

# THE HONG KONG POLYTECHNIC UNIVERSITY DEPARTMENT OF MANAGEMENT AND MARKETING

## Departmental Research Seminar



For Better or For Worse:  
Impacts of IoT Technology in  
e-Commerce Channel  
By

Dr Yonghua Ji  
University of Alberta

Date : 17 May 2021 (MON)

Time : 9 am – 10:30 am

Venue : Online via Zoom

### Abstract

Internet of Things (IoT) technology utilizes sensors and other internet-enabled devices to collect and share data. It is widely regarded as a disruptive technology that brings tremendous opportunities to supply chain members. This paper uses a game-theoretical model to study an e-commerce setting in which an online platform provides IoT infrastructure and a manufacturer sells its products on the platform. Our work examines the interaction among the manufacturer's IoT investment decision, the platform's choice of distribution contract, and the platform's transfer payment strategy. We solve the model analytically and obtain several interesting findings. Our study shows that the manufacturer in a wholesale contract is more likely to invest, and invests more, in IoT technology than in an agency contract. One surprising finding is that both the manufacturer and the channel performance could be hurt by an increase of IoT technology value in certain situations. Also surprisingly, even having the option of investing in IoT technology by the manufacturer can make both the manufacturer and the channel performance worse off. Therefore, the advancement of IoT technology might not benefit either manufacturers or the whole industry, although e-commerce platform giants and the news media have been advocating the benefits of IoT technology enthusiastically in recent years. Our results should concern both device manufacturers who contemplate adopting or have adopted IoT technology and policymakers who are interested in overall channel performance.

**Dr Yonghua Ji** is an Associate Professor of MIS in School of Business, University of Alberta. He received his Ph.D. in Management, with a major in MIS, from University of Texas at Dallas. His research interests include economics of information systems, and information security. He has published in top journals such as *INFORMS Journal on Computing*, *Information Systems Research* and *Production and Operations Management*. Currently he is a senior editor of *Production and Operations Management* and co-editor-in-chief of *Information Technology and Management*.

**All interested are welcome.**



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