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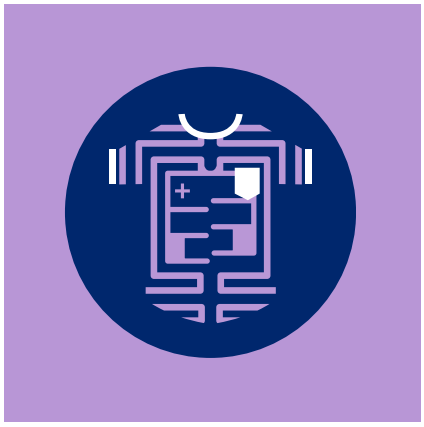
Measuring the impact

Key lessons from 10 retailers using RFID



The "Measuring the Impact of RFID in Retailing" report authored by Professor Adrian Beck of the University of Leicester, summarises the key learnings from ten retailers and brands that have invested in RFID technologies. The report has been produced in partnership with the ECR Community's Shrink and On Shelf Availability Group, GS1 Global and GS1 UK.

Read and download the full report here **www.gs1uk.org/rfidinretailing**.

Summary contents

Background

Radio Frequency Identification (RFID) has been with us since the late 1990s – a technology that promised 'just in time' retail supply chains, a customer service revolution in no-queue check out and billing, plus a silver bullet for loss prevention. Some even considered it as significant a development as the Internet or computer itself.

Despite a slower adoption than the hype suggested, the realisation that RFID can streamline apparel supply chain management and bring transparency to the retail space, is generating a resurgence of interest in its potential. There is an increase in RFID investment as retailers grasp that it can make sound business sense. Growing customer demand for better stock availability – especially given the explosion in omnichannel retail – is also adding to its comeback.

What is RFID?

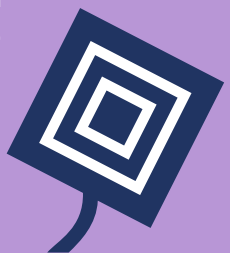
Radio Frequency Identification or RFID, refers to the use of radio waves to read information stored on a chip (or "tag") that has been attached to an object.

Benefits of RFID

Serialisation - RFID tags are serialised, enabling unique identification of each individual item in the supply chain

High read rate – an RFID reader can count over 100 tagged items per second

Line of sight not required – an RFID reader can identify tagged items several metres away, as well as items packaged into cardboard cartons or plastic totes, without a direct line of sight to the tagged items



What is EPC?

Electronic Product Code (EPC) is the global RFID standard created by GS1 in collaboration with RFID technology providers and users. The EPC standard defines two key elements:

1. How data is stored on the RFID tag

The data and memory structure for RFID tags is taken from the widely used GS1 system of identifiers. It consists of each product's Global Trade Item Number (GTIN) – sometimes called a UPC or EAN – plus a product serial number and some reader instructions

2. How an RFID reader talks to the tag

The EPC standard provides a blueprint for how tags and readers talk to each other, so that any EPC-compliant combination will work together anywhere in the world

The aim of Professor Beck's research was not to identify any particular technology for recommendation, but to understand the retailers' decision to invest in RFID, reflect on some of the results achieved, and to chart the lessons (both positive and negative) they're able to share from their RFID journeys. The case study methodology used a combination of requests for quantitative data and face-to-face interviews. Where included in this summary and as in the full report, such data and interview quotations have been anonymised.

Most of the companies that agreed to take part were apparel retailers, adopting a range of both small- and large-scale RFID implementations. They included Adidas, C&A, Decathlon, Lululemon, Jack Wills, John Lewis, Marc O'Polo, Marks & Spencer, River Island and Tesco.

Collectively, these brands and retailers enjoy overall sales in the region of €94 billion a year and are using at least 1.869 billion tags annually – equivalent to about 60 tags per second.

Business investment context

RFID is a technology that many of the companies interviewed were familiar with, having used it in the past, but were now keen to explore in its improved state.

In most cases its introduction came following senior management buy in – by people who saw the need for it to be compelling financially. As one interviewee commented: "It needs to be [a] sound investment, not just a 'nice to have' technology."

For most respondents, one of the main motivations for introducing RFID was improving overall business performance in an increasingly competitive market. This uplift was perceived as coming from better visibility, improved customer satisfaction at a time when omnichannel is demanding ever-better service, plus optimised stockholding and the opportunity for enabling greater innovation and efficiencies:

Delivering inventory visibility and accuracy

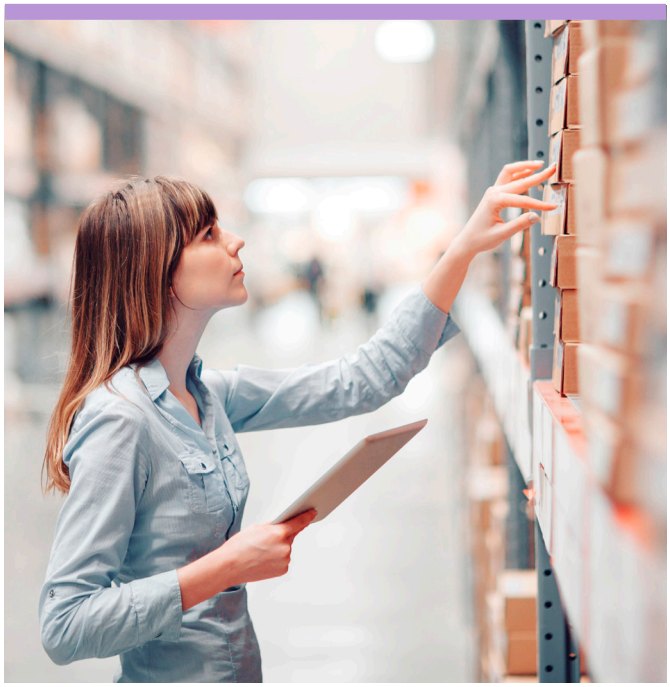
RFID was seen as a way of growing sales by improving visibility to tackle inventory inaccuracy and its knock-on effects. "There was a growing awareness in the business about how bad our out of stocks were," said one respondent. Another went on to put a figure on the problem: "1% of our deliveries are inaccurate and that contributes to about 30% of our stock inaccuracy because it builds every week."

Improving customer satisfaction in an omnichannel era

Other participants saw tackling out of stocks as key to improving customer satisfaction and therefore delivering more sales. For them this justified RFID investment at a time when omnichannel is growing fast – and any inaccuracy in the inventory could compromise the online or 'click and collect' experience for increasingly demanding customers. The comment that RFID "fits our ambition of omnichannel which is about visibility of product to customers across the estate – online and in-branch" typified the views of many interviewed.

Optimising stock holding

For some respondents, increased visibility reduced the amount of merchandise held – positively impacting capital outlay, as well as increasing staff productivity when there was less stock to handle. It also translated into less stock offered at markdown due to an improved stock position. Said one: "We have a large capital investment in stock but low visibility of where it was in the business, RFID gives us a better idea of how much we should have..."



Helping to drive innovation and business efficiencies

Alongside greater visibility, RFID was frequently viewed as part of a broader organisational change that drove agility through better use of data – particularly when it comes to movement of stock and consumer behaviour. Innovation through technologies like RFID was also seen as a key tool in future success. One relevant comment regarding RFID's role concerned what it could offer businesses in terms of competitive advantage: "It is usually best not to be the first, but you must not be last to adopt!" However, most companies were clear that RFID was an enabling tool to establish helpful data points – not a panacea in itself.

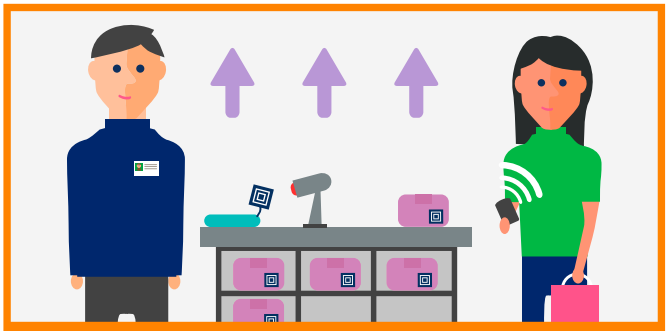
Measures of success

How participating companies measured RFID's impact on their business varied considerably. In part, this was due to diverse definitions of key performance indicators (KPIs).

For example, the conventional definition is that a KPI is a metric to measure planned outcomes against goals. Some interviewed, on the other hand, interpreted it as a way of measuring the performance of the intervention itself e.g. quantifying RFID system efficiency and reliability in terms of tag reliability, read rates, audit accuracy, store inventory updates and accuracy of in-store tag application.

Perhaps not surprisingly given the commercial sensitivity of some data and perception of RFID's role in sharpening competitive edge, research participants were more prepared to share their experiences and knowledge of RFID rather than actual results. The study's main focus on qualitative data – and the differing ways that results were framed – mean that the figures we publish should be treated with caution.

Six main KPI metrics were identified:



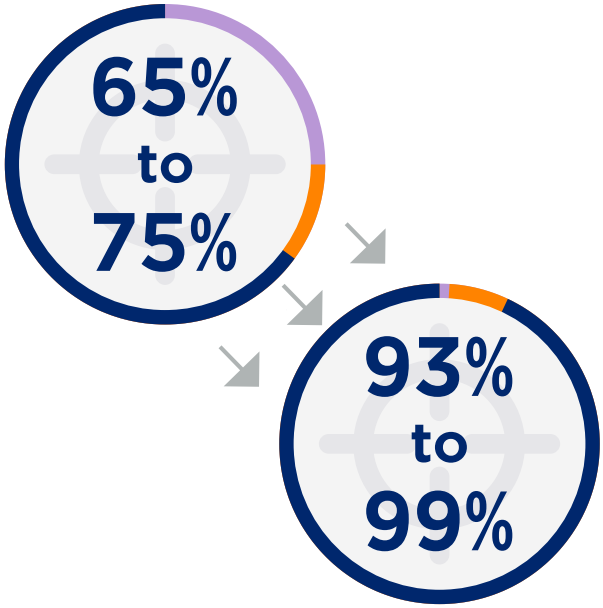
Sales uplift of between...

1.5 to 5.5%

Increase in sales

Seven of the ten case studies shared data showing a sales improvement in the range of 1.5% to 5.5%. In fact, one respondent was prepared to say: "For every 3% improvement in stock accuracy they had experienced a 1% uplift in sales".

For SKUs identified as being out of stock by RFID systems, the growth was even higher – one company reported an uplift in sales of 8%. Based on this data, the ten companies taking part in the study may have realised an RFID-driven sales uplift of between €1.4 and €5.2 billion.



Improved inventory accuracy was seen as a critical enabler of improved sales by almost all case study companies who reported an improvement from 65%-75% to 93%-99%. This shift correlates with numerous other RFID studies.

Participants were less willing to share data relating to out of stock/stock availability. Some of the companies taking part were now finding SKU availability in the high 90% region.

One reported a 20% reduction in the number of SKUs being found out of stock.

Reduced stock loss

Only two companies suggested that this was an active KPI, in line with a general view that RFID offers little to tackle stock loss. One nevertheless suggested that their shrinkage losses had been reduced by 15%, supported by the deterrence factor of a system that instantly alerted store guards with images of unpaid-for items.

Fewer mark downs

Although this RFID impact was highlighted by half of all case study companies – reflecting its clear importance to them – none were prepared to share data on this for reasons of confidentiality.

Reduced staff costs

Although only one studied company had measured RFID performance in terms of anticipated savings in staff costs, others recognised it could free up more time for helping customers and driving sales. The same respondent highlighted a saving equivalent to 4% of their store staffing costs, which, if rolled out across the case-study companies, would be in the region of €378 million.

Reduced stock holding

The second most popular KPI was perceived as freeing up working capital and reducing business borrowing, as well as reducing storage space required, handling costs and the risk of stored product damage/write off. It was also considered a way of avoiding the need to hold 'buffer' stock to guard against possible inventory error as omnichannel grows. Half of the case study companies reported a stock reduction of between 2% and 13%.

Reduced audit costs

There was clearly interest in RFID's potential for reducing the traditionally high costs of manual audit as confidence in the technology grows. However, just one respondent put a figure on this, suggesting RFID had enabled it to reduce auditing from a monthly to yearly activity, saving 75% of budgeted staff audit costs.

Lessons learnt

If pioneering the use of a technology brings benefits from first-hand experience, the opportunity to learn from others and their multiple opinions and perspectives adds particular value. Perhaps one of the most thought provoking report insights of all is that all 10 companies involved were unequivocal in their assertion that ROI had been achieved.

Based on their trial experiences, they saw further roll out across the business as fully justified and embraced by the rest of the organisation, often with considerable enthusiasm and optimism.

The following are key takeaways collated from the case study responses:

Secure senior management 'buy in'

Without active senior support and recognition of the financial imperative, virtually none of the projects would have been initiated – in only one case was the introduction of RFID 'bottom up'. As one participant commented: "The initiative came from the Board. High initial costs required a strong business case and ROI – could only happen with full Board support." Given that RFID projects span many business areas, cross functional buy-in will almost invariably require high level decisions.

Choose the right champion

In most cases, the RFID project leader was the person with responsibility for on-shelf availability/stock integrity – a major driver for promoting RFID investment.

Engage across the business

Research respondents clearly articulated the importance of working hard at getting cross functional buy-in beyond the Board. RFID "touches the entire business" said one participant. Another added: "Every function was involved in the project – buying, production, logistics; it was very important to have all functions represented." This was because, although RFID was not widely resisted, it was not always initially clear to some within companies why the technology was worth exploring. Of all functions, Buying was seen as particularly critical for effective roll out particularly when tagging at source. One case study company commented: "Buyers have to be on-board very early – (for us) nine months before the product enters the supply chain."

Understand your business context

Many respondents considered managing change emanating from RFID adoption one of their biggest challenges. "We didn't plan well enough, particularly in terms of impact on current systems," commented one respondent. Another counselled against being over-influenced by the RFID supplier, saying: "Don't let the technology provider dictate what you should be doing – they often want the business to change its processes to fit the technology."

Undertaking detailed process mapping, and recognising how products move through the supply chain was considered key, as was assessing the impact the physical environment might have on the functionality of the RFID technology and how it would integrate (or not) with legacy systems.

> "The plan was three years and the ROI was achieved in two."

Secure external help

Virtually all companies taking part saw special value in seeking external advice as they began their RFID journey, for example from RFID consultancies, technology providers, other retailers, and industry organisations like GS1. While those using consultancies felt that the costs involved were worth it, especially when organisational knowledge was limited, reliance on RFID providers was caveated with recognition this could bring advice with a vested interest. Conferences and trade shows were seen as a particularly effective way of reaching out for advice from other retailers.

Choosing RFID technologies

As an innovative technology there's a variety of models that can be used to read RFID tags. However, the respondents kept things simple, deploying handheld readers with only some overhead readers installed in trial stores. As one participant put it: "We only have handheld readers, nothing else. No connection with till, no front or back readers." Around half were yet to fully integrate the read capability into their point of sale (POS) systems and address the challenge of integration.

Across the board, companies adopted a circumspect, modest and highly price conscious approach to selecting and using their RFID technologies – taking a 'single issue' focus to supporting their business model and delivering verifiable ROIs. Their mantra of 'keep it simple and highly focused' was very apparent.

Tag reliability

No companies had concerns about the reliability of their chosen tags. The unreliability associated with RFID's early days had evaporated. One respondent commented: "Never found a tag that didn't read". Another said: "We had so few tag failures that we stopped checking and recording them". A more pressing issue for many was ensuring the tag remained attached – and that its position on the product was optimised.

A combination of 'swing' and 'sticker' tags was preferred by nearly all respondents as they are easier to incorporate into the manufacturing process – considered the best time to apply them by all ten respondents. 'Sewn in' tag variants were of interest to two respondents who saw their integration as a critical next step – primarily to tackle accidental or malicious removal. Others, however, saw this route as problematic for reasons of customer privacy as well as manufacturing practicality. Larger companies, in particular, had dedicated considerable resources to optimising tag location and design as that was key to making RFID a success.

> "For us, source tagging was the only way we could make this work in the long term - DCs are too busy and stores are not reliable enough to do it consistantly especially at busy times."

Choice of readers

By far and away the predominate reader technology used was handhelds provided for store staff. These were used for regular stock counts in both front and back of store, and for receiving deliveries. The unit's ability to make the user aware of the number of products scanned and/or progress towards a scanning target

was seen as very important. One respondent commented: “We needed to get [store] staff to understand to work to the [company SKU] target rather than 100% – 100% accuracy generally costs too much money to achieve in terms of productivity”.

Relatively few companies were using any form of transition readers (to track product moving between different parts of the supply chain), integrated point of sale readers or exit detection readers. As yet, none had committed to using in-store overhead readers beyond some ongoing store trials – with cost cited as a disincentive. As one case-study company said: “We cannot make the finances stack up. We reckon the pay back was 13 years but could be 26 for large stores.”

This is interesting given the role overhead readers could play in minimising Not On Shelf But On Stock (NOSBOS) events where stores lose sales because stock is not in the right place at the right time – i.e. at the back, when it should be at the front.

Separate RFID pads at check-out were delivering poor scan rates for some respondents. This led them to see RFID/EPOS integration as the eventual solution to delivering greater accuracy and reducing staff costs – albeit currently technically challenging, as well as costly.

Standards matter

While case-study companies varied in the degree to which they were sensitised to the importance of adopting RFID-enabling standards, all agreed that without them, it would be more difficult to innovate and evolve in the future. One respondent said: “Standards enable tags to become a commodity and then you do not need to be associated with a particular [tag] provider”. Another commented: “If you do not have standards it can stifle innovation – look at Bluetooth for instance.”

Standards in technologies were highlighted as being key for reducing confusion in the supply chain and avoiding getting locked into any particular provider – as well as being important for the collection, collation and storage of data. One respondent said: ”Once you have standardised data then you can get various suppliers to innovate because they have clarity and confidence in the underlying data supply.”

The same case study company went on to suggest: “If you are setting out on an RFID project then it makes sense to utilise the standards associated with an Electronic Product Code Information Services (EPCIS) repository. This is a technology agnostic GS1 standard designed for the easy share of [visibility event] data across the retail supply chain.”

What is EPCIS?

EPCIS is a GS1 and ISO standard that enables trading partners and other stakeholders to share information about the physical movement and status of products or assets as they travel through the supply chain. As a visibility enabler, EPCIS helps answer the “what, where, when and why” questions around a product’s journey.

EPCIS improves business efficiency and, by providing tracking, tracing and provenance information, helps increase product quality, customer safety and satisfaction.

Undertaking trials

All companies had undertaken a combination of ‘proof of concept trials’ (does the technology work?), ‘pilot trials’ (how will RFID operate in our particular environment?) and ‘development trials’ (how can we evolve our RFID system?). A number of companies urged caution about the speed with which pilot trials in particular were undertaken. This was to ensure that the full impact of the introduction of the technology could be fully understood across a range of different environments. One case study company commented: “Had to resolve the process-related issues in the [pilot] stores and two months was not enough time.” Another, however, took the opposite view: “Perhaps adopt a more quick and dirty approach, rather than considered and cautious.”

Measuring impact

Ultimately, RFID is used to enable the business to be more successful in meeting its core objectives of being a sustainably profitable retailer. But an RFID system itself is little more than a combination of technologies that provide the user with actionable data. Most case-study companies had relatively few KPIs they wished to achieve, with an improvement in sales being the most prominent. One respondent said: ”Start with a few KPIs – if you try and measure everything you will be lost.”

But it is important to understand how any chosen KPI will be delivered, including identifying the organisational drivers/ mechanisms that will enable it to be achieved and how it will be measured. Another participant underlined this point, saying: “For us, only one KPI [counted]: increased sales – which is driven by stock integrity, generating accurate replenishment.”

Rolling out RFID

All companies had committed to rolling out their RFID programmes – a ringing endorsement for how valuable it was considered for their businesses. As with the pilot trials, some companies counselled caution concerning speed. One said: “Sometimes [you] need to slow the business down when it comes to roll out”. Another added: “RFID touches every part of the business and the change management in the store is huge.” Of particular importance was timing – avoiding peak times in the retail calendar and investing in high quality and sustainable training for retail store staff.

> “Just based upon one KPI it was sufficient to persuade the business to roll it out.”

Integration, integration, integration

By far and away the biggest headache these companies faced on their RFID journey was the thorny issue of legacy system integration. Several felt they had not planned sufficiently well for this and counselled future adopters to not only take integration seriously, but plan well ahead – in particular considering the involvement of IT departments. One case study company said: “IT need to be involved early on – integration issues generated many problems to be resolved”. Integration was also considered key to making the most of RFID to reduce the instance of non-malicious loss through better supply chain visibility.

Loss prevention and detection with RFID

Data for shrinkage (the gap between stock a business thinks it should have and what it actually holds relative to units recorded sold) is notoriously imprecise, owing to the multiplicity of ways of gathering it and the frequently lengthy time lag between a loss’s cause and its discovery. Despite more frequent data gathering enabled by RFID, few of the companies regarded their RFID system as an effective tool to actively reduce stock loss, particularly the malicious forms of loss such as shoplifting.

Primarily this was because the tags used (swing-style and stickers) were very easy to remove and current exit readers were seen as relatively unreliable. One respondent said: “Tag is easy

to defeat – it's the right tag for our products for selling but not for security." Another commented: "We realised the tag is only any good with opportunistic thieves." One case study company added: "[We're] Only using RFID as a loss detection tool and not loss prevention. We don't want thieves to realise that it is the RFID tags that are offering security as they will begin to remove the tags and we will lose stock accuracy." Few case study companies were prioritising the reading of tags as they exited stores, citing issues such as: "The exit reads are poor" and "The theft antennae are not working well.

However, some were using RFID data to better understand which products would benefit from additional security, as well as helping evaluate more agile and cost-effective store trials of stock loss interventions. One respondent commented: "Weekly stock counts give us huge insights – we can now test ideas in the stores really quickly and cheaply."

For another retailer, an indirect benefit of store staff now having more time to be on the shop floor (because RFID had reduced the time other tasks had taken) was that they could increasingly act as a visible deterrent to prospective shop thieves.

Remember: RFID is a journey

Case-study companies were keen to remind prospective users that RFID systems are not a plug and forget technology. Instead, they require ongoing commitment to ensure they remain fit for purpose and capable of delivering the KPIs originally agreed by the business to justify any recurring investment. This is why many used Key Performance Drivers (KPDs) to track system health. One commented: "We have had to put measures in place to make sure it [the RFID system] continues to work properly".

Keep it simple

The final piece of advice many offered was to keep any planned RFID project simple. Comments included: "We could potentially have built something simpler and more streamlined" and "Don't over complicate it – you are likely to scare off other parts of the business and the project will not get off the ground." Remembering RFID's core purpose and capabilities was considered key, another respondent summing it up neatly: "Remember, RFID simply gives you data – if you do nothing with it [the data] then you just have a nice shiny expensive tool!"

Start your RFID journey:

Find an RFID provider

www.gs1uk.org/partners

Run our ROI calculator

www.gs1uk.org/rfidcalculator

Talk to an RFID specialist

support@gs1uk.org

Read the full RFID report

www.gs1uk.org/rfidinretailing

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