Webinar on Understanding (unintended?) environmental and ecological consequences of digital proliferation

Pre-webinar Abstract:
The use of digital and information system (IS) technologies is growing in India and globally. While we reap diverse benefits, both private and public, don't we need to also understand the costs [1]? In this webinar, we focus on public costs in terms of impact to the environment. We discuss diverse environmental consequences over the life-cycle of digital and IS technologies. We examine diverse costs including CO2 emissions, resource usage, e-waste and pollution. The discussion covers historical changes, the current levels, and trends [2].

Summary of the webinar:

The webinar aims to spark a discussion on technology's known and unknown environmental consequences and facilitate a deeper understanding of its impacts. This will enable us to fully grasp the problem before focusing on potential solutions.

Introduction:

Dr. Vivek, an independent researcher and the curator for the webinar, kicked-off the panel discussion on understanding environmental and ecological consequences of digital proliferation. The genesis of this event lies in the discussions between CSITM Manager Venkatesh Balakrishnam and Vivek.

While numerous earlier events have discussed the benefits of these technologies, we do not seem to discuss the adverse impacts. IS has made it possible for us to receive so many products and services. For example, one of the popular components of IS these days is audio video media, which was earlier limited and difficult to access. Now a very large share of our global population has this kind of access as consumers and even producers. So this is the proliferation aspect. IS products and services provide various personal and some public benefits, e.g., through the digital public infrastructure. But we also have these ecological and environmental costs. And it's a very, very vast topic but not much in vogue. We attempt to bring the cost aspect into public discourse.

Talk 1: Dr.Uttam Doraswami

Dr. Uttam Doraswami, founder and director at Elxion Pvt. Ltd. in India, delivered a talk on e-waste management, emphasizing the urgent need for better strategies in handling electronic waste. His talk drew attention to inaccuracies in e-waste reporting caused by informal recycling practices. For India, the emphasis was on preparedness to deal with e-waste owing to rapid digitization and the technological and skill deficiencies plaguing the country's recycling industry. Product accountability was highlighted as a systemic gap, where manufacturers do not track their sold products but instead earn recycling credits by processing unrelated components, which they then report to the government. The talk called for holistic reforms to bridge skill gaps, improve legislation, and foster more effective e-waste management practices.

Talk 2: Dr. Jyoti Bhat

Prof. Jyoti Bhat, an Adjunct Professor at IIM Bangalore, discussed the responsible use of technology. She highlighted the neglected but significant contribution of the small elements of the digital infrastructure (eg: sensors) to electronic waste which often do not factor into sustainability discussions. Sustainability efforts are often more focused on showcasing outputs, rather than addressing the real problem. Stressing the importance of regulations, she called for stringent certifications for manufacturing small devices, to mitigate cumulative radiation and environmental harm. The role of the consumer was also noted that while vendors may follow standards, users often prioritize cost over quality, opting for cheaper, substandard products. Concluding her session, she proposed innovative ideas, such as establishing markets for certified pre-owned parts, designing devices with built-in monitoring for repair or replacement needs, and ensuring device connectivity for better lifecycle tracking.

Talk 3: Dr. Krish Vijayraghavan

Dr. Krish Vijayraghavan from Ramboll an engineering and consultancy company based in the US explored the air emissions associated with digital technologies across their lifecycle, emphasizing both their environmental benefits and challenges. He highlighted the positive impact of technologies on the environment by enabling effective monitoring, predictive analysis, and comprehensive impact assessments. A key focus of his talk was the need to prioritize increasing the lifespan of digital products, as the current trend of short-lifespan products contributes significantly to pollution and waste. Extending product life will not only reduce emissions but also minimize the resource-intensive processes associated with frequent manufacturing and disposal cycles.

Talk 4: Dr. Keerthi Dsouza

Dr. Keerthi Dsouza from LGS Assurance Private Limited, India addressed the environmental consequences of digitalization across the entire value chain rather than focusing on specific points of interest. Dr. Dsouza stressed the need to raise public awareness about the ecological footprint of digital device usage. Her talk highlighted critical aspects such as life cycle impact assessments, which consider both direct and indirect environmental effects, and the challenges posed by limited data availability on environmental impacts. She also touched on policy and regulatory frameworks that guide sustainability efforts in this domain.

At the end of the webinar, the panel discussion delved into the methodologies and models used for environmental impact assessments, focusing on the inputs required and how the results are communicated. A key point of discussion was the implementation of Extended Producer Responsibility (EPR) when integrating multiple vendors into a solution.

The issue of excessive data collection was also addressed, with panellists advocating for strategies to minimize unnecessary data. They suggested determining the utility of data at the point of collection and ensuring that only essential data is transmitted to the cloud. The panel emphasized the need for continued efforts to conserve resources and adopt sustainable practices.

The key takeaway for us (e.g., businesses, policymakers, individuals in decision-making positions) is that while digital or IS technology is a source of many financial benefits and potentially even social benefits, it comes with ecological and environmental cost or impact that may be hidden, and distant in space and/or time (both in the past and in the future). While the private and public benefits of IS are factored in our decision making to employ IS,

the harm to public goods seems to be largely ignored by us, or even unknown to us. We need to understand this important damaging aspect of the reality of IS production and IS consumption technologies. The subject-matter experts in this webinar provided us with a basic level of knowledge towards an improved understanding of the intended and unintended environmental and ecological consequences of digital proliferation. This knowledge would help us move towards more informed solutions that reduce the ecological and environmental harms.

References

1. Dwivedi, Yogesh K., Laurie Hughes, Arpan Kumar Kar, Abdullah M. Baabdullah, Purva Grover, Roba Abbas, Daniela Andreini, et al. “Climate Change and COP26: Are Digital Technologies and Information Management Part of the Problem or the Solution? An Editorial Reflection and Call to Action.” *International Journal of Information Management* 63 (April 1, 2022): 102456. https://doi.org/10.1016/j.ijinfomgt.2021.102456.
2. Freitag, Charlotte, Mike Berners-Lee, Kelly Widdicks, Bran Knowles, Gordon S. Blair, and Adrian Friday. “The Real Climate and Transformative Impact of ICT: A Critique of Estimates, Trends, and Regulations.” *Patterns* 2, no. 9 (September 10, 2021): 100340. https://doi.org/10.1016/j.patter.2021.100340.