

The Business Case of Intelligent Packaging



This brochure focuses on the financial sense of utilising **radio-frequency identification (RFID)** to make products and packaging intelligent. You will find recent research data and an actual business case, which present intelligent packaging from a business value perspective.

RFID in a Retail and distribution context



The most significant ROI comes typically from **reducing time and labour costs (ROI 12%)**. Labour cost savings can be realised through more efficient cycle counts, or by removing the need for manual cycle counts altogether. Other top ROIs can come from **improving Backroom to Front-of-Store inventory accuracy (10.3%)** and

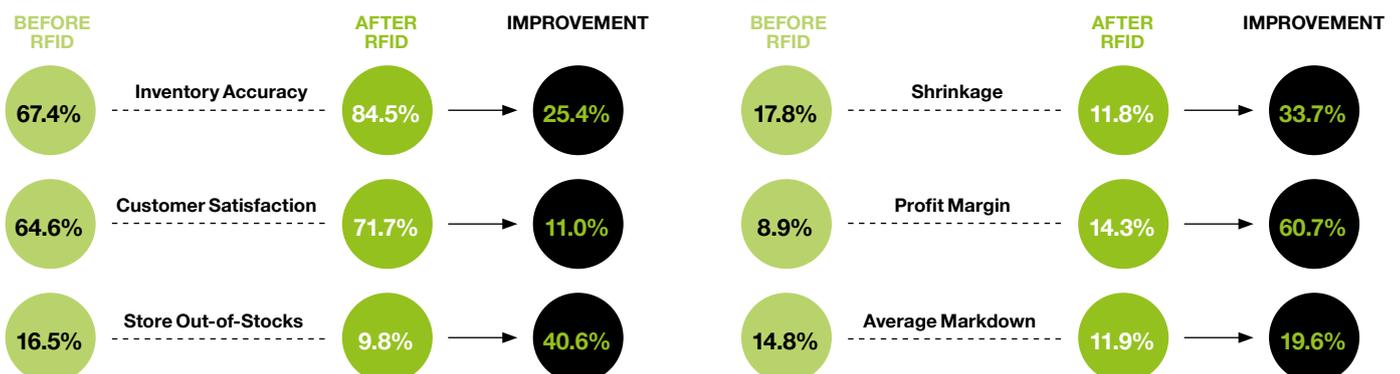
the store replenishment process (10.0%).

The evidence from the retail/wholesale sector suggests average KPI improvement potential of about **32%**. Inventory accuracy, for example, can be increased on average by **25.4%**, and profit margin by **60.7%**.

Reported ROI by use case



Retailers and wholesale businesses benefit significantly from RFID: Improvement in KPIs



Reduced capital tied up in inventory

Money tied up in inventory is separate from other use cases. Access to real-time supply chain data and the resulting better long-term forecasting allows lower stock levels throughout the supply chain.

As an example, a customer had an average finished goods inventory of about EUR 95 million, WACC of 5% and a 2.5% identified inventory level optimisation estimate. Annual direct financial benefit of optimising the inventory level was estimated to be

about EUR 120,000 ($5\% * 2.5\% * \text{EUR } 95 \text{ million}$).

Improve sales and brand

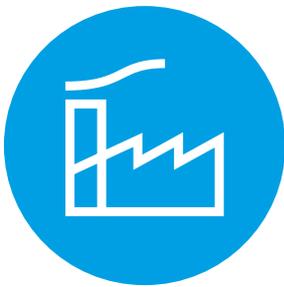
The EKN-Kurt Salmon RFID in Retail Survey (2016) companies reported that inventory inaccuracy causes lost sales of 8.7% on average. The improvement in accuracy can result in significant sales increase.

With EUR 10 million net sales, and 8.7% lost sales on average due to inaccuracy in inventory, estimated sales gain from intelligent packaging is about EUR 221,000 ($\text{EUR } 10 \text{ million} * 8.7\% * 25.4\%$), or 2.21% of net sales.



Radio-frequency identification (RFID) tags come in various shapes and sizes, depending on their application. Pictured Stora Enso's Bracket RFID tag.

RFID in a Manufacturing and brand owner context



For manufacturing clients, the focus on RFID utilisation has mostly driven supply chain efficiency. The value sources are presented below with a financial evaluation of the impact. Below is a summary of an actual case, where financial benefits were evaluated.

Project cost = EUR 2.67 million (one time) - including RFID readers and installation, handheld readers, RFID data IT integration, software control server, solution rollout and design and

project management/execution.

Operating cost = EUR 0.39 million (annual) - including RFID tags, tag application to packages and RFID reader system maintenance.

Key assumptions for NPV calculation: Assumed depreciation time of 3 years, EUR 0.89 million annual depreciation, 20% tax rate, discount rate 5%, no terminal value and holding period 5 years.

Cost benefit analysis for a manufacturing company

Source of improvement	Annual EBIT increase (EUR)	% of total EBIT
Efficiency of in- and outbound processes	640,000	1.24%
Increased sales	390,000	0.76%
Improved S&OP - production planning	130,000	0.25%
Optimized inventory levels	120,000	0.23%
Improved S&OP - warehouse planning	110,000	0.21%
Others	150,000	0.29%
Total	1,540,000	2.98%

Year	Annual costs	Annual benefits	Depreciation tax shield	Discounted CF	Cumulative discounted CF
0				-2,670,000	-2,760,000
1	390,000	320,000	178,000	102,857	-2,567,143
2	390,000	1,540,000	178,000	1,204,535	-1,362,608
3	390,000	1,540,000	178,000	1,147,176	-215,431
4	390,000	1,540,000		946,108	730,676
5	390,000	1,540,000		901,055	1,631,732

Assuming that in the first year, only 50% of the EBIT improvement is realised for in- and outbound processes, with other benefits not yet realised.

Discounted payback period

(With EUR 0.89 million annual depreciation)

3.2 years

NPV

(5% discount rate, 5 year lifetime, EUR 0.89 million annual depreciation for the first three years)

EUR 1.63 million

IRR

(With a lifetime assumption of 5 years)

22%

Contact us for more information:

www.storaenso.com/intelligentpackaging