Mailroom Operation Improvement Using Simulation

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Abstract

The resident students at the University of New Haven have been complaining of long wait times when picking of their mails and packages from the mailroom. There is only one central mailroom operating non-holiday weekdays from 8:30 AM to 4:30 PM. The mail/package dispensing is handled through one window staffed by a mail clerk who handles other mailroom tasks when no one is waiting at the pick-up window. The one waiting line for pick up grows so large at times that some students miss their classes, meetings, lunches, and other very important obligations so as to not have to come back for another waiting episode at the mailroom queue! The student authors (1st and 2nd) selected the improvement of the mailroom operation as their graduate degrees capstone projects with guidance and advising from the 3rd author. The mailroom operation was thoroughly studied and modeled using discrete event simulation with ARENA. Some of the needed data were obtained from the mailroom management while others were collected by observation. A preliminary and first approximation of the model has already been developed, verified, and validated to mirror the actual mailroom operation on a given workday. There were multitude challenges from data availability and data integrity to the picks and valleys in demand (students' pickups) to mail/package arrivals by different carriers. The biggest modeling challenge has been matching of the students with their packages (one or more which is probabilistic) and the team is currently working to implement that scenario. Other than the scarcity of the resources, both physical (windows) and human (mailroom dispensing clerk), there appears to be job design issues, which would require further study in terms of facility design and operations management. The presentation at the conference will review the entirety of the project from data collection to model building and testing to the ARENA model(s), the study findings, and the recommendations for the improvement of the mailroom operation.

Keywords
Lean, Process improvement, Mailroom modeling, Simulation

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Biographies
Ms. Asnath Sethiel Mosha, Preferred name Asnath Sethy. She is a certified graduate in Computer Science and Engineering from St. Joseph University, Dar Es Salaam Tanzania in 2018. Currently she is attending the University of New Haven, where she will earn her MS degree in Engineering and Operation Management in May 2022. Asnath is working as a Graduate Assistant and honored to be a Senator at the University of New Haven, while doing her Internship at Yale University as a Hospitality Coordinator. She worked with Ifakara Health Institute and Horizon Digital Company for two years before returning to school for advanced studies. In Ifakara Health Institute (IHI), she has worked in different projects, including modifying the Mosquito Database (MDB), Managing ongoing Research and Data Analysis. In Horizon Digital Company she worked in creating different websites for different companies and managed different groups of team members on developing systems and applications. Her experience is predominately Project and Operations Management, Data Analysis, and Programing Languages such as, Java, Java Script, C, C++, HTML and CSS, PHP, MySQL, SQL, Visual Basic and Python. In addition to her professional work engagements, Asnath has been involved in leadership and volunteering activities around campus, such as being a class representative during her undergraduate study for three years under Computer Science and Engineering department.

Currently as a graduate student, she has been volunteering in Welcome Center during the University's Open Houses and Orientation Days.

Jack Krivitsky is currently working towards a dual master's degree program in Industrial Engineering and MBA at the University of New Haven. He is expected to complete his dual master's degree in the spring of 2023. He received his bachelor's degree in Industrial Engineering from the University of Pittsburgh in 2019. Jack has worked in multiple industries through different internship experiences, including real estate, manufacturing, consulting, distribution centers, retail, and management. He is now looking to expand his horizons towards healthcare. Within these fields, the majority of his work has been in operations, validation, and process improvement where he significantly strengthened his complex problem-solving skills through the versatility of his experiences. He also has software experience using Arena, Simio, RStudio, Minitab, Matlab, Python, Oracle, C++, HTML, and Unix.

Dr. M Ali Montazer is Professor of Industrial Engineering and Engineering Management at the University of New Haven, where he has been since September 1984. Dr. Montazer was nominate in 1986 and again in 1987 and was awarded the Excellence in Teaching Award in 1987. He leaves teaching and working with motivated and inquisitive students to work on applications-oriented projects, especially those coming from and sponsored by local industry. Over the years, he has worked with students on projects sponsored by Hershey Metal, Sikorsky Aircraft, Asa Abloy-Sargent, Cheese-borough Ponds (Unilever), Remington, US Surgical (Medtronic), Valley Tools and Manufacturing, and more. and served in a variety of administrative positions, including MSIE and MSEOM program Coordinator /Advisor, department Chair, Associate Dean, and interim Dean of the college of engineering. He is a senior member if IISE, a member of ManufactureCT, and a former member of ASEE and POMS. He is interested in man-machine interface design, simulation modeling, Job design and process improvement strategies, including six sigma.