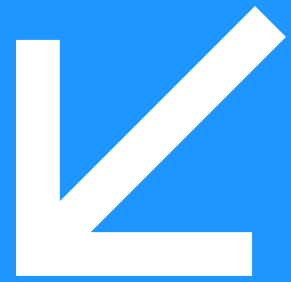


How Data Warehousing for Analytics Has Transformed E-Commerce



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01

INTRODUCTION

Here are five things to know about data warehousing and e-commerce:

1



Data warehouses have become incredibly popular with e-commerce retailers that want to enable business intelligence activities.

2



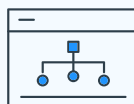
Retailers can push data from e-commerce sources such as CRMs, ERPs, and other platforms to a warehouse and run that data through business intelligence tools.

3



Data warehousing provides retailers with a way to analyze their business activities, improve lead generation, enhance marketing campaigns, and more.

4



There are various ways to move data to and from a warehouse, including ETL, ELT, and Reverse ETL.

5



Integrate.io is a data warehousing integration solution that makes it easy to run data through BI tools and generate actionable e-commerce insights.



The architecture for data warehouses dates back to the [1980s](#)—long before e-commerce became ubiquitous. Back then, organizations would transform data from operational systems to decision-making systems, though this process was clunky and unreliable.

But how did data warehousing get to this point? And why, despite the evolution of the warehouse, do so many e-commerce companies struggle to move data to this centralized target location? Integrate.io explores data warehouses in the era of e-commerce.

Fast forward to the 2020s, and the [data warehouse](#) is the gold standard for e-commerce data transformation and integration. Organizations that sell products and services online can move data from disparate, often siloed, systems to a target system like Snowflake, BigQuery, Amazon Redshift, or Microsoft Azure for analytics.

Integrate.io is a data warehousing integration solution that moves data from multiple sources to a centralized warehouse for business intelligence activities. It removes many of the challenges of data warehousing, such as data cleansing, transformation, governance, and security, and it does it all in a low-code/no-code drag-and-drop environment. Integrate.io simplifies data warehousing, plain and simple. [Schedule some time with an expert](#) to learn more or email hello@integrate.io for more information about the benefits of data integration for e-commerce companies like yours.

02

WHAT IS A DATA WAREHOUSE?

It's important to define "data warehouse" as confusion still surrounds this term.

It's important to define "data warehouse" as confusion still surrounds this term. One misconception that persists is that a data warehouse is a type of database that collects, records, and stores data. This isn't the case. A data warehouse, in the simplest terms, is a system that collects data for reporting and data analysis. It is an essential component of [business intelligence](#) (BI)—a process that analyzes data and delivers actionable insights about that data.

In an e-commerce context, a data warehouse aggregates and stores data from multiple sources for analytics. That lets e-commerce companies identify patterns and trends in data and make better business-related decisions. Typically, a data warehouse will contain a large number of data sets from all

kinds of sources in an organization. Those sources might include customer relationship management (CRM) systems, enterprise resource planning (ERP) systems, email marketing automation tools, transactional databases, relational databases, SaaS tools, and social media networks.

How frequently a [warehouse](#) pulls data from sources like the ones above depends on the warehouse itself and the organization using it. Once data exists in a warehouse, e-commerce companies can run that data through BI tools and access reports, visualizations, and dashboards that provide insights into their business.

03

WHY DO E-COMMERCE COMPANIES USE DATA WAREHOUSES?

E-commerce companies, like other businesses, typically collect, process, share and store large amounts of data.

Think about all the data that exists in your organization right now. You might keep financials in an ERP, customer contact information in a CRM, transactional data in a transactional database, and so on. All of this data is critical for your business to run, but sometimes the systems that hold this data don't connect with each other. They remain independent of one other.

Data silos happen when one team in your organization can access specific data in a system, but other teams can't view that information. That results in a lack of transparency in your organization and communication problems. Even in smaller e-commerce businesses, separate systems can make it difficult to access information.

By moving data to a warehouse, e-commerce companies can resolve the problems listed above. Data warehousing combines separate and siloed data sources to provide a Single Source of Truth (SSOT) for all data management activities within an organization. Now data sets can coexist alongside each other in one centralized system, making it easier to run those data sets through BI tools and generate insights.



04

WHAT DO E-COMMERCE COMPANIES USE DATA WAREHOUSES FOR?

A data warehouse is more than just a target system that combines data sources.

Its primary function is BI activities such as data analytics, helping e-commerce companies perform queries and investigate current and historical data. By performing BI tasks, these companies can achieve the following:

1 BETTER LEAD GENERATION

E-commerce data warehousing can provide incredible insights into your lead generation processes. By moving data to a warehouse and using BI tools, you can discover insights such as lead quality and improve lead scoring processes. Instead of data existing in siloed systems, warehousing provides you with a centralized platform to enhance lead generation activities, helping you build audiences and improve conversion funnels.

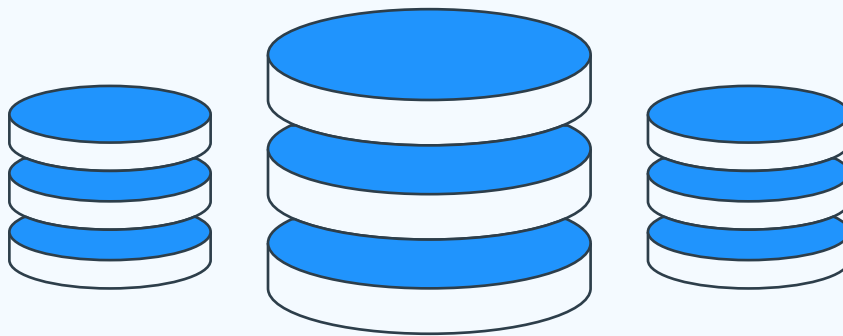
2 IMPROVED MARKETING

Along with empowering your customer data, the Integrate.io platform also provides access to over 200 pre-built data sources and destinations. These pre-built data sources and destinations make it incredibly quick and easy to deploy Reverse ETL pipelines. In the end, this is extremely beneficial for organizations, as it reduces the time it takes to load your datasets by up to 93 percent.



3 IMPROVE YOUR UNDERSTANDING OF E-COMMERCE DATA

When e-commerce data exists in siloed systems, it can be difficult to find correlations or patterns in this data. Moving data to a warehouse, however, provide you with a better understanding of all the information you collect, process, and store across your enterprise. With the latest BI tools, you can generate powerful data visualizations that present complex statistical information with visual context, making it easy to make conclusions from data sets. You can also produce data reports and access dashboards. With warehousing, data analysis suddenly becomes easier.



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WHAT TYPE OF ANALYSIS CAN YOU PERFORM AFTER MOVING E-COMMERCE DATA TO A WAREHOUSE?

There are various analytical techniques you can perform after moving data to a warehouse.

Here are some of the most common for e-commerce companies:

1 **ATTRIBUTION MODELING**

Attribution modeling is a technique that allows e-commerce businesses to assign credit to various customer touchpoints and determine which of those touchpoints provides the most value. Say a customer clicks on a link in a marketing email to a product page, and another customer clicks on a link in a Twitter post. You can perform attribution modeling to ascertain which of these touchpoints generated the most sales or produced the biggest return on investment.

Like all the analytical techniques listed, attribution modeling requires lots of relevant data from as many sources as possible. That means this technique might not be effective if data exists in siloed systems across your organization. By moving data to a warehouse for attribution modeling, you can generate deeper insights that drive your business.



2 PREDICTIVE ANALYTICS

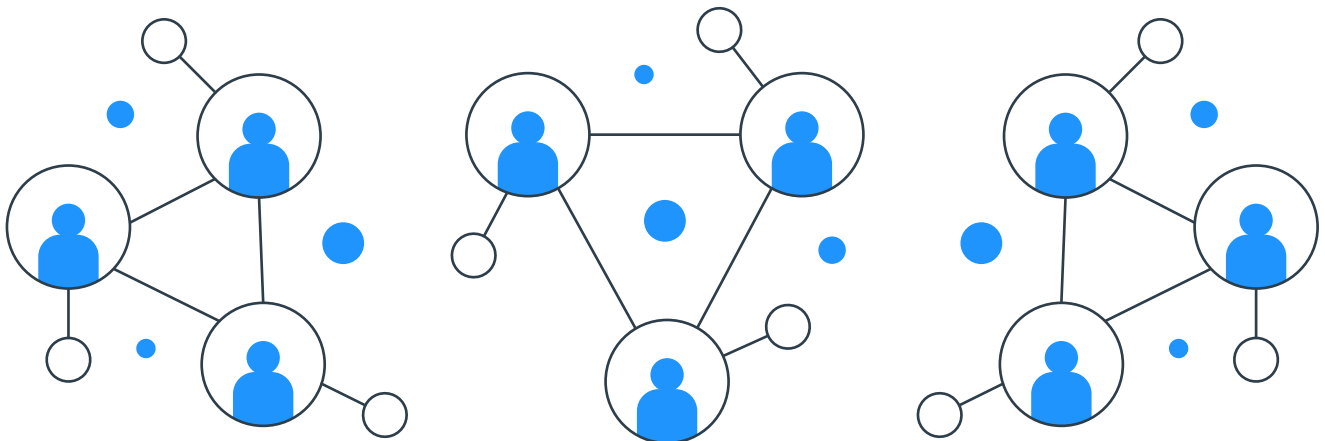
Predictive analytics lets you determine future outcomes based on historical data. It's a statistical and data modeling technique that helps you predict the likelihood of specific events and whether those events will impact your organization.

Like attribution modeling, predictive analytics is more successful if you have lots of data.

That means moving data to a warehouse and running the data through BI tools proves more effective than trying to perform predictive analytics using other methods.

3 CUSTOMER SEGMENTATION

Customer segmentation is one of the most important analytical techniques for e-commerce retailers. That's because it divides customer groups based on shared characteristics, helping you target those groups with more effective marketing. Customer segmentation can allow you to find the customer groups most likely to spend money on your online store or engage with your social media posts. Ultimately, moving data to an e-commerce warehouse can result in more successful customer segmentation outcomes.



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06

HOW TO PERFORM DATA WAREHOUSING IN E-COMMERCE

Data warehousing gets more popular every year, and now there are various considerations for moving data to a warehouse:

1 CHOOSE A DATA WAREHOUSE

As e-commerce has become more prevalent, new data warehouses have hit the market, providing retailers with more choices than ever before. Some of the [most popular](#) warehouses include Snowflake, Microsoft Azure, IBM Db2, and Amazon Redshift, which describes itself as the world's most popular cloud data warehouse. All of the warehouses on the market come with different pricing plans, capabilities, and features, so e-commerce retailers should research the best technologies based on their budget and requirements. There's also functionality and ease of use to consider; some warehouses have a steeper learning curve than others.

2 DECIDE WHAT DATA YOU WANT TO MOVE TO YOUR WAREHOUSE

It might tempt you to move all of your data to a warehouse to increase the scope of your BI activities. However, not all data will improve BI and data analytics. You might have data from five, 10, or even 20 years ago that's no longer applicable to your current e-commerce activities or store information in a legacy system you never use. For more successful analytics, choose high-quality and relevant data that provides the business insights you are looking for.



3 DECIDE HOW OFTEN YOU WANT TO WAREHOUSE DATA

There are two main approaches for data ingestion—the process of moving data from a source to a warehouse:

- **Streaming** involves a continuous flow of data from a source to a warehouse. This approach allows for ongoing data transfer, helping you process data in real-time.
- **Batch processing** happens when you upload data to a warehouse in "batches" at a specific period. For example, you might transfer data from a source to a warehouse every three hours or 24 hours.

4 CONSIDER DATA LOSS AND DATA GOVERNANCE

Moving data to a new warehouse isn't always plain sailing. There are various factors to think about, including the possibility of data loss if a warehouse "rejects" your data or there's another technical issue during the integration process. Losing data can be a significant problem for any e-commerce retailer, especially if that data becomes vulnerable to cybercriminals. A data breach that results from data loss could impact your business reputation and cause you to lose customers.

You will also need to consider data governance legislation in your geographical region or niche. Take GDPR, for example, which stipulates stringent guidelines about the collection, processing, and sharing of data for organizations with customers in the

European Union, European Economic Area, and the United Kingdom. Moving data to a warehouse might not seem like a violation of data governance law, but transferring erroneous data or data that customers don't want you to use could result in financial penalties.

CCPA, which impacts organizations that serve customers in the state of California, is just as strict as GDPR, and you could receive a fine for not complying with its guidelines. Even HIPAA, which governs data protection of sensitive patient information, might affect e-commerce companies that sell healthcare products. It's always best to be aware of these data governance rules rather than break the law and jeopardize your business reputation.

07

HOW TO PERFORM DATA WAREHOUSING IN E-COMMERCE

Several years ago, there were limited ways to integrate e-commerce data into a warehouse.

Now, there are a handful of techniques that improve the process. Here are some of the data integration methods available to e-commerce retailers today:

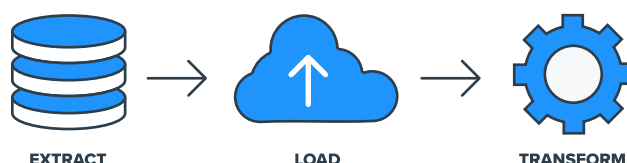
ETL

Extract, Transform, Load (ETL) is, perhaps, the most popular data integration method used by e-commerce retailers. It's been around since the 1970s, but it's become the de-facto integration technique in e-commerce as the industry has boomed.

ETL involves extracting data from a source such as a CRM, ERP, relational database, transactional database, or SaaS tool and transforming the data for analytics. That might involve cleansing the data and removing any inaccuracies in that data. Then ETL takes the newly formatted data and loads it to a data warehouse of your choice. You can then run the data through a BI tool and perform analytics.

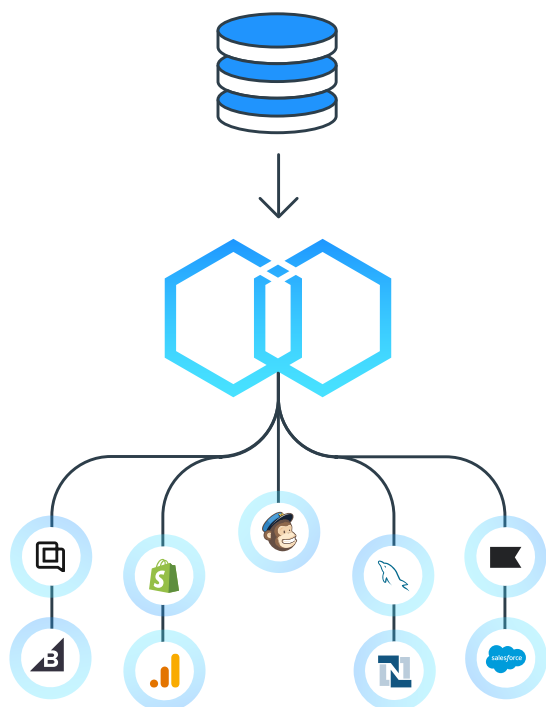
ELT

Extract, Load, Transform (ELT) is another data integration technique popular in e-commerce. When compared to ETL, it's typically the better option for moving unstructured data to a warehouse or handling particularly large data sets. The "extract" part of ELT is the same as ETL; however, this data integration technique loads data into a warehouse before transforming it into the appropriate format for analytics.



REVERSE ETL

ETL and ELT deal with moving data to a warehouse for analytics. However, Reverse ETL reverses these processes and enables you to access the data you need in your current systems. This data integration technique pushes data from a warehouse into an operational system such as a SaaS tool, allowing teams to view data in their favorite applications.



CDC

Change Data Capture (CDC) is a data integration method that syncs two or more databases. It lets you view any changes made to those databases in real-time, providing real-time access to the latest data. CDC can help you take swift action after a database change like an updated table and make accurate decisions about the data you use for e-commerce-related activities.

You don't have to use just one of the above methods for data integration. Using a combination of techniques, depending on the scope of your data project, can help you improve data warehousing and achieve more successful outcomes.

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THE CHALLENGE OF DATA WAREHOUSING FOR E-COMMERCE COMPANIES

While data integration techniques like ETL, ELT, and Reverse ETL prove valuable for e-commerce retailers, the reality is all these methods require, at the least, intermediate knowledge of coding and programming. Take ETL, for example. For this data integration method to work, you'll need to code complex data pipelines that move data from its source to a warehouse—something that can take days or weeks, even if you have data engineering experience.

As mentioned earlier, there are also concerns surrounding data loss and data governance with the do-it-yourself approach to data integration. Move the wrong data to the wrong location, and you could lose valuable information or risk a fine for data governance non-compliance. Thankfully, there's a solution to these problems.

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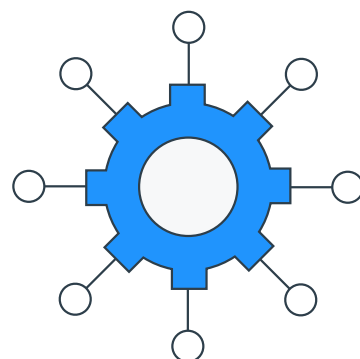
WHY CHOOSE A DATA INTEGRATION SOLUTION FOR E-COMMERCE ANALYTICS?

It's important to define "data warehouse" as confusion still surrounds this term.

A data integration tool does all or most of the work associated with [data warehousing](#). There are many of these platforms on the market, and the best ones extract data from a source to a warehouse and then transform the data into the correct format for BI and analytics. Depending on the tool, you might still need some coding knowledge; however, the entire data integration process will be considerably easier than building data pipelines from scratch.

Ideally, choose a tool that facilitates fast data integration, whether that's ETL, ELT, or another method. Your tool should also cleanse and remove accuracies from data, transform data into a standardized format, and abide by any data governance rules in your industry or jurisdiction.

The problem is that most data integration platforms aren't specifically built for e-commerce and only offer one or two integration methods. (A tool might only perform ETL and not ELT, for example, limiting your integration options.) Then there's the issue of the out-of-the-box connectors that come with many of these platforms. Several of the leading ETL tools, for example, only connect with a few data warehouses, which might not be useful if you want to move data to a specific target location.



10

HOW INTEGRATE.IO CAN HELP WITH DATA WAREHOUSING FOR E-COMMERCE

Integrate.io is a data warehousing integration platform specifically designed for the e-commerce era.

It can move big data to a warehouse via ETL, ELT, ReverseETL, and fast CDC without any of the work that typically comes with these integration methods. Take Integrate.io's Amazon Redshift connector, for example. It enables you to connect data from several sources to the popular warehouse without any data engineering experience. Integrate.io has connectors for all the major data warehouses and exists in a low-code/no-code environment.

Integrate.io improves decision-making in e-commerce by helping you build a 360-degree view of your customers with real-time inventory, carrier performance, and order fulfillment reporting. Trusted by many of the world's most successful e-commerce companies, the platform improves

operational efficiencies and makes it easy for teams to access the business intelligence required. The result? Better productivity, performance, and profitability across your entire organization.

Other benefits of Integrate.io for e-commerce data warehousing include:

- Adherence to all major data governance legislation such as GDPR and HIPAA.
- SSL/TLS encryption and other security protocols to safeguard sensitive e-commerce data.
- Excellent customer service. You can talk to an Integrate.io rep via phone, email, or live chat.
- A simple pricing model that provides value for money.

11

FINAL WORD

The e-commerce era has redefined the role of the data warehouse.

First used in the '80s to transform data from operational systems, this technology now provides e-commerce retailers with access to data-driven BI insights that power their teams. There are now several data integration methods to push data into a warehouse, and retailers don't need advanced knowledge of code or data engineering to optimize business intelligence. However, there are still challenges associated with e-commerce data warehousing, such as the potential for data loss and fines for data governance non-compliance. Choosing the right e-commerce warehousing integration tool can solve these issues and make analytics a more profitable and streamlined experience for decision-makers.

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Interested in learning more about Integrate.io?

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