**Postdocs Fellowships**

The Sida Mathematics project at University of Dar es Salaam under competitive bases won a proposal among the 12 proposals funded by Sida Bilateral programmes of Sweden. The overall goal of this project is to build capacity for graduate training and research in mathematics at the University of Dar es Salaam (UDSM) through collaboration with Swedish universities. The Sida Bilateral programme sponsorship at UDSM was a five years from July 2015 – June 2020 and has been given extension of one year until June 2021.

In the period of five years from 2015 – 2020, this project awarded three postdocs to three UDSM staffs. Each postdoc has opportunity to have six months research visit to Sweden. The three postdocs are:

**Name:** Dr. David Koloseni

**Research Title:** Multi-criteria decision making and aggregation operators.

**Research Description:**A number of decision-making processes involve building models of decisions under uncertainty andrisk. The existing models use functions defined on a finite set of reference. Nevertheless, the results on a finite set of results are rather limited and there is interest in aggregating the information for arbitrary functions and arbitrary measures. In this project we consider the problem of aggregating information with conflicting criteria and obtaining a clear ranking of the alternatives.



Dr. Koloseni was the first Postdoc and visited Skövde University in Sweden from January 2018 to June 2018. Through the postdoc published two papers.

**Email:** dkdavykol@gmail.com

**Name:** Dr. Thadei Dams Sagamiko

**Research Title:** Optimal control of a threatened



wildebeest-lion prey-predator system with prey

speciespool in the Serengeti ecosystem

**Research Description:** Despite the famous slogan, ‘’Serengeti shall not die’’, the ecosystem has been faced with several threats such as the recorded severe drought of 1993, ongoing poaching, and lion killings due to Maasai retaliation to mention a few.

Several management strategies have been suggested and implemented for ecosystem conservation. In this project,we consider theproblem of a threatened wildebeest-lion prey-predator system found in the Serengeti ecosystem in which there is a prey species pool, where lions can prey apart from wildebeest. Optimal control techniques are applied to determine the best management strategies to mitigate ecosystem threats.

Dr.Sagamiko was the second Postdoc and visited Linköping University, Sweden, October 2018 to March 2019. Through the postdoc published one paper.

**Email:** tsagamiko@gmail.com

**Neme:** Dr.Andongwisye Mwakisisile John

**Research Title:** Importance sampling for optimization problems

**Research Description:** Many real problems are solved



by optimization techniques. Monte Carlo simulation is

one of the methods used toapproximatethe true

solution. Monte Carlo is affected by errors, which may

lead to the wrong solution.Importance sampling is one

of the variance reduction Monte Carlo methods. In this

method, a few scenarios may be used to give the more

accurate solution. In our study, we use newsvendor

optimization problem to see it improve our solution.

We study the one and multi products newsvendor for

single stage as well as multistage.

Dr.Sagamiko was the third Postdoc and visited Linköping University, Sweden, January 2020 to June 2020. Through the postdoc published one paper.

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