research fund and BDT 2,526,364 was disbursed for travel grants including budget for the Economics Research Platform. A breakdown of research grant for each school is given here:

School	Research Grant	Travel Grant
School of Business & Economics	6,087,000 Taka	1,396,000 Taka
School of Health & Life Sciences	19,597,600 Taka	95,200 Taka
School of Engineering & Physical Sciences	6,808,000 Taka	346,800 Taka
School of Humanities & Social Sciences	3,010,000 Taka	620,364 Taka
Others	0 Taka	68,000 Taka
Total	35,502,600 Taka	2,526,364 Taka

Highlighting Faculty Research



Dr. Md. Hamidul Islam, Assistant Professor, DMP, received the Best Oral Presentation Award under the category of Interdisciplinary Science in the 6th International Conference on Natural Science and Technology (ICNST)'19, held at Asian University for Women in Chittogram. The title of his presentation was Mathematical Modelling of Viral Dynamics in Severe Dengue Infection. The work models the complex dynamic reactions that take place during the course of dengue infection. It was a collaborative work with Dr. M. A. Masud, Assistant Professor, DMP.

Dr. Md. Sahadet Hossain received the "Dr. Fatema Rashid Best Paper Award" in the 22nd International Conference on Computer and Information Technology (ICCIT) 2019 held at Southeast University, Dhaka, Bangladesh during 18-20 December 2019. He was awarded ten thousand taka as the prize money. The title of his paper is: "An Efficient Algorithm for Reduce Order Modeling of Discrete-Time Index-2 Descriptor Control Systems". This research was funded by an NSU Grant.



External Funding awarded to NSU faculty to date

According to our record, a total 48 external funds were awarded to NSU faculties from January 2018 to January 2020, which are equivalent to BDT 164,708,169 (\$1,937,743). Some of the funding agencies are: Japan Society for the Promotion Science (JSPS), British Academy, German Federal Ministry of Economic Cooperation and Development, Fundamental Research Grant Scheme (FRGS), Global Community Engagement and Resilience Fund (GCERF), 3ie, International Research Partnership Fund (IRPF) Scheme, etc.

Institute Research

Economics Research Platform

On September 2019, the Economics Research Platform (ERP) co-facilitated a four-day Bangabandhu-Cambridge Policy Simulation Lab 'Policies for Improving Bangladesh Resilience for Industry 4.0' at the State Guest House Padma, Dhaka. As an 'Academic Partner', ERP is closely working with the Resilience and Sustainable Development Programme (RSDP) of the University of Cambridge on the Bangabandhu-Cambridge



Policy Simulation Lab project sponsored by the Bangladesh Ministry of Foreign Affairs. The September Policy Lab session involved high-profile policy makers and advisers, including several ministers and secretaries, key industry leaders, representatives from many development partners and NGOs, as well as 30 Lab-participants pre-selected from across a diverse range of agencies and institutions. This was successfully concluded with award of certificates to the lab participants.

ERP has been delivering on NSU's commitment to this nationally important, high-profile project. Earlier in March 2019, the ERP Director, Professor Helal Ahammad, joined the RSDP-Cambridge team leaders—Professor Steve Evans and Dr Nazia Habib—during their Bangladesh visit, in consultation meetings with key industry peak bodies and stakeholders. ERP also prepared the Bengali version of the questionnaire for the online 'Innovation Readiness Survey', and road-tested the survey. In July 2019, Mr. Benajir Ahmed, Chairman of the NSU Board of Trustees reiterated NSU's support for the project during his meeting with Professor Evans and Dr Habib at the University of Cambridge.



Institute of Innovation, Research and Development (IIRD)

The School of Engineering and Physical Sciences plans to develop an Institute of Innovation, Research and Development (IIRD). The objective of the proposed IIRD is to create a hub for industry-academia collaborations and support for innovation, interdisciplinary research, technology transfer, training on cutting edge technologies and business start-up activities by university students and area entrepreneurs, especially for various fields of engineering and technology. The Institute will focus on experiential learning through projects, research, training and experimenting innovative ideas primarily for NSU students who are interested in applied research, invention, early stage startups, and entrepreneurship. Its planned scope of activities includes: interdisciplinary research and project grants; scholarships; technology transfer; Seminars and workshops; business skill development; technology skill development, business incubator or start-up incubation; capstone design projects; competitions; establishment of research and project labs.

South Asian Institute of Policy and Governance (SIPG)

The South Asian Institute of Policy and Governance (SIPG) conducted a nationwide survey under a research project on "Explaining Differences in Citizen Attitudes toward Climate

Finance for Reducing Vulnerability in Bangladesh". The Project is funded by the World Bank, in a partnership with American University in Washington DC.

The project aims to assess the linkage between climate finance and extreme weather events, with consequent impacts on adaptation and mitigation with regard to climate change. In addition to this, the survey also seeks to determine out the impacts of climate change on peoples' lives and livelihoods. This is the first-ever national survey focusing on the governance of climate financing and consequent political and social implications for coping with extreme climatic events such as floods, cyclone, and drought.

Prior to beginning the survey, a rigorous year-long pre-survey preparation had been made. A series of meetings with experts, focus group discussion among slum-dwellers in Dhaka, residents of an ocean flooded island near Cox's Bazaar in the south, and in the often flooded Kurigram district in the extreme northeast, and field testing in several districts, had been conducted.



The national survey had 3,396 respondents. 43 trained enumerators had been deployed for the countrywide survey, covering 19 selected districts, ranging from highly climate vulnerable areas to low climate vulnerable areas of Bangladesh. The two month long nationwide survey was completed on September 25, 2019.

NSU Global Health & Climate Research Institute (NGH&CRI)

The Global Health & Climate Research Institute (GH&CRI), North South University, has created a significant reputation for excellent performance. The Ministry of Health and Family Welfare (MOHFW) awarded to GH&CRI a grant to conduct a Public Health Situation Analysis Research to Combat Non-Communicable Diseases in Dhaka North & Khulna City



Corporations. This is a pioneer research in Bangladesh. The purpose is to document the public health situation and to develop future interventions in Dhaka North and Khulna City Corporations for improving urban health and preventing non-communicable diseases in view of the Sustainable Development Goals. Prof. Dr. Gias U. Ahsan, Dean, School of Health and Life Sciences and Executive Director, Global Health & Climate Research Institute, is the Principal Investigator of this research. A pool of researchers of the Global Health & Climate Research Institute and Public Health Department are involved.

NSU Genome Research Institute (NGRI)

Apart from several national grants, NGRI has recently been successful in receiving an international grant of 250,000 GBP (equivalent to 2.7 crore BDT) from the Global Challenge Research Fund (GCRF: 2019-2020), University of Nottingham (UoN) for the project “CARE Bangladesh: Cholera Antibacterial Resistance in Bangladesh: Big Data Mining and Machine Learning to Improve Diagnostics and Treatment Selection” in collaboration with University of Nottingham, icddr,b, BCSIR, UNICEF, and Professor Rita R Colwell from University of Maryland. Dr. Muhammad Maqsd Hossain (Director, NGRI), together with Dr. Tania Dottorini (UoN) conceived and designed the project rationale, project plan, and wrote the project.

Research activities at NGRI have resulted in several publications in Scopus indexed international peer reviewed journals, and a manuscript was recently submitted in Nature Scientific Reports, one of the prestigious journals in the field of life sciences. NGRI, in collaboration with Bangladesh Agricultural Institute (BARC), has recently published a whole genome analysis of the Black Bengal Goat in BMC Research Notes; the findings of the study demonstrate the genetic basis of high meat quality in the species. In addition, NGRI has uncovered genomic characteristics of clinically relevant micro-organisms such as *Escherichia coli*, *Vibrio cholera*, *Morganella* spp. and several other pathogens. The Institute, in collaboration with Johns Hopkins University, has also established the infrastructure for biobanking and genetic analysis around 50,000 samples from different stages of pregnancy to identify potential genetic and epigenetic markers for intervention of different maternal, neonatal, and child health related adverse conditions.

NSU Research Ethics Committees

Institutional Review Board/ Ethics Review Committee (IRB/ ERC)

Dr. Dipak Kumar Mitra, Professor, Department of Public Health is the Chair of NSU IRB/ ERC. The committee deals with the ethical review of human related research. In 2019 there were six full committee meetings reviewing 41 internal proposals (CTRG) and 9 external courtesy proposals. All proposals were approved.

Institutional Animal Care and Use Committee (IACUC)

Dr. Muhammad Maqsd Hossain, Associate Professor, Department of Biochemistry & Microbiology is the Chair of NSU IACUC. The committee deals with the ethical review of animal related research. In 2019 there were four full committee meetings reviewing 18 internal proposals (CTRG) and 4 external courtesy proposals. Among them 21 proposals were approved.

Food for Thought

Albert Einstein in Conversation with Rabindranath Tagore

Einstein: I cannot prove, but I believe in the Pythagorean argument, that the truth is independent of human beings. It is the problem of the logic of continuity.

Tagore: Truth, which is one with the universal being, must be essentially human; otherwise, whatever we individuals realize as true, never can be called truth. At least, the truth which is described as scientific and which only can be reached through the process of logic—in other words, by an organ of thought which is human. According to the Indian philosophy there is Brahman, the absolute truth, which cannot be conceived by the isolation of the individual mind or described by words, but can be realized only by merging the individual in its infinity. But such a truth cannot belong to science. The nature of truth which we are discussing is an appearance; that is to say, what appears to be true to the human mind, and therefore is human, and may be called maya, or illusion.

Einstein: It is no illusion of the individual, but of the species.

Tagore: The species also belongs to a unity, to humanity. Therefore the entire human mind realizes truth; the Indian and the European mind meet in a common realization.

Einstein: The word species is used in German for all human beings; as a matter of fact, even the apes and the frogs would belong to it. The problem is whether truth is independent of our consciousness.

Tagore: What we call truth lies in the rational harmony between the subjective and objective aspects of reality, both of which belong to the superpersonal man.

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News Features →

News Article Title	Date	URL for Link Access
Coronavirus declared global health emergency by WHO	31 January 2020	https://www.bbc.com/news/world-51318246
US officials revisit rules for disclosing risky disease experiments, Nature	27 January 2020	https://www.nature.com/articles/d41586-020-00210-5
How CEOs, experts and philosophers see the world's biggest risks differently	27 January 2020	https://shorturl.at/bjwyY
Top UN court orders Myanmar to protect Rohingya from genocide	23 January 2020	https://news.un.org/en/story/2020/01/1055841
Measuring the world of social phenomena	21 January 2020	http://shorturl.at/CDIP5