

Solution Brief

RFID data collection and analysis system for customer behaviour monitoring and inventory control of retail fashion stores

In a challenging time for retail, many brick and mortar stores are seeking to transform themselves into more effective selling and customer service organizations – with technology playing a central role in the process. One key component of this transformation is collecting and acting on the best possible data regarding how shoppers behave inside their stores.

FreeAnt RFID data collection and analysis system is developed to help the fashion retail shops to perform this transformation. The system solution includes battery powered wireless RFID antenna pad, a small size intelligent RFID reader gateway, database server, data presentation application and data analysis program. With the FreeAnt RFID system, retail fashion shops owners or management teams can collect the shopper behaviour inside the stores, the products selling performance and inventory status. The server application will present the data collected, analyse the data and predict the trend of products sales.



Fig. 1. RFID Retail data collection and analysis system solution for fashion shop

HOW IT WORKS

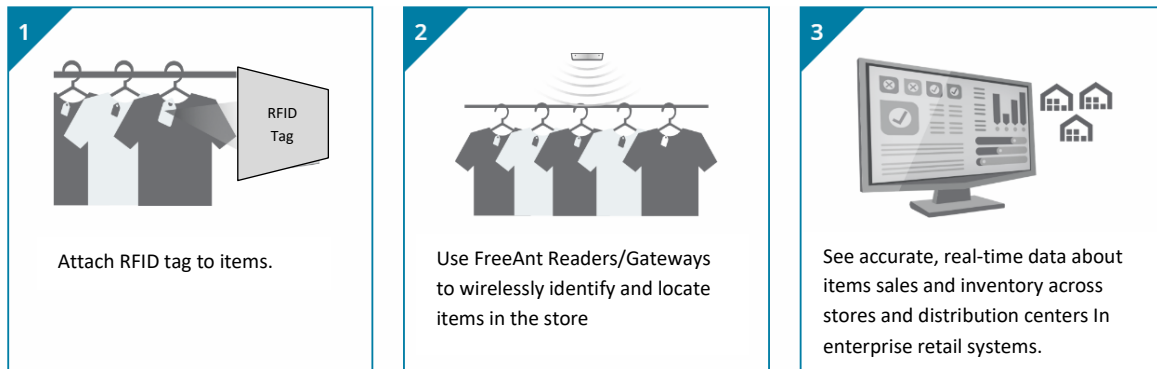


Fig. 2 System Operation

In summary, the followings are the features and functions of FreeAnt RFID System:

1. RFID Antenna Pad is battery powered and wirelessly connected to RFID reader gateway. No cables are needed.
2. Easy and Flexible installation. Minimum interruption to the retail stores.
3. RFID Antenna shape and size can be designed to fit the customer application.
4. Every product is assigned a unique EPC code stored in the RFID tags. The EPC code can be related to the current barcode used in the stores.
5. The RFID tags can be reused and reprogramed with new EPC code.
6. The RFID antenna pads can be placed in the fitting room to record the number of different clothes products being tried by customers.
7. The RFID antenna pads can be placed on or near the clothes rack to record the clothes products being taken by customers.
8. The RFID antenna pad is placed at the cashier to record the products sold.
9. With the RFID Antenna Pads being placed in the fitting rooms, clothes racks, cashiers and any appropriate location, the following useful data can be obtained
 - The products tried by customers in the fitting rooms: the product items, trial duration, time and date of trial, store location and fitting room location in the store.
 - The products taken by customers from the rack: the product items, duration of holding the products, time and date of this activity, store location, rack location in the store.
 - Number of products sold after customers' trial in fitting room.
 - Number of products sold without trial in fitting room.
10. With the above data collected, the following important information can be induced
 - The ratio of the number of products sold against the number of products trial in fitting room.
 - The ratio of the number of products trial in fitting room against the number of products taken from the clothes rack.
 - The ratio of the number of products sold against the number of products taken from the clothes rack (without trial in fitting room).
 - The sales performance of different products in the stores overall.

- The sales performance of different products in every particular store.
- The sales performance of products in different time period and day of the week in every store.

11. With the above information, it can help to

- find out the sales trend of any product item and predict the sales performance in future;
- find out the best store location;
- find out the best sales product item;
- find out the most attractive product item (NB: it may not be the best sales product);
- find out the relationship of product trial and sales, as a results to get the insight of the product sales performance;
- find out the best sales time period, days of weeks and months of year;
- find out the relationship between sales performance of different products and store location;
- find out the relationship between customers visits and the time periods/store locations;
- find out the relationship between customer visits and sales performance for overall, particular product item, particular store and particular time;
- do the accurate inventory planning;
- deliver the goods to stores on time to avoid any product shortage in stores;
- observe the customer behaviours in store, their movement from one clothes rack to another clothes rack, trial habit, etc. and
- design the store layout to attract customers and motivate their buying intention.

12. Careful analysis of the above data can also enable retailers to develop effective measures for:

- Assessing the components and success of marketing campaigns
- Evaluating and determining buying patterns
- Finding optimal mix of product types and quantities via region, store, season
- Deciphering optimal pricing strategies for product/category types
- Improving supply chain procedures

13. Below is a sample of data records summary in a period of time:

