ABSTRACT

Artificial Intelligence (AI) technologies are transforming many industries and our society. While both academia and industry consider AI closely intertwined with innovation, we still have limited knowledge of the business and economic values of AI on innovation. This dissertation seeks to address this gap (i) by proposing a novel firm-level construct to identify strategically innovative firms; (ii) by examining how firm-level deep learning (DL) capabilities affect knowledge innovation; and (iii) by investigating the economic and societal impact of AI robotics in the customer-facing service industries.

In the first essay, we propose a novel firm-level construct, Strategic Competitive Positioning (SCP), to identify distinctive strategic positioning (i.e., first-movers, followers) and competition relationships. Drawing on network theory, we develop a structural hole-based, dynamic, and firm-specific SCP construct. Using a large dataset of 10-K annual reports from all public firms in the U.S., we demonstrate the value of the proposed measure by examining the impact of SCP on subsequent IPO performance.

In the second essay, we study the impact of firm-level DL capabilities on exploration to determine how AI's value creation can facilitate knowledge innovation. Drawing on the theories of organizational learning and path dependence, we theorize how DL capabilities can help firms overcome path dependence and pursue exploration. The findings show that a firm's DL capabilities have a positive impact on exploration, and conventional exploratory innovation-seeking approaches negatively moderate the positive impact of DL capabilities on exploration.

In the third essay, we seek to understand the economic and societal impacts of service robots, embodied AI with a physical presence. The findings from a difference-in-differences estimation demonstrate that service robot adoption increases restaurant performance, specifically through improved dining experience of existing customers. Subsequently, we differentiate between two forms of managers' intent in adopting AI robots: employee replacement and collaboration. While replacement positively impacts the perceived atmosphere quality, collaboration positively affects the perceived service, manage, and atmosphere quality.

In sum, this dissertation makes a substantial contribution to the literature on AI and innovation by enhancing our understanding of the influence of AI technologies on different types of innovation.

BIOGRAPHICAL NOTES

Place of Birth:	Seoul, South Korea
Academic Studies:	B.A. Yonsei University, 2012
	M.A. Yonsei University, 2014
Current Position:	Ph.D. candidate, UBC

GRADUATE STUDIES

Field of Study:	Economics of AI and Innovation

Courses (500 level and above)		Instructors
COMM 525	Introduction to Behavioural Research Methods for Business	Dr. Ronald T. Cenfetelli
COMM 590B	Topics in Business Administration	Dr. Ronald T. Cenfetelli
COMM 633	Modelling Methods in the Research and Practice of Information Systems	Dr. Ning Nan and Carson Woo
COMM 634	Empirical Research Methods in Information Systems	Dr. Ronald T. Cenfetelli
COMM 635	Advanced Topics in Management Information Systems	Dr. Arslan Aziz
COMM 693	Seminar in Research Methodology I	Dr. Sanghoon Lee
CPSC 503	Computational Linguistics I	Dr. Giuseppe Carenini
LING 530G	Linguistic Problems in a Special Area	Dr. Muhammad Abdul-Mageed

AWARDS

Dean Earle D MacPhee Memorial Fellowship, 2019, 2020, 2022, 2023
President's Academic Excellence Initiative PhD Award, 2020, 2021, 2022, 2023
Four Year Fellowships (4YF) Tuition Award, 2019, 2020, 2021, 2022, 2023
International Tuition Award, 2019, 2020

PUBLICATIONS

Lee, M., Lee, G. M., & Cui, V. (2023). Go Beyond the Local Search: Understanding the Impact of AI Capabilities on Exploratory Innovation. In Academy of Management Proceedings (Vol. 2023, No. 1, p. 19196). Briarcliff Manor, NY 10510: Academy of Management.

PRESENTATIONS

Conference on Information Systems and Technologies (CIST), 2019, 2023
Academy of Management (AOM) Annual Meeting, 2023
INFORMS Annual Meeting - Accounting and Data Analytics, 2022
INFORMS Workshop on Data Science (DS), 2021, 2022
Workshop on Information Technologies and Systems (WITS), 2020
Bright Internet Global Symposium (BIGS), 2022
KrAIS Research Workshop, 2020, 2021

SUPERVISORY COMMITTEE
Prof. Gene Moo Lee
Prof. Hasan Cavusoglu
Prof. Sang-Pil Han

UNIVERSITY OF BRITISH COLUMBIA
EXAMINATION PROGRAMME

The Final Oral Examination
For the Degree of

DOCTOR OF PHILOSOPHY
(Business Administration)

MYUNGHWAN LEE

M.A., Yonsei University, 2014
B.A., Yonsei University, 2012

Exam Date & Time: (Wednesday, March 6, 2024, 9:30 am)
Exam Location: Room 966, Henry Angus building
Latecomers will not be admitted

"Three Essays on AI Strategies and Innovation"

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      Prof Gene Moo Lee, Research Supervisor (Business Administration)
      Prof Hasan Cavusoglu, Committee Member (Business Administration)
      Prof Sang-Pil Han, Committee Member (Business Administration)

University Examiners:
      Prof Ning Nan (Business Administration)
      Prof Muhammad Abdul-Mageed (Linguistics)

External Examiner:
      Prof Kunsoo Han
      Desautels Faculty of Management, McGill University
      Montreal, Quebec
      Canada