TODD A. HALL

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EDUCATION

2016-2021 Duke University, Fuqua School of Business
PhD in Business Administration, Strategy

2014-2016 Brigham Young University, Marriott School of Business
MBA

2006-2012 Brigham Young University
BA, Economics

RESEARCH

I study how organizations and work, particularly that of managers, evolve with technological change. I use large sample administrative data and econometrics to glean lessons from past technological change and an experiment and a simulation to learn about the challenges posed by more contemporary emerging technologies.

DISSERTATION: TECHNOLOGY AND THE CHANGING NATURE OF MANAGEMENT

Committee: Victor Bennett (Chair), Sharique Hasan, Ines Black, Ryan McDevitt

Essay 1: Organizing Managerial Work around IT Adoption

Existing research has shown that organizations that adopt IT are flatter and assign more workers per manager but organizations vary in the roles they require managers to play. In this essay, I study whether organizations' response to IT depends on the type of work they ask managers to perform. Because of IT's effects on communication, I focus on the varying importance of communication across different managerial occupations. I combine complete employment records from 11 hospitals with IT adoption and occupation data to answer this question. The results indicate that only organizations with high manager communication requirements increase span of control as they adopt IT. Organizations with low manager communication requirements actually decrease span of control with IT adoption. I take advantage of a shock to IT adoption to show that these relationships are causal and present evidence suggesting that the mechanism underlying these patterns is changes in manager communication after IT adoption. Finally, I find that implementing IT can help mitigate any lower quality resulting from less supervision and that cost savings from increasing manager supervision load do not completely offset cost increases associated with IT adoption.

Essay 2: Market Segment, Organizational Form, and Information Technology

In my coauthored paper in *Strategic Management Journal*, we showed that software adoption is positively associated with the entry of new firms and the exit of large firms. Past research has shown that software adoption has heterogeneous effects on firm performance depending on firm complements. In this essay we ask whether late entrants benefit more from software and, if so, why? We use employer-employee matched data for the complete set of Portuguese firms to show that the sales and margins of late entrants are indeed more sensitive to software adoption. Late entrants possess organizational forms with broader lower levels that are complementary to software. Because of their complementary structure, late entrants also adopt more software than early entrants do.

Essay 3: The Modern Manager

In recent years, there has been a renewed interest in studying the effect of good management practices on firm performance. While the result that good basic management practices lead to better firm performance is an intuitive result, it is less clear whether using innovative management practices will provide a firm with a competitive advantage. Using a grant from the Strategic Research Foundation, I am collecting data on the job requirements of managers at thousands of public firms over the past decade. This data will allow me to document important trends in management in recent years. I will then merge this data with firm financial data to see whether firms at the forefront of managerial practices actually achieve better performance than do firms lagging in management practices.

RELATED WORK IN PROGRESS

In a coauthored work in progress, we ran an experiment in a behavioral lab looking at how the transition to Industry 4.0 technologies such as artificial intelligence (AI) will change teamwork. In this experiment, teams of students fulfilled different managerial roles but worked together to run a simulated factory. Control group teams received only basic reports of past performance á la industry 3.0, but treatment group teams managed smart factories with various automation technologies that produced AI recommendations for the participants. In a second treatment group, representing a transition state, only one team member received Industry 4.0 technologies. We find that teams in the transition state have higher levels of coordination, trust, and continuous improvement than do teams in the control and full treatment groups.

In a different working paper my coauthor and I ask how firms can best organize around digital experimentation. Commentators and researchers have hailed digital experimentation as a revolutionary technology enabling better decision making but also criticized it for encouraging only incremental improvements. We construct a model of experimenting organizations with various product complexities and decision-making protocols and perform a simulation to find that organizations can balance these two effects by optimizing their organization around digital experimentation. Organizations with largely decentralized decision-making but with a single centralized authority that sets standardized thresholds for adoption achieve improvement with less downside risk.