



ICT Challenges and Opportunities in Building a “Bright Society”

Wonseok Oh¹, Alessandro Acquisti², and Choon Ling Sia³

¹College of Business, Korea Advanced Institute of Science and Technology, wonseok.oh@kaist.ac.kr

²Heinz College, Carnegie Mellon University, acquisti@andrew.cmu.edu

³City University of Hong Kong, iscl@cityu.edu.hk

1 Introduction

Information and communication technologies (ICTs) have introduced great changes into our personal and professional lives. Although the debate over the benefits of ICTs (and how to measure them) still lingers (Remenyi, Money, and Bannister, 2007), there is a general consensus that ICTs have driven innovations in key societal dimensions, including economic development, health care, education, and connectivity. Since the 1990s, for instance, ICTs' contribution to the U.S. GDP has increased to 25 percent¹. ICTs have also significantly affected health care services across the globe and now contribute to the delivery of high-quality patient care. Furthermore, ICTs have promoted increased access to education and enhanced the quality of teaching and learning (Livingstone, 2012).

However, the benefits of ICTs come with a price. Novel information and communication technologies have raised or exacerbated challenging issues affecting individuals and societies. Cybercrime and economic espionage, for example, cost the global economy as much as 575 billion USD per year.² The erosion of privacy affects autonomy and changes the way we think, act, and interact in online environments (Acquisti, Brandimarte, & Loewenstein et al., 2015). Cyberbullying and online abuse are unwelcome byproducts of ICTs—more than two-thirds of users aged 13 to 22 have been victimized by cyberbullying³, cyberstalking, or online harassment. ICTs are also

heavily criticized for widening social and economic inequalities around the world (Atkinson et al., 2012; Piketty, 2014) and for deepening the digital divide between the rich and the poor. A key government officer who served under former President Obama recently warned us of this gap: “We are creating two Americas where the wealthy have access . . . while others are left on a bike path, unable to join in the social and economic benefits that the Internet brings.”

This special issue seeks to identify the diverse challenges created by ICTs and offer effective solutions to these challenges. We received nearly forty submissions, covering a diverse spectrum of methodologies and focus. Of them, we accepted six papers: four recount examinations of ICT-driven challenges—ranging from cyberbullying and cyberattacks to privacy threats—and two discussions on how ICTs can play an important role in improving health care services and fostering societal transformation toward the development of a “Bright Society.”

2 ICT Challenges and Opportunities

One of the challenges faced in building a Bright ICT Society is how to respond to cyberbullying. Over 70% of American teenagers between 13 and 17 years old use social media to interact and communicate (Lenhart, 2015). Social media—and online interactions, by extension—offer adolescents significant learning and

¹ https://www.tiaonline.org/gov_affairs/fcc_filings/documents/Report_on_ICT_and_Innovation_Shapiro_Mathur_September_8_2011.pdf

² <https://www.politico.com/story/2014/06/cybercrime-yearly-costs-107601>

³ <http://www.antibullyingpro.com/blog/2015/4/7/facts-on-bullying>

socializing opportunities but can also expose them to negative consequences. One such consequence is cyberbullying, to which the most frequent users of social media (i.e., adolescents) are also among the most vulnerable (Sevickova & Smahel, 2009). Cyberbullying is associated with negative outcomes; it has been linked to depression, anxiety, poor academic performance, increased alcohol and drug use, and even suicide attempts (Wright, 2016). In this special issue, Wright (2018) uses a longitudinal research design to study the role that parental mediation strategies play in mitigating the negative effects of cyberbullying via social networking sites. Parental mediation strategies include restrictive approaches (e.g., parents imposing a limit on the amount of time an adolescent is allowed to surf social networking sites), instructive methods (e.g., parents showing their children how to use social media sites and warning them about possible risks), and covieing strategies (e.g., parents surfing sites together with their children). Wright conducted a survey of 567 adolescents in two waves (during the fall of seventh grade and the fall of eighth grade). She found that restrictive mediation was positively associated with cyberbullying victimization and with higher rates of depression and anxiety measured at the end of the study. In contrast, covieing mediation and instructive strategies were associated with lower rates of cyberbullying victimization and lower rates of depression and anxiety measured at the end of the study. As Wright summarizes in her paper, the results stress how important parental involvement is for helping adolescents navigate social networking sites while enjoying the bright side of ICTs.

Suh, Lee, Suh, Lee, and Lee (2018) offer several interesting directions for curbing cyberbullying in online news environments. Unlike traditional media-delivered news, Internet news presents opportunities for readers to comment on content or respond to an author. Comment systems may function as feedback mechanisms by providing a space where readers and journalists can interact. Nevertheless, this system has also given birth to what is becoming a serious social problem—malicious commenting, which includes instances of undesirable conduct, dissemination of falsehoods, or attacks on specific persons that include swear words, slanderous expressions, and/or sexually degrading comments. Suh et al. focus on the possibility that the emerging comment system could serve as a “public sphere” where the various thoughts and feelings of commenters constitute a network. Departing from previously mentioned policies that, in effect, censor and manage comments, the active moderation regulations that the authors recommend encourage people to write deliberative comments. They propose and empirically evaluate two moderation policies—namely, constructive seed comments and a login policy that uses social networking site accounts for increased identifiability—to determine whether

these measures lead to deliberative discussions. The authors found that both policies effectively improved the quality of comments through highlighting the function of commenting as an avenue for thoughtful, meaningful conversation.

Currently, the development of interpersonal relationships increasingly involves the use of social networking websites. Users are often enticed by opportunities to connect with their offline networks online and increase their social capital by developing new online social connections. Yet, emerging evidence has suggested that cultivating relationships online can, at times, expose users to a variety of threats, including privacy breaches and harassment. Drawing on impression formation theory and the privacy calculus perspective, Choi, Wu, Yu, and Land (2018) contribute to the discussion of privacy-related “bright ICTs” in three ways. First, they inform the design of personal profiles by demonstrating the importance of network mutuality and profile diagnosticity in privacy evaluations. Second, they advance the understanding of the effects of privacy concerns on online social networking behavior by clarifying the interplay between dispositional privacy concerns and situational privacy evaluations. Finally, they illustrate the prevalence of both active and passive responses in protecting users against privacy risks.

Shin, Lee, and Kim (2018) tackle the regulatory issues of cybersecurity and the responsibility of countries and global governance concerning this matter. The authors developed a preventive cybersecurity paradigm that contrasts with the existing paradigm of self-protective defense. Preventing cybersecurity threats necessitates that sources of cybersecurity violations be eliminated through implementing the origin-responsible principle of the Bright Internet. The origins of threats are rooted not only in private-led cybercrime but also in state-led cyberterror. Hence, the research analyzes the characteristics of state-led cyberattacks on the basis of several significant cases, thereby extending the scope of information systems research to global societal problems. The authors propose that to prevent state-led cyberattacks, responsible countries should conform to the five principles of the Bright Internet (principles of origin responsibility, deliverer responsibility, identifiable anonymity, global collaboration, and privacy protection). However, if ill-intentioned countries violate the principles, they are obviously less effective on a global scale. In response, the authors propose an international enforcing mechanism called the Internet Peace Principles. In order to develop the Internet Peace Principles and make them consistent with existing international conventions, Shin et al. analyzed international statements associated with four traditional conventions, three research statements on cybersecurity, and two analogical conventions. They derived the Internet Peace Principles from these

conventions and specified them in terms of Bright Internet principles. Together, these principles will contribute to the development of a new international cyberconvention.

Dadgar and Joshi (2018) direct their attention to the relationship between ICTs and individual health. Rather than looking into the potential risks associated with ICT usage (as well as the mitigation strategies for those risks), the authors focus on how ICTs can be designed to support patients' ability to engage in health self-management. Dadgar and Joshi's investigation focuses on diabetes—a chronic disease that the World Health Organization (2015) named an invisible epidemic—and examines how ICTs contribute to empowering diabetes patients through attention to patient values. In value sensitive design (VSD), "value" broadly refers to what is important to the user of a system. The heart of Dadgar and Joshi's examination lies in the consideration of what patients value in the design of ICTs for health self-management. Through interviews with patients, the authors uncover a set of values held by individuals suffering from diabetes (e.g., accountability, autonomy, dignity, and privacy) and establish a conceptual model that identifies the values implicated in ICT features that contribute to advancing or impairing patients' ability to independently manage their health. The empirical analysis and the resultant model highlight a path forward for Bright Health Care ICTs on the basis of a deep and careful consideration of the values that end users attach to their designs.

Finally, Lee, Shao, and Vinze (2018) probe how ICTs enhance socioeconomic restructuring and sociopolitical changes for countries in various stages of development (i.e., developing, transition, and

developed). One of their main findings suggests that ICT investments positively affect employment and wealth equality in developing countries, but that such favorable effects are not fully observed in countries that are in the transition or developed stage. Although ICT-driven job creation and income inequality reduction have led to substantial economic and social benefits in developing nations, ICT investments have yet to advance the achievement of economic or political freedom, given the low utilization and slow diffusion of ICTs. The authors recommended that policy makers and the government executives of developing countries increase public access to digital services, establish effective legal frameworks, and enhance the affordability of ICT goods and services. These measures can promote ICT adoption and create ICT-friendly environments facilitating the development of a Bright Society.

3 Conclusion

The six manuscripts included in this special issue illustrate some of the diverse challenges associated with the development of novel information and communication technologies, but also some of the ways that ICTs can, themselves, provide solutions to these challenges. Academic communities across a variety of fields are mindful of the ICT-related economic, legal, and ethical challenges that confront our global society. The editors' hope is that this special issue will encourage further IS research and discussion into the design, development, and implementation of "bright ICTs" in a way that counters the negative effects of such technologies and helps establish a safe and prosperous society.

References

- Acquisti, Alessandro, Laura Brandimarte, & George Loewenstein. (2015). Privacy and human behavior in the age of information. *Science*, 347(6221), 509-514.
- Atkinson, R., Stewart, L., Andes, S., and Ezell, S. (2012). Worse than the great depression: What experts are missing about American manufacturing decline. Retrieved from <http://www.countdownnet.net/Allegati/63%20Worse%20Than%20the%20Great%20Depression.pdf>.
- Lenhart, A. (2015). Teens, social media & technology: Overview 2015. Retrieved from: <http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015>.
- Livingstone, Sonia. (2012). Critical reflections on the benefits of ICT in education. *Oxford Review of Education*, 38(1) (2012), 9-24.
- Remenyi, Dan, Arthur Money, & Frank Bannister (2007). The effective measurement and management of ICT costs and benefits. Amsterdam: Elsevier, 2007.
- Ševčíková, A., & Šmahel, D. (2009). Online harassment and cyberbullying in the Czech Republic: Comparison across age groups. *Zeitschrift für Psychologie/Journal of Psychology*, 217(4), 227-229.
- World Health Organization. (2015). Noncommunicable diseases. Retrieved from <http://www.who.int/mediacentre/factsheets/fs355/en/>.
- Wright, Michelle F. (2016). “Cyber victimization on college campuses: Longitudinal associations with suicidal ideation, depression, and anxiety.” *Criminal Justice Review*, 41(2), 190-203.

About the Authors

Wonseok Oh is the KCB Chair Professor at the College of Business, Korea Advanced Institute of Science and Technology. He received his PhD in information systems from the Stern School of Business at New York University. His research interests include economics of information technology, mobile consumption and addiction, social networks, and e-book pricing. His work has been published in premier journals, including *Information Systems Research*, *Journal of the AIS*, *Journal of Management Information Systems*, *Management Science*, *MIS Quarterly*, and *Production and Operations Management*.

Alessandro Acquisti is a professor of information technology and public policy at the Heinz College, Carnegie Mellon University, the PwC William W. Cooper Professor of Risk and Regulatory Innovation, and a Carnegie fellow (inaugural class). He is the director of the Peex (Privacy Economics Experiments) lab at CMU, and the codirector of Carnegie Mellon's CBDR (Center for Behavioral and Decision Research). Alessandro investigates the economics of privacy. His studies have spearheaded the investigation of privacy and disclosure behavior in online social networks, and the application of behavioral economics to the study of privacy and information security decision-making. His studies have won numerous awards and have been published in journals, books, and proceedings across different fields, including *Science*, *Proceedings of the National Academy of Science*, *Management Science*, *Journal of Economic Literature*, *Marketing Science*, *Journal of Consumer Research*, *Journal of Personality and Social Psychology*, and *Journal of Experimental Psychology*. Alessandro has testified before the U.S. Senate and House committees on issues related to privacy policy and consumer behavior. His findings have been featured in national and international media outlets, including the *Economist*, the *New York Times*, the *Wall Street Journal*, the *Washington Post*, the *Financial Times*, *Wired.com*, *NPR*, *CNN*, and *60 Minutes*; his TED talks on privacy and human behavior have been viewed over 1.2 million times online. Alessandro holds a PhD from UC Berkeley, and Master degrees from UC Berkeley, the London School of Economics, and Trinity College Dublin.

Choon Ling Sia is a professor at the City University of Hong Kong and AIS fellow (2015). He received his PhD degree from the National University of Singapore. He is Director of the Center of Social Media Marketing and Business Intelligence at the City University of Hong Kong. He is serving, or has served, on the editorial boards of *Journal of the AIS*, *MIS Quarterly*, *Information Systems Research*, *IEEE Transactions on Engineering Management*, *Journal of Global Information Management*, *Information and Management*, and *Journal of Database Management*. His research interests include cross-cultural issues in information systems, electronic commerce, healthcare IS, distributed work arrangements, and computer-mediated communication.

Copyright © 2018 by the Association for Information Systems. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and full citation on the first page. Copyright for components of this work owned by others than the Association for Information Systems must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists requires prior specific permission and/or fee. Request permission to publish from: AIS Administrative Office, P.O. Box 2712 Atlanta, GA, 30301-2712 Attn: Reprints or via e-mail from publications@aisnet.org.