

# Data migrations begin (and end) with data quality

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## Methodology

Experian has once again conducted a survey to look at global trends in data quality. This study looks at how data practitioners are leveraging and managing their data to generate actionable insight and how data management practices are changing over time.

Produced by Loudhouse for Experian in November 2016, the study polled more than 1,400 people across eight countries around the globe. A variety of roles from all areas of the organization were surveyed, including information technology, data management, marketing, customer service, sales, operations, and more. Respondents were chosen based on their visibility into their organization's customer or prospect data management practices. Organizations that were surveyed came from a variety of industries including IT, telecommunications, manufacturing, retail, business services, financial services, healthcare, public sector, education, utilities, and more.



## A successful data migration sets your business up for success

Technology is constantly evolving and business needs are always changing. Given this state of consistent change, a majority of organizations will need to take on a data migration project at some point. In our recent 2017 global data benchmark report, we found that 35 percent of organizations will start a data migration this year. Data migrations are costly projects: they require a good deal of planning, and involve a number of stakeholders from across your business. A data migration is typically one step in launching a new system of some sort—be it a customer relationship management platform, an advanced business intelligence (BI) reporting tool, or consolidation of multiple sources into a data warehouse. After taking the time to vet the various options and investing a significant amount of money into a shiny new system, focusing your time and resources to preparing the data for a migration can often feel a little less exciting. While it is not cheap, the cost of a data migration is only a fraction of the money you may spend on purchasing and implementing a new system—but a successful data migration is critical to set your business up for success.

Let's think of your new system as a new house. After you buy a new house, you are likely going to pack up most of your belongings and take them with you. Moving is often a chance for people to go through their stuff and decide what is worth bringing to the new house, and what things might be ready for the trash. If you still have that A+ dinosaur diorama from the second grade, a move might be a good time to evaluate whether it's worth bringing that with you or not. It may also be a chance to decide that the old couch in your garage may not fit so well in your newly finished basement. Your data migration is similar to the moving process. If your antiquated, out-of-date stuff wouldn't make it into your new house, why would you be willing to migrate old or poor quality data into your new system?

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83% of data migrations fail or exceed their budgets and schedules.

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## The biggest obstacles for successful data migrations

Data migrations can be tricky. These projects hold many challenges, and according to Gartner, 83 percent of data migrations fail or exceed their budgets and schedules.<sup>1</sup> Though it's unfortunate that so many organizations experience failure, the good news is that we can learn a great deal from their mistakes. We have identified some of the most common pitfalls that companies run into. Whether you are currently migrating your data or plan to at some point in the future, beware of the biggest obstacles that may stand in your way of success:

- **Data quality** – According to our study, 44 percent of U.S. organizations say that data quality issues caused delays for their migration projects. Data quality is essential to a successful data migration. When organizations undertake a data migration, they often unearth data quality issues that may not have been noticeable in their existing systems because of workarounds or system shortcomings, but that become glaring when it's time to switch to a new system. Poor data quality slows down the entire migration process, and sometimes bad data will be outright rejected by the new system as newer technologies often have stricter standards surrounding the quality of data entering the system.
- **Lack of standardization** – To easily switch from an old system to a new one, data should be formatted the same way. Standardization is important to ensure that all of the data you are migrating from one or more existing systems is in the correct format to be understood in the new system. If, for example, the new system requires that names be listed as (last, first) and you have a mix of formatting for your existing data, that lack of standardization can create significant issues and slow down the migration process.

- **Insufficient labor** – Many organizations rely heavily on manual processes when conducting a data migration. This entails teams of SQL experts coding queries to extract all the existing data and prepare it for migration—often without understanding the business context or the state of data quality. Considering that migrations involve moving hundreds of thousands, if not millions of records, the amount of manpower required is immense. We found that for 29 percent of organizations, insufficient labor was a major obstacle that delayed their data migrations. Even for organizations that have the software and tools needed to process the data, successful data migrations still involve a great deal of effort on the behalf of the IT team and many other stakeholders across the business.
- **Ineffective tools** – There are many different solutions and tools that organizations use to complete a data migration. Some organizations require robust, comprehensive tools, but many organizations can combine some lighter-weight tools that are less expensive. Often, the tools designed specifically for the migration lack data quality capabilities that are essential to success. Ensuring that you have a tool to address data quality needs can help make your migration more effective and more efficient.
- **Budget restrictions** – Two of the most common reasons why organizations' data migrations fail are that they run out of money or run out of time. This is because companies frequently overlook the budgeting and forecasting stage of the migration. Investing the money it takes to successfully complete a migration is necessary for achieving the desired outcomes or any potential return on investment from the new system. Many organizations end up setting themselves up for failure by never determining what an accurate budget might look like and underestimating how much a data migration might cost. Many businesses also ignore best practices, and their costs end up being higher in the end. Any perceived savings an organization tries to achieve by skimping on planning and preparatory investments ends up coming back to bite them later on, and can often have repercussions beyond just the budget.
- **Not enough time** - As mentioned earlier, another big issue that many organizations encounter is that they run out of time. A data migration is often a timely process, and when companies do not proactively take steps to analyze their data at the outset, they are often surprised at the sheer volume of information that must be migrated. Many organizations also fail to build in time for an initial analysis or the many user acceptance tests that are typically conducted to see whether the data works in its new environment. Discovering that you have more data than expected or finding that the data fails in the new system can significantly delay the data migration timeframe. When a user acceptance test fails, for example, the team must start over again, build something new, and test it, repeating the process until something works. Often, the migration timeline is determined by deadlines imposed by the specific business objective driving the adoption of a new system.
- **Poor communication** – A lack of communication among the stakeholders in a data migration is common and can lead to tremendous issues. In our study, more than half of the respondents (51%) agreed that improved communication would have helped to reduce delays in the process. Generally, the IT and business teams will meet at the beginning of the process to discuss scope and expectations of the new system, but then IT will handle the full migration with minimal involvement from business users across the organization. Without business input throughout the process, IT completes the required technical specifications of the migration, but has little sense of whether or not the results will be practical and useful for the business at large.

Despite so many potential obstacles, a well-prepared organization can achieve a successful data migration. Planning effectively and getting the right people, processes, and tools in place can help you overcome these challenges and deliver the migration on time and on budget. Following the best practices outlined in the next section can help you avoid these pitfalls and set you up for a more seamless data migration.



## The secret to data migration success

If there is one true secret to data migration success, it's all in the planning. Planning for your data migration can be an intensive process, but it will create a better experience for all involved, and it's the best way to ensure your new system will perform as desired. Knowing your specific needs and what you wish to get out of your data migration will help you understand the right team of people to put together, what your process will look like, and which tool or combination of tools will adequately fit your needs.

There are two main approaches to data migrations: big bang or phased.<sup>2</sup> In some instances, organizations require the big bang approach and need to transfer all their data to the new system, or series of systems in one fell swoop. This approach provides the benefit of a shorter timeline, which can potentially lead to lower costs. The big bang approach is often necessary for organizations that don't have the option of simultaneously working in both systems and can't afford any downtime for normal business operations. Organizations often plan for big bang migrations over the course of a number of months, and then execute the full migration over a weekend or holiday. The phased approach moves data in smaller segments over a longer period of time. The process involves less risk and provides ample time for business users to learn and acclimate to the new system, which can help with adoption. Sometimes organizations divide their migration and utilize both approaches, so perhaps a large chunk of essential business data is migrated via big bang, while other elements are migrated in a phased approach.

### When determining which approach will work best for your organization, consider the following:

- How effectively your organization can work simultaneously in two systems
- How the data is stored in the source system(s)
- What risks would be involved with each approach
- How much time you have to complete the migration
- What the associated costs might look like for each approach
- How readily employees adopt and adapt to new systems
- The level of expertise your data migration team has (a more experienced team is more likely to pull off a seamless big bang migration, whereas a less experienced team can learn as they go with a phased approach).



## The plan

The planning period is your chance to determine the roadmap for your migration and to choose the course that will be most effective in terms of your desired outcome, timeline, and budget. As with most planning, it is important to have the end in mind. A data migration is not as simple as just moving information from point A to point B. You need to define what success will look like in the target system. What is necessary to ensure the new system operates optimally? What degree of data quality do you expect in the new system? How can you be certain that you achieve the required level of data quality? How much data needs to migrate to the new system? What data can you filter out from the old system? Asking these questions can help you determine a more detailed scope for the migration. The more questions and variables you consider at the outset, the better.

After you've defined what the end should look like, it's important to know where you are now. Defining your current state of data quality can help you get a sense of what a realistic goal is for the target system. If your current state of data quality is poor and you hope to have a high degree of data quality in the new system, you can build in the time and budget to improve your data quality as part of the migration. You also will want to analyze your data sources and compare what the source data looks like—in terms of organization, formatting, grouping, etc.—to how the data will look in the target system. If, for example, you currently have customer information on one platform and business performance information on another, and you plan to host both types of data in a new system, the way the data is organized and grouped may look different.

Another very important thing to keep in mind is that with a data migration, less really is more. The less data you transfer from the existing system, the less it will cost, the shorter time it will take to complete, and the less complicated the process will be for the teams involved in the migration—so it's important to keep this in mind from the get-go. Ask yourself, “can we archive some of this information instead of migrating it?” and even more importantly, “can we consolidate some of these records?” This can help you to reduce the overall record count and achieve a single source of truth.

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## Pre-Migration Impact Assessment

Many organizations and third-party data migration vendors will accomplish all required planning and preparatory tasks through a Pre-Migration Impact Assessment (PMIA). A PMIA is a comprehensive process to help an organization determine what people, processes, and technology it needs for a successful data migration. A PMIA functions as a data migration simulation and requires a data management tool with data profiling and discovery capabilities in order to expedite efforts for both the PMIA and the full migration project. Data profiling and discovery provide insight into the accuracy and completeness of the existing data in the legacy systems. It also allows the organization to identify how much information is in the scope, where problems lie, where the largest gaps exist, and what to include in a correct costing forecast.

A typical PMIA typically involves eight stages:

**Stage 1:** High-level function discovery – Understand what business functions are used in the legacy system and what functions are planned for the target.

**Stage 2:** Scope & scale – Prioritize which tables to extract and which records to process first.

**Stage 3:** Security & access – Review required security measures (like encryption) to plan accordingly.

**Stage 4:** Full-volume landscape analysis – Analyze full volumes of data in a short period to gauge data quality and identify what data is needed, how it should be connected, and what issues may arise.

**Stage 5:** Migration simulation – Prototype the likely outcome of linking disparate datasets and moving them into a new system with a format and structure to support targeted business functions.

**Stage 6:** Resourcing facts – Identify the types of software required during the migration, volumes of data, key issues, and the necessary types of data access and interfaces.

**Stage 7:** Project artifacts – Use the simulation to populate the artifacts (data quality assessments, mapping documents, stakeholder maps, interface specs, etc.) you will need in the full migration project.

**Stage 8:** Gaps & issues – Identify the gaps between the source and target systems that may prevent the success of the migration project.

Many organizations can complete a PMIA in as little as one week. In some cases, it can take up to a month, but it should not take longer than that, as it is meant to speed up the process—not prolong it.

The benefits of a PMIA include:



Discovering important insights



Outlining the migration plan



De-risking your project



Determining cost estimates for more accurate forecasting

Conducting a PMIA is a great way to get a thorough assessment of the data migration that lies ahead and can help prevent any major surprises from cropping up once the project is underway and the budget and timeline are set.



## Timeline

Determining a realistic timeline, one that considers a planning period, is often the next step to a successful data migration. The average data migration takes around six months.<sup>3</sup> While we found in our research that many migrations wind up taking much longer, that should not be the case in data migrations that follow best practices. If delivering the migration in the allotted time is a marker of success, you will want to be as thorough and realistic as possible when setting the project timeline. Consider the experience of your team, the tools you will use, and the amount of data you need to migrate when developing your timeline.

Given the number of variables and obstacles that may pop up in a data migration, it never hurts to build in a bit of extra time. Conducting a full volume analysis of your data from the outset is a great way to get an idea of the necessary timeline and can even help you significantly reduce how long the migration will take. There are also solutions available that can help you save considerable amounts of time, and the time savings can provide an immediate return on investment on the tools.

We can help you expedite the migration process and improve your data quality.

[Learn more](#)

## Budget and buy-in

Getting buy-in from senior leadership on the data migration and setting the budget are often processes that go hand-in-hand. Since they are expensive and require cross-collaboration, a data migration normally requires buy-in and financial backing from senior leadership. As discussed earlier, most organizations plan data migrations as an essential piece of a much larger project that is aimed at improving business operations in some capacity. Considering a successful migration lays the groundwork for the optimized usage of the new system, however, it is worth every penny.

Using a proven methodology (such as the [PDMv](#) by Johny Morris) is a surefire way to consider every necessary step of your data migration and budget for the project accordingly. For most data migrations, the biggest cost is the labor. Whether you have the expertise in-house or are outsourcing to a third party, people will often make up the biggest portion of your budget. In poorly planned migrations, organizations will often try to save on the labor costs at the beginning by assembling a bare-bones team—which often backfires. When an organization has a thin resource profile at the start, they often end up having to invest in many developers and testers at the end. This can easily make the project go over budget. By creating the team you need from the beginning—including a data migration expert and a data quality analyst—you will save money downstream by significantly minimizing the size of the development team while ensuring that data quality won't stand in the way of your migration success.

By doing your due diligence, you can get a good sense of what is necessary to perform a successful data migration and accurately forecast the costs. This will also be a necessary step for presenting a compelling case to senior leadership for buy-in. It can be helpful to present a clear breakdown of the required labor and technology costs needed to execute a data migration with the desired outcomes. Emphasizing how essential the migration is to the successful functioning of the new system can help draw consensus among the group and push the budget through approvals more quickly.

## People, process, and tools

Every successful data migration starts with the right people, processes, and tools. With data migrations, following best practices and investing in the right choice of teams and technologies can significantly ease the challenges you will face. While the specifics of each data migration will be unique—based on the data sources, required business uses, target systems, level of data quality, level of expertise, timeline, and so on—the overall process that most data migrations follow is the same. The key players and the types of tools needed are also similar, even if the specific requirements for the number of people or the tool's capabilities vary from organization to organization.

### People

Assembling the right team to lead and execute your data migration is the primary building block to success. To spearhead your migration, you need a leader with strong expertise in data and migration processes to plan and carry out the project. In addition to the data migration expert, you will want a data quality analyst who can help you achieve or maintain a high level of data quality as you move your information from your legacy system into the new environment. Whether you have the talent in-house or are outsourcing your data migration to a consultant or third-party vendor, the combination of a data migration expert and a data quality expert will be critical to achieving the desired outcome. In addition to the data migration expert (who may sometimes double as the project manager) and the data quality expert, you will need to have a team of developers and testers, a database administrator, perhaps a designated project manager, as well as business users to provide input throughout the process.

### Process

Data migrations generally follow a similar process. Regardless of the approach an organization is using, the volume of information being transferred, or the timeline, data migrations typically follow six steps, as illustrated in Figure 1 on page 10:

1. **Analyze source data** – Take a closer look at the data in your legacy systems to assess data quality levels, how much information there is to move, and where the biggest issues may lie. In some cases, this may be conducted as part of the PMIA.
2. **Mapping specifications** – Map the source data to the target system. Since data migrations are more complicated than simply moving data from one system and placing it into a new one, the mapping specifications are a set of rules that outline how the records and fields in the source translate to the corresponding locations in the target system.
3. **Test & build** – Once you've mapped out how the data migration should look, it's time to start building and put it to the test. Your development team must build out the migration logic, and then test the migration with data from the production environment with a mirror of the live environment.
4. **User acceptance testing (UAT)** – UAT is the final phase in software testing. In this case, it would include testing the migration plan to ensure it fulfills all business requirements, and allowing business users test out the new system in the production environment to identify and fix any potential risks. For data migrations that lack the necessary planning, expertise, or tools, it is common to fail the UAT (sometimes multiple times) which can extend your go-live date and cause your project to run over budget.
5. **Production build** – After your data migration plan passes the user acceptance testing, it's time move out of the planning phase to build and execute the full migration. This means following the processes laid out through the previous steps to migrate the data into the production environment.

6. Go-live – With all of the data migrated into the production environment, all that is left is to go live. In a well-planned, well-tested migration, when the go-live date rolls around, everything is ready and goes off without a hitch.

### Tools

The right tools can make all the difference for your data migration. Though the right solutions can be pricey, they cost much less than the manual labor would be to complete the same processes, and offer the benefits of efficiency and accuracy. In most data migrations, manual processes are not quick or robust enough to process all the data and draw any meaningful conclusions from it. There is a wide array of tools designed specifically for data migrations, such as extract, transform, load (ETL) tools as well as data quality software that can complement migration software. When looking for the right tool for your migration, try to identify what is most appropriate for your needs. There are lots of robust, heavy tools available for those who need them, but there are also many lighter-weight solutions that can work effectively for those who don't require a more complex tool.

ETL tools are very popular with organizations that are tackling a migration. Extraction can refer to getting data from an internal or external source through a series of queries. Transformation entails changing source data into the structure required by the target system, which can include sorting, collecting or separating, cleansing, or checking quality.<sup>4</sup> The final step of loading is taking the transformed information and loading it into the new system. Considering the ETL process underpins the essential steps for a data migration, it's not surprising that many organizations follow the process and use ETL tools.

## The importance of data quality in a migration

A data quality solution is another staple for a successful data migration. A robust data quality tool can significantly ease the migration process and help with data cleansing, data standardization, data matching, and data profiling.

Here are some of the benefits that a data quality tool can provide to your data migration:

- Data profiling allows you to examine your data and arrive at conclusions about it. Some profiling tools, such as Experian's data quality management platform, help you conduct a full-volume analysis on your data.
- Cleansing your data helps make sure it's as accurate as possible to prevent you from moving dirty data into the new system.
- Standardizing your data ensures consistent formatting for all your data, and can apply these requirements of the new system to all records.
- Data matching helps to identify and remove duplicates, which can help reduce the number of records that you must move from the legacy system into the new one.

A full-volume analysis allows you to discover unknown data quality errors within your data and easily identify data issues in the early stages of your project. Data profiling and data discovery simplify the "Analyze source data" step of the migration and help define the scope and scale of data sources, ensuring you identify the right data for migration. It can also significantly improve the quality of data migrated in your new system.

## Delivering your migration on time and on budget

As we know, the majority of data migrations fail. The typical data migration process involves many risks, with 40 percent of organizations citing data quality issues as a key cause of delay. With these risks, many organizations are forced to take a step-by-step phased approach rather than executing their migration all at once in the big-bang style migration. Experian helps mitigate this risk by changing the philosophy and workflow driving the migration. The Experian workflow enables you to analyze all of your data upfront, expose all of the data quality issues, and then generate the mapping specifications, saving you a significant amount of time. Following this approach, the migration process may look more like the one shown in Figure 2, below.

This approach allows you to eliminate some of the guesswork and proceed with more confidence. Experian's robust data analysis and ability to prototype mapping specifications can help remove some of the testing phases that typical migrations involve, shortening the process and involving fewer steps.

When looking at the typical data migration process, it's easy to see how the UAT phase introduces a high degree of risk. Each failed UAT pushes back the intended go-live date, which also has implications on the budget. By conducting a full-volume analysis of the data sources and leveraging source data to generate mapping specifications, Experian provides business users the opportunity to construct the data and make it fit for purpose. This unique workflow ensures that your organization will complete your migration successfully, both on time and on budget.

Figure 1. A typical data migration

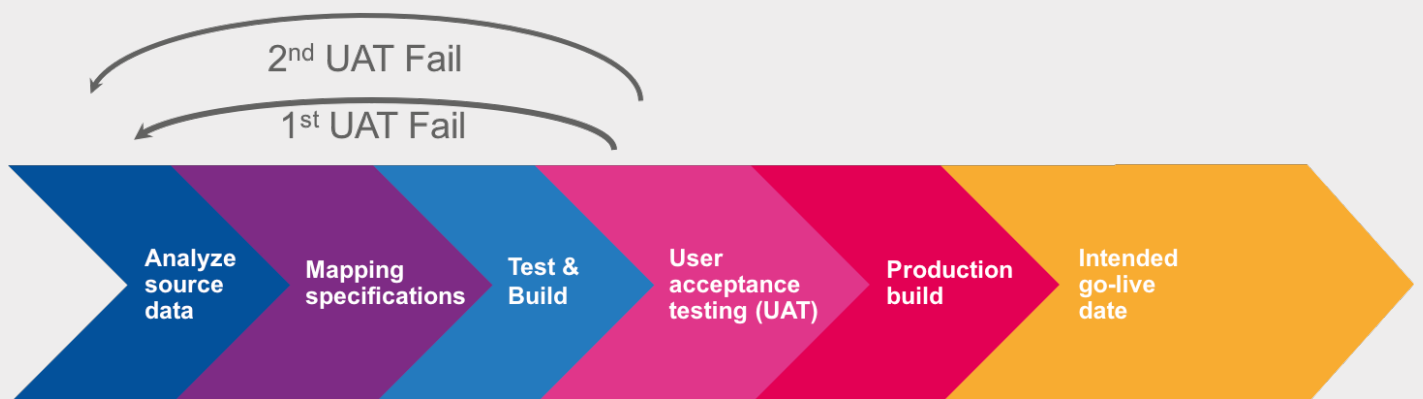


Figure 1: This diagram illustrates a typical data migration process. The two arrows demonstrate that when a UAT fails, as can commonly happen, the process must begin again—further pushing back the intended go-live date.

Figure 2. Data migration with Experian



Figure 2: This diagram illustrates the data migration process as it looks using Experian, which enables organizations to cut out the guesswork.

## Maintaining data quality post-migration

Data quality is an ongoing effort. After making substantial investments to ensure high quality data is entered into your new system, it makes sense to put data quality processes in place following the migration. Monitoring your data moving forward helps you maintain control and ensure that you continue to get the most out of your new system. If you plan to invest in a strong data quality solution to help complete your migration, look for one that provides monitoring and reporting capabilities to enable you to keep up your data quality post-migration.

## Conclusion

Data migrations are complex undertakings. Getting a data migration right requires a great deal of time, money, and effort. At every stage in your project, data quality is essential to success. Data migrations begin with analyzing data quality and end with monitoring data quality to ensure that the levels of quality achieved during the migration are maintained. Planning, getting the buy-in and budget you need, and ensuring you have the right people, processes, and tools to complete the migration can help you avoid some of the biggest obstacles most organizations run into. Regardless of the approach you choose, it is critical to have a comprehensive plan that factors in an adequate budget, timeline, and input from the key stakeholders across your organization. If you are gearing up for a data migration, keep data quality in mind. And when it comes to data quality, Experian is here to help.

We can help you reduce the associated risks with traditional data migration projects, shorten project timelines, and keep your costs under control.

[Here's how](#)

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