
Editorial

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Biographical notes: Chia-Chen Chen received her PhD from Institute of Information Management of National Chiao-Tung University, Hsin-Chu, Taiwan. Since 2007, she has been on the faculty of the Department of Information Management, Tunghai University, Taiwan, where she is currently an Assistant Professor. Her research interests focus on radio frequency identification (RFID) and data mining. Her research is published or is forthcoming in *Information Sciences*, *International Journal of Mobile Communications*, *Journal of Educational Technology & Society*, *The Electronic Library*, and a number of national and international conference proceedings.

Radio-frequency identification (RFID) is evaluated to be one of the greatest technological innovations in the 21st century. Besides, CNN also identified RFID as one of the 'Ten technologies to watch' in 2004, and ZDNet named RFID as one of the ten most strategic technologies in 2005. Nowadays, RFID technology has been widely used in many industries, including the fashion industry, supply chain and inventory operations, service delivery and customer satisfaction, mechanical and electrical engineering, and health management. RFID has become a new and exciting area of technological development, and is receiving increasing amounts of attention.

This special issue presents the latest developments, trends, industrial applications, and research challenges for RFID technology. This issue explores how organisations can gain competitive advantages by applying RFID technology in real-world settings. The special issue also includes research that uses empirical and case study approaches to present the fundamental theory, techniques, applications and practical experiences in the context of designing the integrated systems.

The first paper in this special issue is by Aggarwal and Lim. They adopt the competitive advantage perspective to analyse the RFID impacts on the enterprise operation and its performance. This paper proposes the implementation of RFID enabled returnable transport equipment (RTE) in combination with the consolidation of network assets and cross-docking. The results show the RFID enabled RTE can significantly reduce assets, increase asset utilisation, reduce RTE cycle time and introduce real-time data in the third party logistics (3PL) network.

Gnoni, Lettera and Rollo also aim to investigate the RFID how to improve the competitive advantage for enterprise. They present a feasibility study about the application of RFID technology for tracing actual wastes intercepted by collection services in municipal solid waste management system. A simulation analysis has been carried out to assess actual impacts on waste collection procedures due to the introduction of this technology. Finally, different organisational scenarios for collection services based

on RFID application have been compared in terms of both technical and economic indicators.

The privacy and security issues are always the primary concern for RFID implementation. Mahinderjit-Singh, Li and Li tackle the security and privacy challenges in RFID by using context-aware web service technology. They propose a seven-layer trust framework and redesign the seven-layer functionalities to comply with web service architecture. Finally, this paper presents the total solution that RFID-enabled supply chain with an EPC global network to tackle the RFID security and privacy challenges in a context-aware web service.

Wang, Huang, Wang, Chang and Liao focus on the semiconductor management system with RFID technique. They present the REPR-MS model and investigate the production time saving of the assembly line in the studied plant and the affected rate of average time of each operating step of equipment parts readiness management. The results show significant potential and promising efficiency for performance improvement and cost saving after adopting REPR-MS.

Tsai, Chen, Chen and Yeh also propose an RFID management information system that integrated three common areas in semiconductor testing industry including inventory flows management, location control in warehouse, and handcar localisation. Through the RFID technology and flows integration, this system reduced the standard warehouse working time and increased efficiency in production line. The enterprise saved the manpower cost, and information transmission was transparent between customers and suppliers.

Wang, Cheng, and Hsu integrate agent and RFID techniques to construct an agent-based manufacturing planning and control system (AMPCS). In advance, the AMPCS uses closed-loop feedback simulation (CLFS) approach to achieve effectively control and identify the production progress of all raw material, work-in-progress (WIP), and products across the entire manufacturing supply chain.

The success of RFID projects is based on the evaluation of savings associated with increasing performance and investment. Thipparate proposes systematic framework for the economic analysis for RFID investment. Besides, this paper uses adaptive network-based fuzzy inference system (ANFIS) to expect increase of customer order, delivery accuracy, and delivery time. Then, the Monte-Carlo simulation method is used to determine the input values for testing the developed model. Finally, Thipparate use a case study to illustrate the proposed method.

Organising a successful special issue and selecting high-quality research papers demand significant commitment and dedication of the referees who provide their knowledge, expertise, and time. We would like to thank the many referees, without whom this would not have been possible. We would also like to thank M.A. Dorgham, Editor-in-Chief, for his support and help. It is our hope that this collection of papers will demonstrate the current trends in RFID technology and future directions that may be taken in this field.