Theory Building with Big Data-Driven Research – An Editorial Perspective

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Abstract: Data availability and easier access to various computational methodologies, are transforming the Information Systems (IS) discipline. As more and more platforms get integrated with social media and other platforms, the generation of big data is facilitated (Kar, 2014; Kar, 2015, Grover et al., 2017). This big data may be generated due to interaction of users with the platform, interaction among users, interaction among components during workflows in massive enterprise systems, and interaction among multiple organizations like government, firms, and individuals (Singh et al., 2017; Gupta et al., 2018; Grover and Kar, 2017). This big data may be analyzed using machine learning and artificial intelligence to generate insights for decision making (Chakraborty and Kar, 2016, 2017; Kar, 2016).

These studies on data science often use big data which may incorporate structured and unstructured data, from various digital platforms like social media, emails, IoT devices, mobile applications, telecommunication devices, and smart applications. The research objectives that these studies address may attempt to use methods from computational science to derive knowledge encoded into this big data. Interestingly, the theoretical contributions are sometimes questioned in these studies. There is a need to ground back studies on data science to information systems discipline so that the findings can enable a better understanding of the interaction, usage and impacts of individuals, organizations, society, and polity with technological artefacts. Multiple stakeholders may also be used in such analysis as multiple stakeholders often facilitate collective knowledge documentation (Kar and Pani, 2014; Grover et al., 2019a; Grover et al., 2019b). We provide direction in our opinion article to fulfill this grand objective to redefine research directions within data science research.

In this journey towards knowledge creation, first, the researchers need to develop the research questions. Subsequently, based on the research questions, the data collection strategy and sampling strategy has to be formulated. This addresses concerns surrounding veracity within big data research. Care should be taken in such research to demonstrate the reliability and validity of measures. The methodology for theory building, being big data-driven and therefore inductive, it is important to iteratively revisit the literature for developing a theoretical model. Such a theoretical model should have ample opportunities for objective model specification. The inputs to these models would be determined from big data analytics methods which may mine unstructured and structured data for computing attributes for the model validation. Statistical validation is very important in these studies beyond outputs derived from data visualization approaches. Researchers should also take ample care to minimize the trade-off between internal validity and external validity in these big data-driven studies.

1. Short Biography

Prof. Arpan Kar is Associate Professor in Information Systems, in DMS, Indian Institute of Technology Delhi, India. His research interests are in the domain of data science, digital transformation, internet ecosystems, social media, and ICT-based public policy. He has authored over 150 peer-reviewed articles and edited 7 research

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monographs with few thousands of citations. He is the Editor in Chief of IJIM Data Insights, published by Elsevier, the companion journal of International Journal of Information Management. He further actively supports reputed knowledge dissemination platforms like Int. Journal of Electronic Government Research, Information Systems Frontiers, Advances in Theory and Practice of Emerging Markets, Global Journal of Flexible Systems Management, Int. Journal of Information Management, ICIS, PACIS, ECIS, and IFIP conferences as associate editor and on the editorial board. He has been a guest editor for journals like Industrial Marketing Management, International Journal of Information Management, Information Systems Frontiers, Australasian Journal of Information Systems, and Journal of Advances in Management Research. He has received reviewing excellence awards from multiple journals like I&M, GIQ, IJIM, LUP, JRCS, JOCS, and ESWA. Prior to joining IIT Delhi, he has worked for IIM Rohtak, IBM Research, and Cognizant. He has also handled over 30 research, advocacy and training projects from national and international firms and governments. He has held multiple administrative positions as chair of corporate relations, academic program improvement, doctoral colloquium, strategic growth, faculty recruitment, IT automation, and so on. He has received numerous recognitions for his research contributions from reputed organizations like IFIP, TCS, PMI, AIMS, IIT Delhi, BK Birla (BimTech), and IIM Rohtak. Prior to joining IIT Delhi, he has worked in IIM Rohtak, Cognizant Business Consulting, and IBM India Research Laboratory.

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