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I am a Ph.D. candidate majoring in Information Systems (IS). This is my third year in the Ph.D. program at Business School, University of Colorado Denver. I have completed two years of Ph.D. coursework and passed my comprehensive examination this summer (Summer 2019). I am writing to apply for the NBER Digitization Tutorial 2020.

Besides the core IS courses such as Advances in Management IS, Mixed Methods Research, and Analytical Research Management IS, during my two years of coursework, I have taken several economics courses to reinforce my research on the economics of IS. For example, I took the Mathematical Statistics for Economists (ECON 7818) and the Applied Microeconomtrics (ECON 8848), and audited the Microeconomic Theory (ECON 7030) at the University of Colorado Boulder.

My main research interest is the economics of IS, with a focus on information technology (IT) strategy and IT/IS for sustainability. The main research method I am using is econometrics. I am sure the tutorial on the Economics of Digitization is helpful for my research. Currently, I am working on several research projects with professors worldwide. I made significant contributions to these research projects.

Research Project 1: IT Investment in Family-Owned Firms: Evidence from Emerging Economy

Part 1: Ning, Xue, A Kathuria, P Karahade, J Khuntia. 2019. A Longitudinal Study in India on the Effect of Ownership and Management Control on IT Investment. *Academy of Management Proceedings*.

Investment decision making is a complicated process and more so when family influence exists in a firm. To achieve long-term success in the current competitive environment, information technology (IT) investment is key for firms to maintain a competitive advantage. Recent studies show that family influence such as family ownership, family involvement, and the way of management and governance has different impacts on R&D investment, technology adoption, and strategies of a firm. However, little is known about how the level of the family- or foreign- ownerships influence a firm's IT investment, and how the management type, including family management and professional management, further influence the direct ownership and IT investment relationship. This study aims to answer these questions with six hypotheses. A dataset of 3,321 large Indian publicly traded firms between 2006 and 2018 is used to test our hypotheses. The results show that family ownership is negatively related to IT investment, but foreign ownership has a positive effect on IT investment. Furthermore, family management and professional management controls have a different moderating effect on the ownership and IT investment relationship. The results unravel the puzzle of ownership and management control influence on IT investments and inform granular insights on the differentiating effect in the context of an emerging economy.

Part 2: Ning, Xue, A Kathuria, P Karahade, J Khuntia. 2019. Information Technology Investment, Environmental Hostility, and Firm Performance: The Roles of Family Ownership in an Emerging Economy. *Accepted for the Hawaii International Conference on System Sciences (HICSS) 2020.*

This study examines the influence of family ownership on the information technology (IT) investment and its impact on the moderating effect of environ-mental hostility on the relationship between a firm's IT

investment and its performance in an emerging economy context. We argue that the roles of family ownership can be bi-directional under different situations, thus comprehensive studies on family ownership in the IT investment context are needed. This study aims to address this research gap. A panel dataset of more than 3,000 large Indian publicly traded firms between 2006 and 2018 is used to test our hypotheses and answer our research questions. The results suggest that on the one hand, family ownership has a negative effect on IT investment, and on the other hand, when the external environment is hostile, family ownership can help to reduce the negative moderating impact of environmental hostility on the IT investment-firm performance relation-ship. Contributions and implications of the findings are discussed.

Research Project 2: Climate Change Risk Perception and Carbon Disclosure: the Role of IS

Ning, Xue, J Khuntia, T Saldanha, N Melville. 2019. Green IS in Sustainability Governance: Climate Change Risk Identification and Carbon Disclosure Performance. *Accepted for the International Conference on Information Systems (ICIS) 2019.*

Climate change is a global risk. The perception of this risk differs from business to business, influencing the variation in responses. Prior studies suggest that businesses need to prepare and respond to climate risk, while embedded within their institutional settings. Less is known about the role of information systems (IS) in this process. In this study, we explore the role of green IS in sustainability governance to influence firms' carbon disclosure performance. We hypothesize that implementation of green IS and the verification against standards, moderate the effects of climate change risk-intensity perception on the carbon disclosure performance, either positive or negative, depending on the institutional environment in which the firm is situated. We use samples of firms from the United States and Europe to test and validate our hypotheses. The main contribution of this study is proposing and validating institutional variations of the green IS in the sustainability governance framework.

Research Project 3: Residential Informedness and Energy Consumption: Evidence from Field Experiments

Ning, Xue, J Khuntia, D Yim, R Kauffman. 2019. Residential Informedness and Collective Action for Sustainability: A Social Informedness Theory Approach. *MIS Quarterly: Reject & Resubmit.*

Sustainability management is emerging as an important concern in the private and public sectors. Prior studies suggest that informedness is influential for appropriate household and citizen actions in the resource sustainability context. Less is known about the mechanism through which informedness can influence sustainability-related actions by people, however. This study focuses on residential informedness, the degree of information received by individuals in a residential building that is related to collective action they take to improve resource sustainability. Residential informedness influences collective action for sustainability through the identification of responsibility, a form of individual attribution, and the control perceptions of residents, who can take actions to reduce wasted electricity. Four hypotheses are presented and tested regarding the attributions and control perceptions of the residents. The empirical research design involves data collected from 43 randomly-selected residential dorms of a large university in the U.S. Four field experiments were carried out to test hypotheses related to a new social informedness theory involving responsibility attribution and perceptions of control for sustainability outcomes, in the presence of differential levels of residential informedness. The findings support collective action for sustainability through enhanced residential informedness.