Implementation and Usage of Radio Frequency Identification (RFID)

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RFID is an emerging technology that is increasingly being used in supply chain management, retailing, and health care environments. As a flexible tracking and monitoring technology RFID increases the ability of an organization to acquire data about the location and properties of any entity that can be physically tagged and wirelessly scanned. As such, it can be applied to a variety of tasks and contexts along the value chain, including business-to-business logistics, internal operations, business-to-consumer marketing, and after-sales service applications. As industry adoption of RFID increases there is an emerging interest by researchers to engage in scholarly investigation to understand how RFID can be implemented and used in the organization. This minitrack includes three papers on the Implementation and Usage of Radio Frequency Identification (RFID) technology in today’s organization and emphasizes the building of an on-going research tradition in this area.

While much of the attention on RFID is focused on the manufacturing and retail sectors, there are many needs in a health care setting that can benefit from tracking technologies. In the first paper entitled “RFID Application in Hospitals - a Case Study on a Demonstration RFID Project in a Taiwan Hospital,” Wang, et al. investigate the implementation of an RFID system at the Taipei Medical University Hospital. This project was motivated by the SARS disease, which raised the level of visibility on the need to track patients and to determine the historical movement of patients over time. The paper describes the development of the project, the conceptual and physical implementation of RFID technology in the hospital, and the overall architecture employed in tracking patients. The authors discuss the lessons learned from the perspective of the implementation strategy, the management of devices to boost read rates, how the huge volume of data was managed, and the value generated by the project.

As researchers begin examining questions related to RFID it is important to understand how RFID can be implemented and used in different ways. Therefore, at this time in the technology’s evolution frameworks and classification schemes are important for providing a lens to examine implementation and usage. In the second paper of this minitrack entitled “A Taxonomy for RFID”, Hassan and Chatterjee develop a taxonomy to classify various uses of RFID technology along four dimensions: usage of the technology, frequency employed for wireless communication, the type of data captured and processed, and the physical components employed in the system. The taxonomy is then applied to three case examples in the transportation sector, the retail industry, and situations where chips may be used to track human subjects. The taxonomy can help managers and researchers understand the technology, factors that influence successful implementation and usage of RFID, the strengths and weaknesses of specific implementation plans, and the scalability of different RFID architectures.

Finally, RFID can be employed as an interorganizational system to transmit data between separate organizations along the value chain. Therefore, standards play a critical role in the decision to adopt the technology. Even though all parties have a desire to arrive at a consensus on the standards choice, there is always the potential for adopters to get stranded with obsolete technology if their choice is not the long run winner. In the third paper entitled “The Role of Collective Mental Models in IOS Adoption: Opening the Black Box of Rationality in RFID Deployment,” Riggins and Slaughter propose a new way of thinking about the collective choice coordination game based on the notion of emerged shared mental models. Employing the knowledge-induced equilibrium concept from political science, the paper describes how multiple players can arrive at a consensus choice in the technology standards adoption decision. The model is applied to the context of RFID adoption to discuss how interfirm consortia play a key role in this adoption decision.