

Rethink routine tasks to cut workplace environmental costs, says study

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A study to explore ways information systems (IS) could support eco-efficient behavior change in organizations found two equally effective IS methods to reduce paper printing by more than 70%.

The study was conducted by Dr. Kenan Degirmenci from QUT's Faculty of Science, School of Information Systems and Professor Jan Recker from the University of Hamburg. The paper, "Breaking bad habits: A field experiment about how routinized work practices can be made more eco-efficient through IS for sensemaking," was published in *Information & Management*.

Dr. Degirmenci said organizations were setting new sustainability goals to meet our 2030 targets and every routine practice in [work life](#) needed to be scrutinized for ways to promote more eco-efficient organizational practices.

"Our study compared two ways to prompt [cognitive dissonance](#) in participants that would nudge them into thinking about the environmental consequences of unnecessary paper printing and change their printer use," he said.

"The results of this study could be used for many routinized behaviors that could be modified to reduce environmental impact, such as travel behavior and [energy consumption](#).

"We chose paper printing because it is a simple action many people do without deliberately thinking about whether they need to do it or if there is another way to reduce their [environmental impact](#).

"Despite innovations such as cloud-based storage, printing remains a substantial environmental problem and one of organizations' most common drivers of [carbon dioxide emissions](#)."

Dr. Degirmenci said the study of 95 university staff used IS to deliver both an individual-level experiment involving a personalized weekly report of that person's use of the paper printer, and a collective change-method via an [online forum](#) with a discussion board, networking

opportunities and a voting system.

"We measured participants' number of printed pages, single-sided, double-sided, color, and black and white and matched it with the equivalent consumption of natural resources such as trees, carbon and energy," he said.

"We tracked paper consumption through the university's print management tool and provided individual email reports with numerical, text, and visual displays of environmental indicators: trees, [greenhouse gases](#), and energy used to produce paper, and the [economic cost](#) in dollars for printed pages.

"The email gave a comparison of each person's paper use over time with that of other participants.

"For the group experiment we first used an [online survey](#) to develop topics, such as 'how can we make our printing greener' and polls for our online discussion forum which enabled participants to discuss and reconsider their routinized work practices.

"For this group, IS support enabled them to comment and receive feedback together with sustainability-themed content. This design also gave participants network building opportunities through socialization in discussions."

"The email reporting system resulted in a reduction of paper printing of 75.75% and the online discussion forum reduced [paper](#) printing by 72.73%.

"Overall, both forms of IS support for sustainable change are interchangeable and there is no additional reduction by employing both methods simultaneously."

"This study shows that giving feedback to employees is another effective way to influence their motivation and behavior and shape their printing preferences such as to not print emails or other digital texts.

"In summary, our study emphasizes the importance of understanding organizational routines to question and modify existing environmentally harmful behaviors."

More information: Kenan Degirmenci et al, Breaking bad habits: A field experiment about how routinized work practices can be made more eco-efficient through IS for sensemaking, *Information & Management* (2023). [DOI: 10.1016/j.im.2023.103778](https://doi.org/10.1016/j.im.2023.103778)

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