DATAWAREHOUSING FOR RETAILERS

This whitepaper will discuss:

- **How data and information can be used to add confidence to the decisions made**
- **How analysis tools can offer the ability to dive into the answers to questions**
- **The steps to undertake when starting a data warehouse project and the common hurdles you may face**

The ability to make decisions based on the analysis of accurate data and information is a key required capability of successful retail organisations to get ahead of the competition. Better decisions on their own are beneficial to the performance of a business, but as important, is the speed at which they can arrive at that decision. However, a recent 'Analytics Advantage' survey by Deloitte found that 32% of organisations lack a centralised approach for capturing and analysing data, and 42% lack the resource or know-how required to create such an offering.

This whitepaper will examine the questions retail businesses are facing and will look more closely at how a data warehouse platform can offer the analytics to make better decisions. This whitepaper addresses every scenario - whether you are looking to implement, expand or monitor the health of your warehouse.

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**About the Authors:**

**Neil Harvie** is a co-founder of Sempre Analytics. Neil has been helping organisations uncover valuable insight from their data for approaching 20 years. He co-founded Sempre in 2011 with a vision of building an organisation which provides our customers with a highly skilled team with the industry knowledge to back-up up their undoubtedly technical knowledge. Five years on and the Sempre Analytics team continue working with customers of all sizes to better capture and utilise their data.

**Paul Scales** is a Principal Consultant with Sempre Analytics. Paul specialises in data warehousing, data integration and business intelligence having developed his skills in the central government and energy sectors. Paul joined Sempre Analytics in 2012 and has worked with a range of customers to improve their understanding of their data. He has delivered data warehouses for our clients across a range of sectors, such as construction, retail and oil & gas.

**Sempre Analytics** is a business intelligence and performance management consultancy based in Richmond, London.
INTRODUCTION

By bringing together multiple sources of data and enabling analysis across them, data warehouses deliver profit generating benefits which would otherwise be unattainable, or expensive manual tasks. A few of these added benefits are listed below:

- Automated and timely reporting by branch, department and cost centre of combined KPI and P&L information
- Insight into customer satisfaction, buying behaviours and preferences
- Product mix and market basket analysis
- Inventory management, warehouse layout and route efficiency improvements
- Product pricing, clearance and promotion analysis
- Supplier management with returns and on-time delivery performance

The diagram below shows the variety of data generated by a simple sales process:

Data is an asset to any organisation and has its own place on the balance sheet. The same as any asset it needs to be used and maintained; when the data is used, it will drive better decisions and improved cost effectiveness.
DATA CHALLENGES IN THE RETAIL WORLD

SALES CHANNELS

The last 15 years of technological development has led to retailers evolving rapidly. Those that failed to evolve, failed to survive. This rapid evolution has resulted in established retailers running multiple, disparate systems and data sources in relation to each sale.

CONSUMER EXPECTATIONS

Added to these changes in the sales channel, retailers are experiencing a well-documented sea-change in consumer expectation. Consumers expect transparency in pricing and product quality with a growing trend focused on the ecological and ethical provenance of the materials in products. An ability to analyse the additional cost of sales or changes to the supply chain, is something that can only be achieved with data.

DELIVERY CHANNELS

As consumer’s expectations on the product changes, so do their requirements on the services offered by retailers. Retailers have introduced Click-and-Collect, Online Order In-Store, Deliver to Store, and other services to attract customers. However, these services are both reliant on the integration of data as well as generating their own datasets. The demand for a service; the revenue generated or costs incurred; being able to access accurate stock levels and availability - all of these processes demand or generate data.

SOCIAL MEDIA

Since the rise of the Loyalty Card, retailers have been generators, collectors and users of “big data”. The rise of social media, mobile traffic and marketing automation has meant the amount of information that can be scraped about customers and prospects is growing exponentially.

WORKFORCE

As a cost to an organisation, marketing is overshadowed by a company’s biggest asset – its people. Store-based retailers face the on-going challenge of balancing their labour costs against their sales/services bandwidth. Being reliant on temporary, part-time and seasonal staff means the challenge of analysing and predicting demand can be fundamental to the success of a store.

FINANCE

Beyond all of this, there is one department that collates data and can measure the monetary pulse of the company; Finance. Finance need to be able to question estimates and forecasts on costs and revenue; only with consolidated data are they able to validate proposals set out in front of them and reconcile actuals as they happen. Finance’s data offers a wealth of information; however, it cannot offer the full story without the other systems adding complementary data.

ACTIVITY-BASED COSTING

A common challenge in the Retail industry is devising an Activity-Based Costing (ABC) methodology around sales – only by combining information from indirect costs, such as
marketing, with direct costs of the sale can cost drivers be determined and analysed. Relying on traditional metrics such as Gross Margin of a transaction is rudimental. A true ABC model will consider all the cost drivers associated with each sale: labour costs, marketing costs, supply chain costs and so on.

WHERE TO START?

An effective data warehouse will serve all the corporate functions from head office to distribution, stores and field based groups. This will include store managers, area managers, regional managers, logistics, merchandisers, buyers and executives. However, it should also feed information to the supply chain, customers, auditors, franchisees and back into the corporate systems.

![Diagram](image-url)

*Fig 1. Typical retail data warehouse feeds*

Consider the following questions with regards to your current reporting processes:

- Are you reliant on manually intensive processes for reporting?
- Is the time lapse between asking and answering a question too great?
- Do different areas of the company appear to be extracting the same data from the same sources?

Answering yes to any of these questions either means that the organisation does not have an enterprise-wide data warehouse or the data warehouse has not grown with the business.

There are a growing number of technologies available for creating data warehouses; everything from small on-premise databases, to dedicated appliances or cloud offerings, such as IBM’s PureData and DashDB respectively. However, the fundamental building blocks of what data is captured, how it’s captured and how it’s stored, determine the success of the warehouse. When built the correct way, a warehouse can start small as a team-based datamart and provide results within just a handful of days, but expand and scale with the business into a large enterprise warehouse over time.
If you’re at the beginning of the data warehouse journey and unsure where to start, then the following programme describes a successful implementation of a data warehouse solution:

- **Create a roadmap:** Identify reporting and analysis needs, then prioritise these based on business need and ROI in order to create a long term plan.

- **Source system analysis:** Review the available source systems, including social media and cloud based tools to identify key items and shared business attributes such as stores, products or customers.

- **Decide on technology for extraction and storage:** Ensure the toolset is future proofed against changing data structures, locations, throughput and business needs.

- **Begin to build, test and amend:** Ensure the business is involved from the start to conduct testing and highlight any gaps. Issues can be found during the development phase and creating innovative solutions to these problems will ensure the platform is built for an organisation’s needs.

- **Work iteratively:** The initial delivery can often be the longest as it includes many data sources which underpin the warehouse. Once this is underway, review the business requirements to encompass any recent changes and then start work on the next area of data. Keep repeating this to ensure a constant delivery of business benefits, whilst keeping up with the changing needs of the business.

If you have a warehouse which is either falling short in some way, or is not understood then consider the following approach:

- **Capture and log the problems** – a key activity is to capture feedback. Understanding the issues and problems that users face will be used as a baseline for determining whether any development was successful.

- **Categorise the issues into areas, such as:**
  - Missing data
  - Latency problems between data source and warehouse
  - Poor speed of queries in analysis
  - Data quality

- **Prioritise and investigate solutions:**
  - Review existing and new source systems for missing data
  - Develop extraction techniques for frequent delta loads of data
  - Review the model and architecture for improved querying
  - Creating additional schemas, attributes and calculations for simplified analysis
  - Develop exception reports and error-handling logic in the extraction process
CONCLUSION

Whether you are looking to start a warehouse project or already have a solution in place; building, maintaining, expanding and improving the solution are areas where customers need assistance from industry experts.

We have been working with our customers for many years to help design, deliver and maintain successful data warehouse implementations; conduct assurance services on existing implementations and assist with the product and vendor selection process.

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