Investigating RFIDs in the retail industry of South Africa: RFIDs friend or foe?

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INTRODUCTION

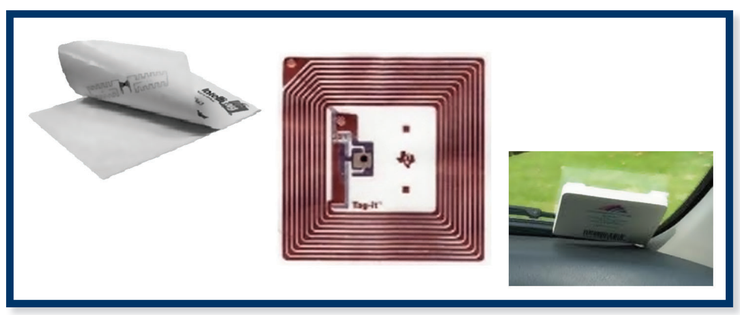
Radio frequency identity devices (RFIDs) were introduced to the retail industry as a technology that would improve productivity, accuracy and security. Proven a useful technology during World War II, RFIDs have grown in popularity and have been adopted by many industries throughout the world. RFIDs are a part of wireless technology and are primarily designed and used for automated identification of people and products.

AIM

The main objective of this study is to evaluate existing literature in order to determine whether the South African retail industry will benefit or be put at risk by implementing RFID technology. The study analysed both scholarly and non-scholarly articles in order to achieve this objective.

RFID TECHNOLOGY

Radio frequency identity devices (RFIDs) are a form of automatic data collection and capture technology [1]. They make use of wireless technology to identify tagged items without the need for line of sight or physical contact.

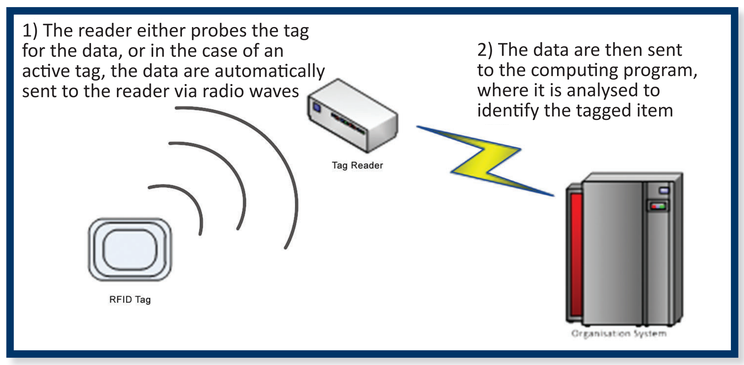


RFID SYSTEM COMPONENTS [3]

1. Tags
   - Active
   - Passive
2. Readers
3. Computer system

RFID SYSTEM

RFID system adopted from [3] (2005)



RFIDs AND RETAIL INDUSTRY

Benefits [3]

- Increased efficiency
- Decreased losses and theft
- Decreased data entry errors
- Allow staff to perform value-added tasks

SOUTH AFRICAN RESEARCH ON RFIDs

Brown, Russell (2007): RFID adoption in SA Retail Sector

- Organisations had started preparing for the implementation of RFIDs
- Little evidence of pilot studies

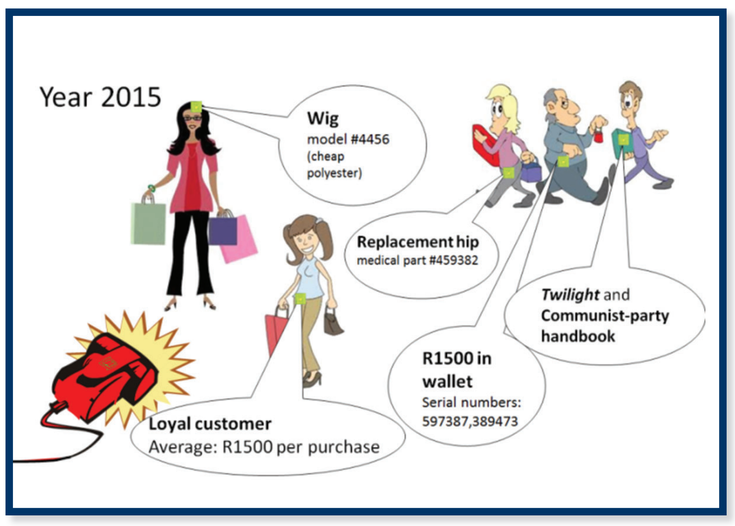
Lui (2007): RFID adoption in SA Retail Sector

- Barriers to RFID adoption in SA:
  - Technical constrains
  - Cost
  - Lack of standards

Thakur (2008): Extent of RFID adoption in KwaZulu-Natal

- Respondents were mostly neutral about security and privacy issues

PRIVACY CONCERN



SOUTH AFRICA AND PRIVACY

To protect its consumers, South Africa has a Protection of Personal Information Bill. The main aim of the Bill is to address privacy issues, specifically the rights that are involved when one organisation gathers and processes the personal information of another party. The Bill acknowledges section 14 of the South African constitution which declares that everyone has the right to privacy. It emphasises the right of South Africans to be protected from illegal collection, retention, distribution and use of personal information.

EPC GLOBAL GUIDELINES[1]

- Consumer notification
- Customer choice
- Consumer education
- Data use, retention and security

SECURITY

Benefits[3][2]

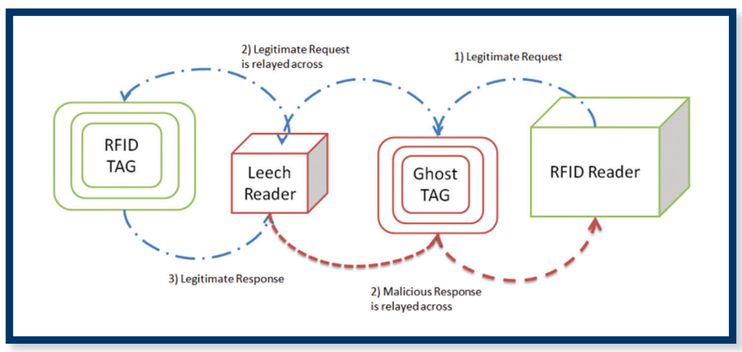
- Traceability
- Minimising loss and shrinkage
- Increase authentication

Security issues

Like any other radio frequency technology, such as Bluetooth, cell phones and wireless networks, the adoption of RFID technology has related security risks[5]. RFID security threats come in many different forms, but can be summarised as either attacks intended to steal data, or to change data[5][2].

RFID security attacks[5]

- Rogue attack
- Cloning attack
- Spoofing attack
- Relay attack
- Insertion attack
- Denial of service attack (DoS)



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CONCLUSION

Through the study, it can be seen that although the RFID technology does come with security advantages, there are privacy and security issues that the retailer must be aware of before the full employment of RFIDs. It was found that the most prominent privacy concern by the consumer is the tracking of a product after it has been purchased. To address this concern, EPC Global has provided some guidelines on how to prepare consumers before the deployment of RFID systems. The most prominent security concerns are interface attacks where hackers concentrate on infiltrating RF communication between the tag and reader.

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