MANAGING RFID PROJECTS IN ORGANIZATIONS

Dr. Venkatesh. J, Associate Professor

Priya. S and Aarthy. C

Time PhD Research Scholars

School of Management Studies

Anna University of Technology Coimbatore, Jothipuram Post

Coimbatore - 641 047. Tamil Nadu, INDIA.

Balasubramanie. P (Professor)

Thenmozhi. S, Part Time PhD Research Scholar

Department of Computer Science and Engineering

Kongu Engineering College (Autonomous),

Perundurai, Erode – 638 052. Tamil Nadu

ABSTRACT

The theme of the paper is to find the tasks faced by organizations in the accomplishment of RFID projects as well as how assessment of RFID value can be made. Explicitly, papers will cover three key segments, that is, Applications, Disputes and Assessment. The first segment ‘Applications’ elucidates the various applications that RFID can be positioned; the second segment ‘Disputes’ is apprehensive with the several disputes that affect the assumption and use of RFID; and the final segment
‘Assessment’ examines how the value of RFID can be measured. In the succeeding sections, we will discuss these three segments as well as how the papers in the distinctive arguments relate to these segments and we come out with a framework context for RFID.

**Key words:** wireless antenna, credit device, pharmacies, homogenous product, benchmark.

**INTRODUCTION**

Radio frequency identification (RFID) permits mechanized documentation of products by inserting chips with wireless antennas on substances. RFID uses transponder technology for the contactless acknowledgment of objects. A key element of this skill is the RFID tag encompassing a small computer chip and a wireless antenna. The data on the chip is read using RFID readers that may be handy or fixed at specific positions. Some software and frame is used to record RFID data and connected with enterprise systems. RFID has been approved in many application areas fluctuating from portfolio in stock management to customer relationship management in retailing. The significant advantage of RFID is that it leads to augmented reflectivity of items, pallets or people on the move and permits for real-time enquiring of the location of these objects. The augmented data on measure of items have the latent to improve various actions related to organizational decision making such as demand forecasting, shelf space managing, target marketing, anticipation of stock outs, among others.

A market research company estimated that the cost of the entire RFID market (comprising labels, readers and software amenities) is U.S. $ 10.35 billion in 2011 compared to U.S. $ 8.25 billion in 2009. Further, a total of 6.75 billion tags will be sold in 2012 compared to 3.97 billion in 2010. One more report assessed that the RFID market is secure to grow at a rate of about 48% from 2011-2014. These predictions are
remarkable in that, in spite of the financial crisis, the RFID market sustains to grow. In contrast, an earlier study found that only 11% of retailers have implemented RFID technologies and among them only 38% of the retailers opened an RFID empowered preliminary store by the end of 2010. There is no controverting that in spite of the tremendous fanfare on RFID by the popular press, organizations remain careful and conventional when it comes to the implementation of RFID technologies. Many firms set up test programs to test RFID technology in their processes but withdraw later on due to uncertainties related to return on investment or lack of technical know-how.

APPLICATIONS

RFID has been effectively applied in supply chain management, healthcare, manufacturing, logistics and retail, and its array of applications spreads far afar these areas. These are often close-loop and problem specific applications to which no other substitute solutions exist. Literature review have broadly categorized RFID applications into 14 areas (animal recognition, aeronautics, building management, production, enterprise feedback control, textile and clothing, food, health, library services, logistics and supply chain management, mining, institutions, retailing, and waste management) based on a analysis of journal papers. It is probable to magnify this classification with more groups such as the printing industry, credit device industry, entertainment industry, sports racing and other viable areas that have not been described in the theoretical journals. In this segment, we recognize and discuss three selected RFID applications that signify high potential as profitable niche markets. They include the following:
1. MEDICAL APPLICATIONS

RFID can be employed in many ways in clinic settings, from staff and patient identification and chasing and device tracking. Vital challenges in managing the operations and processes in hospitals are (i) cases of the wrong prescriptions being directed to patients; (ii) unproductive and inaccurate medical inventory operations and controls; and (iii) insufficient patient identification and location tracking procedures. RFID can be used to stop medical instances as it can routinely collect data and reduce and eliminate medical errors. Six groups of the most predominant medicine errors have been usually reported, namely, communication, poor drug delivery practices, dose inaccuracies, remedy device-related problems, improper drug administration and lack of patient education. Some of them can be resolved by RFID technology as it permits the wireless storage and spontaneous retrieval of data. This makes pharmaceutical inventory processes and controls effective and perfect.

RFID data can also be used to collect data for electric extractions and to validate drugs. Therefore, RFID has been used to recover the daily operations of pharmacological companies, drug suppliers, hospitals, clinics and dispensaries. RFID-based location systems have been shown to be operative in meeting possessions reflectivity challenges in a hospital setting. Thousands of fragments of medical apparatus and devices are frequently relocated round in a hospital and asset management is very vital in handling mobile clinical assets. Healthcare is the world’s largest industry. Certainly, we can influence RFID technology for diverse applications, such as persistent flow management, patient and medical kit tracking, smart shelving, waste material
handling and identification, and medicine administration, all of which can develop practices and rise patient safety, and finally boost business value.

2. RFID/PERVERSIVE RADAR SYSTEMS (PRS) FOR NATURAL CALAMITY APPLICATIONS

Wireless sensors signify the next stage beyond RFID. These can be inert or active RFID tags that are shared with temperature loggers, wave sensors and radioactivity sensors. Although at an initial stage of development, PRS can be used to afford warning of natural calamities, armed and other purposes. A PRS has a range of application areas in which it is essential to collect real-time data over wireless sensor nodes. It is a system that enables users to gain real-time data through radar nodes that provide data from the adjacent environment such as temperature, humidity, etc. It’s pointed out that as for future applications, RFID devices can be used to track the environment of a natural disaster. Radar networks are able to govern a wide variety of surroundings that comprise temperature, moisture, lightning condition, pressure, chemicals, etc. If there were an extremist attack, the radars would provide data concerning which chemicals, harmful materials and other vulnerabilities might be in the environment.

3. CATTLE AND FOOD TRACEABILITY APPLICATIONS

There are cumulative anxieties about animal health, potential bio-terrorism, food safety and consumer demand for credibility features, which have made animal and meat traceability essential. Therefore, speedy and precise supervision of animals during the production process is required. Besides, some organizations and countries, including Australia, Canada and those of the European Union need fodder and food productions to confirm that sufficient procedures are in place to keep ample records
of suppliers of raw materials and components so that the source of any problem can be recognized. Traceability is becoming a way to offer safer food and cattle supplies to manufacturers and consumers. Food traceability is the facility to trace and follow a food, fodder, food-producing animal or material envisioned being, or anticipated to be merged into a food or fodder, through all stages of fabrication, processing and distribution. However, tracing the source of cattle has become more intricate in recent years. The marketing of cattle and animal products has developed with enhancements in transport, particularly road transport. The products may be carried over longer miles or away from the origin. As contractors have to assure quality in food traceability by the end-to-end classification, tracking and tracing of food, an RFID-based traceability system can be used to trace the cattle and food to attain both animal and public health. An RFID-based traceability system can yield many benefits: fast product extraction, consumer protection, the minimization of economic impacts and enhancements in consumer self-reliance, higher proficiency, provision of information on interior logistics and quality, feedback loops, and consistent information to businesses, consumers and experts. As the global financial recession hits our markets, there is no doubt of global financial slowdown that will affect companies implementing RFID systems. However, in the long run, no one can miscalculate the effects of RFID technology and we consider that RFID will ultimately become part of our daily lives.

DISPUTES

With the wide range of RFID applications defined, the technology is a key enabler for services in many industries. In some areas, such as toll-collection or ticketing, it is already established as a technical core. RFID allows for unified and competent entree, it sees common and rapid market adoption and recognition among people. There is no
need for an intricate learning of how to handle the technology. And its usefulness due to improved control and less access transaction cost is acknowledged. RFID became the base technology to transfer the future bar code (the Electronic Product Code), the technology enlarged a new dimension of consequence. The vision to embed RFID chips with a unique numbering scheme into every single product and to thereby allow a global monitoring of every single object is a powerful suggestion. Yet, also one that adds a political measurement to the technology for: Who is going to control and govern the numbering scheme, the discovery services, the address resolution servers and the assembly of transactions that are fictional to be felt with the help of the RFID infrastructure? How will national entities or corporations uphold full control over their supply chain information? How much safety is needed (in terms of data encryption) in order to confirm that knowledge on economic transactions is not leaking? Whose technical standards will be assumed? And is there a need for operator impartiality if there really was a joined RFID network, such as the one proposed by EPC Global. The questions show that besides the practical challenges related with each RFID implementation, many political and deliberate questions are unanswered around the global ‘RFID framework’ needed for the kind of pervasive, unified and real-time commerce intended.

A further political issue is the enormous criticism RFID has seen from privacy rights organizations since 2001. Some privacy supporters refer to RFID tags as ‘detective chips’ and have rolled out public ‘END RFID’ campaigns against the technology’s introduction. At the core of these critical voices are Class 1/Generation 2 RFID chips that infer that their information can be read out by anybody with an RFID reader in clear text in an unrestrained manner and potentially ignored by an object owner. And the EU Commission has published a reference in June 2009 that forecasts a default deactivation of RFID tags by operators (i.e. retailers) if a privacy impact calculation
classifies the use of the technology in an operator’s specific framework as privacy delicate. Yet, at the same time, visions on consumer’s real methods towards RFID and confidentiality disputes adjoining the technology are still imperfect. First consumer studies show that customers are scared of the technology due to its invisible nature. People fear that they are mislaying control over read outs of their possessions once RFID tags are attached to all products sold found that five existing threats dominate people’s distresses around the technology: The concern of one’s personal possessions to be evaluated without one's knowledge and consent, the concern to become known to and categorized by others, to be followed or to be offended. For those who recognize the technology in more depth, the concern to sign accountable for each object one owns or to be limited, educated or exposed through automatic object reactions is adding to the list of serious disputes.

Retailers are considered as one of the main gatekeepers in the confidentiality debate. Once RFID chips have been surrounded in products and used in the supply chain, the question is how tag’s functionality can be further exploited for shop-floor or after-sales services. The retail industry has been carrying out tests multiple service scenarios in RFID-enabled test-stores. These include, for example, self-checkout systems, smart cashier queuing, product information services, dynamic product pricing, etc. on the shop floor. After-sales services are; for example, receipt-free return and guarantee as well as reutilizing services. Retailers are uncertain to what extent they will be allowed to exploit such RFID-based service offerings in the future. Will consumers escalate RFID services to an extent that they will live with the privacy risks? Or do they risk brand harm by hosting the technology? Many of these differences and challenges remain. Through a hierarchy-of-effects they untangle three attitude levels towards
new IS-based services in general, and RFID in particular. Consumers hold an attitude towards a service irrespective of technology.

**Fig1: Framework for RFID**

**SIGNIFICANCE**

One of the top anxieties related to the use of RFID is the identification of business value generated by RFID. In a survey, 23% of the respondents specified that ‘ROI insecurity was preventing extensive deployment of RFID in their businesses. Although RFID is widely publicized as a general technology that is likely to bring great benefit to the organization, real life business cases of companies that comprehend such immense benefit are not widely recorded in the academic or practitioner literature. However, it goes without saying that any firm will be concerned to know the business value of this new technology if it plans to adopt it. This infers the importance of research associated to business value of RFID. In fact, the research related to business value of RFID can be roughly classified into two groups - value generation or consciousness of the various applications.
ways in which value is created by the use of RFID, and value charge or measurement of the actual value those effects from the positioning of this technology. This is depicted well in the framework of RFID (fig.1)

VALUE GENERATION

The use of RFID may lead to multiple aids. These include condensed decline, reduced material management, increased data precision, faster concession management, improved information sharing, better fabrication tracking, efficient quality control, enriched supply and production endurance, reduced material handling, real space utilization, better asset management, reduced stock outs, enhanced customer and aftersales service, and lower inventory, among others. Among these benefits, three major ones that are measurable - labor cost savings, account reduction, and shrinkage and out-of-stock reduction. While the above aids are identified from the perspective of supply chain management, other benefits such as improved patient care, active patient management, new service plan and new business opportunities were identified in a hospital setting by leading five case studies on hospitals. The recognition of business value can take place in segments and increase as companies move from the phase of technology deployment to the phase of incorporation with business procedures, and finally to the phase of new business architectures.

At the same time, the business value produced by this new technology is not restricted to the firm itself, but may even spread to its upstream and downstream partners. As firms learn how to use this new technology and ‘learn to adjust’, they are likely to apprehend short-term competitive advantage and as they ‘learn to transform’ according to the requirements of the technology they are likely to achieve even long-
term competitive advantage. Several disputes assume importance for understanding the value generated by RFID. It is important to determine whether value is created at the operational, strategic or strategic levels. At the same time, it is important to know if the value produced is similar or different across different firms. In fact, in a recent study, it was found that only firms with broad utilization of IT applications and with a critical application investment for RFID is likely to comprehend business value early. Finding the exact correlation between generated business value and firm features is still an open research problem at this time, and is of great concern to academicians and experts alike. Another important research question is correlated to how the trade value affects the decision-making competences of the firm.

VALUE DIMENSION

Extent of return on investment of a new technology is always a stimulating problem. Researchers have resorted to various procedures and practices for discovering the business value of RFID. Typically, professional value is determined by collecting data through inspections of senior managers, and investigating the data using statistical techniques. Another approach is to conduct detailed case studies of firms that accepted the technology, and measure qualitatively the value of the technology over time. A third approach is to extent value quantitatively by directing a thorough study of return on investment by procuring the costs and benefits of RFID. A study showed a best-case and worst-case return on investment analysis on the disposition of RFID at a dispersal center by counting all costs and benefits clearly and found that the savings per year was extensive. Simulation-based methods have been used for debt of business value as well. Using five different situations representing various uncertainties in the supply chain, it’s experimental that the use of RFID at the pallet level, item level and shelf level and found that smart shelves with inserted RFID were
not economically beneficial. Similarly, combined SWOT analysis with replication to determine the return on investment for RFID implemented by retailers in China. Taking a different style for value measurement, an event study to report that agreement of RFID resulted in statistically noteworthy increase in stock prices for U.S. firms. However, it is not known whether such a wealth effect is quantifiable and obtainable in the long run. This is important because IT speculation is generally known to have a lag effect on the created value due to the well-known IT productivity inconsistency. The large size of data produced from RFID-based applications makes it problematic to determine which data should be used in charge of business value.

A vital challenge in the value dimension research for RFID is the presence of ‘hesitations associated with future cost and benefit flows’ as well as segregation and quantity of value separately for the adopters of RFID and their upstream and downstream partners. At the same time, more research is required for purpose of value for the clients of the firms that adopt RFID though it is quite hard to do so. Another vital aspect is the formation of a suitable benchmark with which the case of RFID acceptance can be associated for purpose of business value. Since employment of RFID unavoidably brings about deviations in business procedures, it is difficult to segregate the value that is bent due to acceptance of RFID from the value that is produced due to change in business processes. Again, there is an imperative need to measure value of RFID for diverse application areas, different trades, as well as diverse physical locations of the world to find out if any resemblances or changes exist between them.
CONCLUSION

In precise, the works in this special subject comprise two credentials under the Disputes segment, one under Applications and Disputes segments, one under Applications and Value segment, and two papers under Applications, Disputes and Value segments. The RFID research agenda provides a stingy way to classify RFID research and deliberation of all three segments is essential in assisting better thoughtful of the disputes and challenges in RFID acceptance and application.

REFERENCES


