

THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Department of Information Systems, Business Statistics and Operations Management

IS SEMINAR ANNOUNCEMENT



Artificial Intelligence and Firm Resilience: Evidence from Firm Performance under Disaster Shocks

by

Ms. Miaoze HAN
Chinese University of Hong Kong

DATE	23 November 2023 (Thursday)
TIME	10:15 am - 11:45 am
VENUE	4/F ISOM Meeting Room (Room 4047), LSK Business Building

ABSTRACT

Artificial intelligence (AI) has been increasingly deployed in business operations over the past decade. While AI productivity in normal times is extensively studied, direct evidence of its effectiveness in uncertain contexts is limited. Our work fills this gap by focusing on the contribution of AI to corporate resilience. Specifically, we measure firm AI investment by the cumulative AI-relevant skills extracted from a comprehensive job posting database. We gauge firm resilience with the changes of corporate valuation in response to natural disaster-induced operational shocks. Using a pooled event study approach, we provide evidence that AI generates resilience: an average firm that equips 2.4% of total jobs to be AI-related could approximately recover the full damage of disasters reflected in corporate valuation over a short event window. Then, we discuss mechanisms under the framework of an adapted production function. Combined with an instrumental variable that integrates baseline firm-specific task structure and over time task-specific AI suitability, we find consistent evidence that, during turbulent periods, AI deployment moderates the decreased responsiveness of firm output to both labor and capital inputs in the production process. An array of sub-sample analyses reveal a pressing phenomenon that although currently under-performing firms could potentially benefit more from an additional unit of AI investment, the realized productivity of which is notably restrained due to a lack of complementary organizational designs. Overall, our study makes a distinct contribution relative to prior literature that has focused on AI productivity while assuming certainty or homogenous factor elasticity. Our findings provide managerial implications regarding the interplay between environmental conditions and firm investments in both AI technology and complementary infrastructures.

BIOGRAPHY

Miaoze Han is a Ph.D. candidate at the Chinese University of Hong Kong. Her research centers around the economics of emerging technologies, with a particular focus on artificial intelligence and contributing algorithms. Her studies examine the impact of prediction machines deployed in various contexts such as industrial operations and social media. In identifying potential inefficiencies, she proposes managerial or technical tools for improvement. As part of her broader exploration, she also collaborates extensively with companies, including e-commerce and video-sharing platforms, to investigate how ever-changing technologies reshape user behaviors and online interactions, and how these platforms can foster sustainable innovations. Her papers have been published or are currently under revision at top scientific and management journals.