8 Ways that Business Intelligence Projects are Different

And How to Manage BI Projects to Ensure Success

Business Intelligence and Data Warehousing projects have developed a reputation as being difficult, risky and expensive. Although Data Warehousing has been around for decades, there is still a high failure rate for BI and DW projects – an oft-quoted figure is that at least 50% of these types of project fail, and many more go over time, over budget, or don’t deliver the expected benefits – or all three.

One cause of these problems is that BI and Data Warehouse projects are often approached like a typical IT project, whereas in fact a very different approach is needed. This paper will discuss 8 important differences between BI initiatives and other kinds of IT projects. By understanding these differences, it is possible to structure the environment and the project management methodology so that these differences are taken into account, resulting in a much higher success rate and greater business benefit.

How are Business Intelligence Projects Different?

1. Business Intelligence projects are primarily business projects, not IT projects.

There is a common perception that BI projects are IT projects. While Information Technology is an important component of BI projects, it is better to treat BI initiatives as business projects which are enabled using technology.

This is because the business users will ultimately decide the success or failure of the project. The business therefore needs to take the lead role both in defining their information requirements and in ensuring that the BI solution built by IT meets these requirements. This is in contrast to the approach often taken, in which IT determines what it believes to be the user requirements and delivers to this specification, inviting the business on board in the latter stages of the project.

To drive the project as a business-led initiative, the business must be engaged to define what information they need, the format that they need it in, where the most up-to-date and accurate version of the data is stored, how the data is related (including how it should be summarized and categorized), when and how often the data needs to be provided, how much history needs to be catered for, and to whom the data should be made available.

By properly analyzing and documenting the complexity of the business' information requirements, questions will inevitably arise during the design and development process. The IT developers will need the business to explain the meaning of the data, clarify how they want the data processed and displayed and define how to handle exceptions. The business subject matter experts therefore need to allocate a substantial amount of time to help the IT developers understand the data and help resolve the questions which arise.
A significant level of input from the subject matter experts (SMEs) is also required during the testing phase. This is because the testing needs to be carried out by people with business experience who know the significance of the data being examined, so that exceptions can be flagged and ‘fixed’.

Often, the business users and SMEs find that they need so much time for testing that they need to join the project team full-time during the testing phase. This is a significantly greater resource commitment, compared to typical IT projects.

The project sponsors need to be aware of the time commitment that will be required of the information SMEs to make the project a success, and ensure that there is a high level of business commitment and ownership before starting the BI initiative.

From a project management perspective, the project plans need to reflect the level of business personnel involvement required. The project manager should confirm that the organization is willing to release these people to join the project team when their involvement is required, and that these people have the necessary knowledge and skills to provide the appropriate level of input to the business analysts and the development team.

2. Intensive IT business analyst support is required throughout the project.

While the business needs to be prepared for a substantial resource commitment, IT also needs to be aware that a BI initiative will require more dedicated business analyst time, compared to other projects.

This is due to the fact that the requirements will continue to be clarified and refined during the development phase. The IT business analyst needs to stay deeply involved in the project to document (and note the impact of) these refinements, and help manage the level of change in the development process.

Compared to other projects, BI projects also involve a significantly greater contribution of business analyst time during the development and testing phases. Many organizations make the assumption that business analyst involvement is required mainly during the design phase. This approach leads to serious underestimation of the business analysts’ work allocation in the project schedule for the remainder of the project.

Project managers therefore need to make sure that the business analyst is appropriately allocated for the duration of the project. The project manager and business analyst will need to work closely together to manage the scope of work, ensuring that scope creep is managed. The business analyst will need to document refinements and clarifications of the requirements throughout the project life cycle, together with the reasons and business rules behind these choices.

3. Requirements for BI projects are impossible to define completely in advance.

It is rare to find a BI project where the users are able to define exactly what information they want from the solution, in advance. While they will have some initial requirements, the process of defining and thinking about their information needs will prompt new ideas, as they start to realize how the data warehouse can make new reporting capabilities available to them. Often these new ideas arise well into the development and even testing phase of the project, presenting a major challenge to the project manager to balance the evolving business requirements with the need to manage scope.
In fact, these additional requirements represent one of the major benefits of developing a data warehouse, as these new insights are often where the greatest potential value of the project lies. Changes to business requirements should not be viewed negatively, as delivering enhanced capabilities represents a key objective of the BI project.

Traditional development methodologies, however, tend to focus on controlling and limiting changes to initial requirements specifications. This can be extremely counter-productive in BI projects, as this approach will limit the usefulness of the BI solution produced.

One way of mitigating this problem is to devote more time than usual to the requirements gathering and analysis phase, before development begins. This extended scope definition phase will provide a better picture of the final scope of the project, and will allow more time to get business agreement on the boundaries of what will be included in the scope.

The IT developers also need to adopt a flexible approach, so that the detailed business requirements can be refined or clarified during the development phase of the project. The project manager needs to take care, however, that only minor changes are allowed to proceed. As with other projects, major changes should only proceed after the impact of the change has been assessed, quantified and agreed with the business sponsor.

4. A different project management approach is necessary.

The above three features of BI projects suggest that traditional software development methodologies (such as waterfall-based approaches) do not work well in the BI context.

In fact, BI development efforts tend to fit better into an iterative methodology, where work is done in cyclical stages. Our experience has shown that agile system development methods and techniques are very effective in delivering results in BI projects.

An agile approach involves small teams of highly skilled individuals, who work very closely together. The project includes the business users as integral members of the team, with all members communicating closely and continuously with each other. In our experience, an important technique to promote the free flow of information and ideas is the co-location of business SMEs and IT developers.

The agile methodology also emphasises rapid release cycles of small components of the overall solution. Agile methods therefore do not involve a great deal of requirements specification up front, but rather a continuous refinement of the requirements as the system is being developed, based on feedback from the users of the BI solution.

Scope is managed by applying a ‘timebox’ to each cycle of the project. To do this, the developers and business SMEs agree on what is achievable in the given time for a particular cycle. All requirements that cannot be completed within this period are deferred until after the current scope of work has been completed, but are not lost as they become part of a future development cycle.

The methods described above are quite different to traditional project management methods. Most organizations and project managers have only had experience with conventional models, and most conventional methodologies don’t always align easily with agile methods.
Ultimately, agile techniques are not incompatible with more conventional project management methodologies. The agile development philosophy and emphasis on producing value to the business is a valuable addition to standard project management tools and techniques in BI projects.

5. Building the BI solution is just the beginning – extensive testing is needed.

One of the major areas that is frequently under-estimated in data warehousing projects is the amount of time required for testing and dealing with data fixes. Most organizations assume that a report or dashboard is finished once the development process is completed. However, once a report is available for testing, the testing process will often identify errors not in the report itself but with the underlying data sources.

The project team, including business SMEs, need to examine the contents of the report carefully, and be able to check “the numbers” against a known correct set of values. This checking and verifying process is often more complex and takes more time than expected because BI projects commonly find errors in the data supplied. The data from older systems, in particular, tends to have numerous data quality issues. These problems can be caused by a lack of data validation in the software, changes in data definitions through the history of the system or data elements being used for multiple purposes.

It is usually very difficult to find all of these issues before commencing the project. A good BI project plan will include data discovery as a task (by the developers) and will facilitate early access to the data by the business, to help identify these issues as quickly as possible. An early ‘pilot’ load is invaluable in exposing these issues at the initial stages of the project.

These data issues often need to be addressed by data fixes during the testing phase. These fixes then need to be re-tested. This may in turn expose further data issues, which will then need to be fixed. The testing phase therefore tends to be an iterative process, with repeated testing cycles.

All these factors conspire to make the testing process longer and more resource intensive than testing efforts on other projects. It is important that the project caters to the additional time required to perform adequate testing, data fixing, and re-testing, as the business needs to be able to trust the information produced.

A good BI project plan will therefore allocate more time for testing, compared to other projects. The ratio of additional time required will depend on the data quality and age and complexity of the source data systems, which needs to be assessed during the data discovery process.

6. Users are attached to the current toolset – change management is critical.

BI projects usually involve replacing an existing reporting method (typically Microsoft Excel and Access) with a new BI reporting capability, consisting of a data warehouse and new reporting tools.

In the early stages of the BI initiative, the data loaded into the new warehouse often does not allow the users to produce the full range of their existing reports. The users will also need time to familiarize themselves with the structure of the data available in the warehouse, and will require training on the features of the BI tools provided.

By contrast, users are already familiar with the features and data available in the existing tools, and as a result often feel that the current methods are easier to use. They are also accustomed
to the flexibility of general purpose tools such as Excel, and may not be prepared to use the BI tools provided as a substitute.

It is therefore critical to define a change management strategy for the BI effort. This should take into account user training needs as well as gaps in reporting capabilities, and should address any concerns about flexibility to manipulate data manually for ad hoc reporting or analysis.

This change management strategy should recognize that the BI initiative will not (in most cases) replace all of the current reports at once. In such cases, the project should aim to replace the current reporting methods according to a schedule agreed with the business. The existing system and tools should be retired gradually, and the BI project may need to provide a short transition period during which users have access to the old tools, or alternatively, allow access to the BI reports via a more familiar interface such as Excel.

For long-term planning, it is important to identify all of the current reporting requirements, as well as the downstream users of the data. It is also important to ensure that the solution being developed is not bound by the same limitations as the existing systems. Although it is tempting for users and developers to agree to reproduce an existing set of reports, this is not the best approach as it does not take advantage of the additional capabilities provided by the new data warehouse, and may also reproduce existing errors in the new system.

A far better approach is to work with the users and business analysts to define the reporting requirements based on discussions and workshops, rather than seeking to replicate existing reports. Brainstorming is often a good way to get users to ‘think outside the box’. By allowing the users to come up with a ‘wish list’ of information requirements, the project team can sidestep the limitations of the current reporting system, leading to greatly enhanced reporting capabilities for the end users.

7. Tight integration with existing systems and business processes.

A BI solution needs to fit into an existing environment of operational systems and databases (that generate and record the data), business processes (that use the data) and business and IT support (that keeps it all running smoothly).

In particular, it is usually necessary to extract the required data from the operational (transaction processing) systems without affecting the performance, stability and reliability of these systems. This is extremely important as these are often business critical systems that can’t be jeopardized by a demanding data extraction process.

Once the data has been extracted, it needs to be integrated and presented in a timely and meaningful manner. There are a number of tools which can be used, each with its own strengths and weaknesses. The choice of tools to be used, as well as the integration method, needs to be defined in advance.

At the same time, the BI solution also has to fit into existing business processes and be accepted by the business staff who will be using it on a day-to-day basis. It is important to understand what data they need, where they currently get this data from, and how they produce the reports that management require. Issues such as lack of user training and acceptance could have a huge impact on the project’s success, limiting the value of the solution that is built. Again, the business deployment and change management strategy needs to be defined before the BI project is started.
These considerations highlight the importance of a BI Strategy, and detailed planning and preparation before embarking on a BI initiative. This implementation strategy also needs to be informed by a readiness assessment across the affected areas of the organization. Some of the elements of the BI readiness assessment would include an evaluation of the technical environment, as well as a data and information needs assessment and a review of the business and analytics culture. The results of this BI readiness assessment should then be used to help define the BI technical implementation strategy, business deployment and change management strategy, and the background supporting elements such as the information governance program and production support arrangements.

8. BI is a program, not a project.

In the past, BI efforts were often structured as a ‘project’, with a single defined budget and schedule to integrate data from a number of systems into the data warehouse.

Experience has shown that a large number of changes and issues are often found during these projects, causing the final budget and schedule to vary dramatically from the initial estimates. This has given BI projects a reputation for being difficult to manage.

As we have discussed, in our experience it is better to structure the BI effort as a series of projects, each with its own limited budget and schedule. The data warehouse is thus built in stages, where each project delivery consists of a component of the overall set of requirements defined by the business.

When the BI effort is approached as a ‘program’, it becomes easier to prioritize the delivery of major components, including changes, without rejecting evolving user requests outright. It also becomes easier to separate the development efforts (which are structured into projects) from the support activities which the BI system will require.

The supporting elements of the BI program will include the technical infrastructure and environment, the overall information architecture, design standards and guidelines, an information governance program, a change management program and an ongoing BI operations (production) support program. All of these elements need to be set up to support the BI effort and will be shared by all of the projects on an ongoing basis.

**Conclusion**

Creating a BI capability is a complex and resource intensive set of activities. For this reason, it is better to structure your BI initiative as a program, which includes a series of BI projects and the supporting activities required.

BI programs and projects have some unique characteristics, and therefore require a different approach to other projects. Agile techniques, extensive business involvement, careful change management and extended scope definition and testing phases have all been proven to be essential in BI initiatives.

By incorporating these methods and practices into your BI program, you will increase your chances of producing a more reliable, accurate and timely information source that will deliver value for your business.

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