

# BUSINESS INTELLIGENCE (BI) INITIATIVES: FAILURES VERSUS SUCCESS

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## **Abstract**

*For many organizations, success with Business Intelligence (BI) requires a co-ordinated effort across the dimensions of people, processes, technology and data. The complexity of “real-world” BI applications continues to grow with the increasing demand for information at all levels of a business. In the maze of potholes many BI efforts fail to impress, are abandoned or are not even completed. Fortunately, a number of best practices and techniques have been developed to achieve the mission of BI – while overcoming these key implementation challenges. This article defines BI, examines the core reasons for BI failure as well as some key methods used to overcome these obstacles.*

## **1. INTRODUCTION**

### 1.1 Background of study

The ability of companies to make fast and accurate decisions in an ever changing environment is imperative for success. In order for companies to make decisions that will give them a competitive edge, they need business systems, technologies and methodologies that will provide them with information to base these decisions on. These business systems, technologies and methodologies need to extract, integrate and analyse data from a combination of heterogeneous sources.

According to the International Technical Support Organization, a survey performed in 2000 showed that “more than 93% of corporate data was not usable in the business decision-making process.” [16]

In order to unlock these valuable data resources, a large majority of companies are turning to Business Intelligence (BI) initiatives to solve their growing demand for integrated and applicable information. [9, 11, 18, 20]

A study conducted in 1996 by the International Data Corporation (IDC): “The Financial Impact of Business Analytics”, confirmed that BI initiatives can provide considerable value to all types of business organizations. This study, found that “Business analytics implementations generated an average five-year Return on Investment (ROI) of 431%. In addition, over half (63%) of the firms participating in the study had a payback period of two years or less.” [22]

Unfortunately many stakeholders in the BI arena claims that Business Intelligence initiatives often fail. According to Gartner, Inc. (a research and advisory firm that helps more than 10,500 clients leverage technology to achieve business

success), at least 50 percent of the BI programmes implemented will not reach full potential or experience absolute failure. [8]

Deepak Pareek (an internationally renowned expert in enterprise technology, integration, business intelligence, data warehousing and databases) agrees and says that "more than half of all BI projects are either never completed or fail to deliver the features and benefits optimistically agreed on at their outset." [15]

Keith Gile, senior analyst at Forrester, said in April 2003 that "Business Intelligence has not grown at nearly the rate anticipated or to the levels predicted, and that Business Intelligence has not lived up to its promise of delivering analytics to the enterprise." [7]

## 1.2 The purpose of the article

The main purpose of this article is provide managers with a greater understanding of why Business Intelligence initiatives fail, and to present ways in which the overall success and value of BI initiatives within corporations can be improved.

## 1.3 Objectives of Research

The objectives of the research are firstly to describe what is meant by Business Intelligence. After this the reasons why BI initiatives fail or do not perform to expectations are investigated. Lastly the ways in which the overall value of BI initiatives within corporations can be improved are investigated.

## 1.4 Scope of research

The scope of this research is limited to BI systems and the failure and success of such systems.

## 1.5 Research Method followed

The research method was based on a proper internet study, coupled with a research of most recent listed articles (the last two years). Informal meetings have also been held with people in the industry in order to clarify certain aspects.

## 2. WHAT IS BUSINESS INTELLIGENCE?

Business Intelligence is a relatively new concept in corporate circles and it has a number of different meanings to a number of different people. It seems that each company has created their own understanding of what the term means.

The term Business Intelligence is an umbrella term that was first introduced by Howard Dresner of the GartnerGroup in 1989 to describe a combination of concepts and methodologies that is designed to improve the decision-making process in business through the use of facts and fact-based systems. "Fact-based

systems consist of executive information systems, decision-support systems, enterprise information systems, management support systems, on-line analytic processing, and newer technologies such as data mining, data visualization, and geographic information systems.” [16]

According to Shaku Atre (from the Atre Group) BI is much more than old decision support and management reporting concepts, and she defines BI as “business success that is realized through the rapid and easy access to actionable information through timely and accurate insight into business conditions about customers, finances, and market conditions.” [2]

Ryan Chun from CTA Development defines BI as: “BI encapsulates a broad range of technologies, software applications and business practices that allow businesses to distill data into useful information that can be shared, stored and applied throughout an organization.” [4]

The Mathematical and Information Sciences Department of The Commonwealth Scientific & Industrial Research Organization (CSIRO) defines BI as “a process for increasing the competitive advantage of a business by intelligent use of available data in decision making.” [5] According to them BI consists of five key stages namely:

- Data Sourcing (extraction of electronic information from multiple sources of data like text documents, databases, images, media files and web pages);
- Data Analysis (synthesising of useful knowledge from collections of data using data mining, text understanding and image analysis techniques);
- Situation Awareness (filtering of irrelevant information, and setting the remaining information in the context of the business and its environment).
- Risk Assessment (discovering what plausible actions might be taken, or decisions made, at different times, based on the expectation of risk and reward);
- Decision Support (using information wisely in order to make better business decisions).

A broader definition of BI is presented by Thorigood when he stated: “It is important to realise that BI systems run ‘over and above’ a firm’s transaction processing systems and enterprise resource planning systems. They collect data from many different systems, reorganise it and present it in useful ways to people responsible for the firm’s performance.” [19]

A basic and straightforward definition is presented by Allen Bonde and Matthew Kuckuk from ABG: “People need information to do their jobs, and the information

they need exists in a form they can't read. BI and reporting technologies exist to bring the data to the eyes of the people that need to use it, and—most importantly, put it in a form that has the right format and flexibility to fit the task". [1]

### **3. REASONS WHY BUSINESS INTELLIGENCE INITIATIVES FAIL**

#### **3.1 Introduction**

There are several reasons why Business Intelligence initiatives fail. The core reasons are discussed in the first part of this section. The second part of this section gives an insight into why BI initiatives do not produce the expected results.

#### **3.2 Core reasons why Business Intelligence Initiatives fail**

In an interview with Tony Shaw in May 2004, Shaku Atre listed the main reasons for BI failure. These issues are addressed in the book: "Business Intelligence Roadmap: The Complete Project Lifecycle for Decision-Support Applications", written by Shaku Atre and Larissa Moss in (2003). [2]

The reasons for BI failure that Deepak Pareek discusses in the article: "Key Challenges Critical for Business Intelligence Success", that was published in DM Direct Special Report, on the 14<sup>th</sup> of September 2004, closely correlates with the reasons that was provided by Atre and Moss. [15]

The core failures of BI initiatives according to these authors are the following:

- A lack of recognizing BI as cross-organizational business initiatives and not understanding that cross-organizational initiatives are different from stand-alone solutions;
- Unengaged business sponsors or business sponsors who have little or no authority due to their low-level positions within the organization.;
- Unavailable or unwilling business representatives;
- Lack of skilled and available staff as well as suboptimum staff utilization;
- No software release concept (no iterative development method);
- No appreciation of the impact of dirty data on business profitability;
- No understanding of the necessity for and the usage of metadata.

A discussion of each of these reasons for BI failure (on which the three authors agree) is presented below: [2, 15]

### *3.2.1 BI Projects fail because they are not recognized as cross-organizational business initiatives and businesses do not understand that as such they differ from typical stand-alone solutions*

BI aims to achieve a holistic cross-organisational view, and cannot be treated as a stand-alone initiative. Collaboration cannot be limited to departments, but an integration of knowledge at all levels is required for a BI initiative to succeed. If an enterprise does not nurture a cross-organizational collaborative culture in which everyone grasps and works toward the strategic vision, a BI initiative will normally be unsuccessful.

### *3.2.2 Unengaged business sponsors*

If a BI project does not have a supportive and committed business sponsor, the project will struggle to obtain support within an organization - and usually fails. The responsibility of business sponsors is to establish proper objectives for the BI application. They must ensure that the initiative support the strategic vision because it is the business users who truly understand the data and can ensure that the functionality of a BI application correctly maps the strategic business goals.

### *3.2.3 Unavailable or unwilling business representatives*

A major shortcoming of BI projects is that the focus is mainly technical rather than business oriented. The reason for this is that most BI projects are run by IT project managers with minimal business knowledge. It is therefore imperative for BI project success that business representatives for all areas in the organisation must be part of the BI project team. If IT people take the responsibility for BI they quite often see BI as the end instead of just a means to the end.

### *3.2.4 Lack of skilled staff or suboptimal staff utilization*

The skills that are required to implement a BI application differ significantly from other On-line Transaction Processing (OLTP) projects. It is very likely that a BI project team, without previous BI application implementation experience, will fail to deliver desired results in the first iteration.

Gartner, Inc. (a research and advisory firm) emphasises this and says that lack of skills is one of the main reasons why Business Intelligence projects fail. Gartner predicts that companies that do not invest in forming a Business Intelligence competency centre, have an 80 percent chance its initiatives will fail to meet strategic business objectives. The aim of a competency centre is to make users self-reliant, to ensure consistency, to co-ordinate the use and re-use of business metadata, and to prevent dirty data. [8]

### *3.2.5 No software release concept or methodology*

To succeed, BI projects must adhere to a plan with clearly defined methodologies, objectives and milestones. However, unlike other undertakings, BI projects are not limited to a confined set of departmental requirements, which adds to the complexity of these projects. Their purpose is to provide cross-organizational applications. BI methodologies and deliverables therefore differ from other IT projects. BI project planning is not a one-time activity, but rather an iterative process in which resources, time-lines, scope, deliverables and plans must be adjusted continuously.

### *3.2.6 No data cleansing activities*

BI projects are data-intensive and the data that is delivered by BI is highly dependant on the quality of the data in the current systems. It is of utmost importance that source data is scrutinized to ensure quality. Most business analysis issues in BI projects are related to source data, which is scattered around the organization in heterogeneous data stores and formats.

It is critical to identify which data is important and to devise ways to clean it. Any dirty data must be identified, and a data cleansing plan must be developed and implemented. Even the best BI application will be worthless if driven by dirty data. Underestimating these activities is one of the biggest reasons for BI failure.

Gartner Inc predicts that 50 percent of all companies will not make the effort to ensure data quality “due to ignorance of how to implement, or deliberate avoidance of, a complex and expensive set of initiatives”. [8]

### *3.2.7 No understanding of the necessity for and the use of metadata*

The Business Intelligence Certification Guide defines metadata as the kind of information that describes the data stored in a database and includes such information as a description of tables and fields in the data warehouse, including data types and the range of acceptable values. [16]

Clean data is worthless to knowledge workers if they do not understand its context. Valid business data, unless tied to its meaning, is still meaningless. Therefore, it is imperative for all BI applications to consciously create and manage the meaning of each data element. The management of metadata should thus be an essential activity in BI projects and the lack thereof causes serious problems.

## **3.3 Core reasons why BI Initiatives do not produce expected results**

Helen Dwight offers 5 reasons for BI not fulfilling its promise in her article: “Business Intelligence for the Rest of Us: Five Reasons Why This Has Not Yet Become a Reality” (2003). [7]

The core reasons of BI Initiatives not fulfilling its promise according to her are the following:

- Systems are geared towards “power users” and not ease of use.
- The cost of taking ownership is too high.
- Deployment and maintenance is difficult.
- A lack of an extensible, scalable infrastructure.
- Underlying data can not be trusted.

A discussion of each of these reasons for BI's lack of performance is presented below: [7]

### *3.3.1 BI geared toward “power users,” not ease of use.*

According to Dwight, BI applications are not easy enough to use and the largest majority of BI tools requires expensive and time-consuming on-site training classes to get users up and running. The effect of this is that BI applications in many firms are limited to a small set of users within the company, failing to deliver value to a wide variety of business users.

### *3.3.2 Cost of ownership too high*

Large-scale deployment of BI tools is impossible for many companies due to the high costs involved in the implementation of these systems. It's not only the cost of the software that provides a barrier but also the amount of time taken in the implementation and maintenance of a BI initiative. Time equals money, and too many organizations end up spending way too much on both in their BI deployments.

### *3.3.3 Difficult deployment and maintenance*

The implementation and maintenance of BI projects are very complex. There are also hidden costs which include user training and ongoing support. A lot of BI solutions lack a unified platform approach throughout the organisation which complicates maintenance efforts tremendously. Companies must devote extensive resources to administering and maintaining these fragmented solutions. Multiple interfaces drive up training costs and some solutions even require multiple administrative tools.

### *3.3.4 Lack of an extensible, scalable infrastructure*

A large majority of companies do not have the infrastructure necessary to support mass deployment of BI initiatives within the enterprise. Businesses that do succeed with the deployment of BI systems encounter great difficulty when the number of users increases, because the current infrastructure cannot meet the growing needs of users.

### 3.3.5 *Underlying data can not be trusted*

If often happens that too much time is spent by developers of BI systems to improve the look and feel, features and functionality of these systems and too little time is spent worrying about the results that decision makers receive. This can lead to a situation where users can get many different answers to the same questions and this can negatively affect the credibility of these systems.

## **4. HOW THE VALUE OF BI AND ITS CHANCE OF SUCCESS CAN BE INCREASED**

### 4.1 Introduction

There are many ways to increase the credibility and success levels of BI. The core methods that can be use to enhance BI are discussed in the next part of this section.

### 4.2 Core methods of enhancing BI's level of success

Various articles had been written about failure of BI and especially ways of avoiding this. The core issues that need to be addressed in order to enhance the performance and acceptance of BI Initiatives are the following:

- Align BI with business;
- BI must not be IT-driven;
- Focus on core business issues;
- Build BI on a Data Warehouse;
- Maintain data properly;
- Use a good project methodology;
- Combine BI with other corporate performance measurement tools.

A discussion of each of these issues is presented below:

#### *4.2.1 Align BI with business*

It is extremely important that BI is relevant and aligned with the business and its needs.

Peter Walzer says in an article, "Why so many BI initiatives fail", that the content delivered by many BI projects often does not need to be used by anyone. He emphasizes that what is required in a successful BI project is for key executives, managers, and other members of the organization to want to make use of what a BI project delivers. The key of a successful BI project is therefore that is must be aligned with the information that the organization desires. [22]



BI by itself has little value; it must be used (actionable) to have real value. BI should also be coupled and aligned with strategic planning, business development, market planning or sales force win-loss analysis and used in the decision making process. [18]

#### *4.2.2 BI must not be IT-driven*

Another important problem with BI (that is linked to the lack of alignment) is that BI projects are quite often managed by IT professionals. This is normally disastrous, especially if these people do not have the necessary business acumen and focus. BI is a means to an end and not an end in itself.

This fact is underlined by Deepak Pareek who believes that the biggest reason for failure of BI projects is due to the fact they are treated as just another IT project. He says that BI should be treated as a constantly evolving strategy, vision and architecture and must continuously be aligned to an organization's operations and with its strategic business goals. [18]

Lee Wittschen also combines the first two issues when he presents "lack of business alignment" as his number one reason why BI implementation had such a poor success rate. He says that when technology efforts disengage from the business and take a technology focus, these efforts fails to meet the needs of the business user. [21]

It is clear that BI projects need to be developed with a business focus in mind and with business managers that understand the needs of the business in a broad spectrum and have the necessary skills to act as sponsors and project managers.

#### *4.2.3 Focus on core business issues.*

With so much data in organizations that can be analysed it is important for organizations to decide what critical few things should be analysed, measured and focused on. Without the necessary focus, BI systems can waste a lot of time and effort on developing reports, analytical capabilities, and data marts without first gaining agreement on which are the most important things to measure and analyze in order to execute a specific business strategy. Much of the effort may end up creating reports and analytical tools that provide information that an organization does not want their people to focus on. [3]

#### *4.2.4 Build BI on a Data Warehouse*

To gain the most out of BI it must be developed directly on top of the data warehouse. [17] "A data warehouse is essentially a database where data is collected to be analysed." [12] A solid and reliable data warehouse is a prerequisite for the effective implementation of a BI solution. [9, 11].

When BI analytics are performed directly on top of the data warehouse a business can reap the following benefits:

- Performance measures companywide will be linked to strategy;
- The company will get a clearer view of what information is valuable to different users, according to what parts of BI they use;
- Improvements in individual and enterprise behaviour will be realised because it is measured in quantitative terms against tangible goals. [17]

#### *4.2.5 Maintain data properly*

It is important that data are pure and cleansed and maintained on a regular basis. Data forms the foundation for what the analysis is build upon and without proper data BI becomes useless and even dangerous (in a business sense) to use. [7, 15, 16]

The design of the cubes, reports and analytical interfaces of BI systems are determined primarily by the underlying source of data. These systems can identify gaps in the data that need to be filled to allow more useful analysis, but the lion's share of the effort goes into making the most of the data that already exists in various systems. [3]

#### *4.2.6 Use a good project methodology*

The processes that are followed to develop BI are extremely important. Von Eschen [23] emphasises this and elaborates on using a structured project methodology that he call the business knowledge process. This methodology is done in the following steps:

- Clearly define BI goals;
- Determine the units of information needed;
- Prioritize information requirements;
- Determine the relationship between the units of information;
- Locate the data;
- Assign responsibilities;
- Map the processes;
- Improve the processes.

The major advantage of the above-mentioned methodology is that it specifically shows the developers where, why and how BI solutions can be applied to gain the maximum benefits for a business.

#### *4.2.6 Combine BI with other Corporate Performance Measurement tools*

To be effective BI should form part of the broader Corporate Performance Management (CPM). It should be used in conjunction with other existing tools

such as Balance Scorecards, Predictive Analysis, Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) to get the maximum benefit for an organization. Combining BI with other CPM tools can be viewed as the most important measurement to enhance BI's chance of success because it actually gives a framework for the other success criteria to be met. [3, 9, 14, 20, 22]

The Balance Scorecard, developed in 1992 by Drs. David Norton and Robert Kaplan, has gained global acceptance as a powerful framework to help leaders define and rapidly implement strategy. It translates the vision and strategy into a set of operational objectives that drive behaviour and performance. The four perspectives of the Balance Scorecard framework (financial, customer, internal, and people and knowledge) are used to describe the strategy. [14]

The first steps according to the balance scorecard paradigm, is to go through the critical thinking process of more clearly defining the organization's strategies and the cause and effect relationships that support those strategies. The Balanced Scorecard approach emphasizes this bigger picture of creating a "strategy-focused organization". The Balance Scorecard therefore creates an essential foundation for Business Intelligence that will determine what critical data needs to be extracted and analysed. [3]

When combining BI with the Balance Scorecard the emphasis fall on carefully selecting measures that reflect the specific cause and effect relationships that underlie an organization's specific strategy. Selecting these measures is often more about agreeing and communicating what is important than it is analyzing data. When combining BI with the Balance Scorecard it will ensure that only the "critical few" measures that drive the successful execution of strategy is extracted and analysed. Managers and other business users will only be provided with the relevant strategy specific measures which they need to monitor in order to enhance CPM and strategy execution. [3]

The Balance Scorecard approach facilitates BI project alignment, prioritisation and focus and gets its performance measures as part of the package. The business benefits from this co-ordinated effort and gets a road map for better-aligned BI Projects. [22]

Another very positive advancement in the BI arena is the marriage of BI and predictive Analysis. With this combination the future can be predicted much more accurately. Together these tools provide the user with [20]:

- Segmentation of business data;
- Statistical process control that allows an organization to monitor and improve its processes;
- Real-time alerts to impending market changes and trend swings;

- Collaboration options for goal-setting and performance measurement across the enterprise.

Lee Wittschen and others also mention the importance of using other existing systems in combination with BI to enhance BI's performance. Data from ERP, CRM, KPI's and Point-of-Sale systems should form an integral part of BI applications. [9, 20, 23]

## 5. CONCLUSION

It is not enough for managers to understand why the most BI initiatives fail. They must also understand how to increase the value of BI in their organizations.

A Business Intelligence infrastructure must be able to provide the functionality that will enable all the end-users in the organisations to easily plug into BI systems, and must be able to offer different users different ways to access the information provided by these systems.

What is really needed in order to increase the value of BI projects is an approach for resolving the alignment of what BI projects deliver, and the strategic and operational information that the business really would like to have. An overwhelming number of companies worldwide are also starting to combine BI with other CPM business tools, especially the Balanced Scorecard and Predictive Analysis, as an approach to address the BI alignment problem and enhancing the practicality of BI. Integrating these tools with BI initiatives adds tremendous value to organizations, and also provides the framework for organizations to use Business Intelligence to enhance Corporate Performance Management.

In summary it can be said that Business Intelligence needs to move out of operating in a silo and rather finds synergy with other business tools to create enterprise-wide solutions with tremendous potential. When organizations learn from BI failures and apply the necessary professionalism that is described in section 4 they are experiencing powerful impacts on its critical enterprise applications and key business function areas.

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