

Business Intelligence

The Business Case



BUSINESS
INTELLIGENCE
SOLUTIONS

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Introduction

Many large companies have been using Business Intelligence (BI) computer software for some years to help them gain competitive advantage. With the introduction of cheaper and more generalised products to the market place BI is now in the reach of smaller and medium sized companies. Business Intelligence is also known as knowledge management, management information systems(MIS), Executive information systems(EIS) and On-line analytical Processing (OLAP).

In this white paper I will present the data problems facing companies today, how to recognise the opportunities BI can bring and some practical methods of evaluating the feasibility of a BI software solution.

The issues that may make BI necessary.

From the day that a company is born, until the day it dies, it creates data. For example you may collect data about your customers:

- What they buy
- When they buy
- How much they buy
- How promptly they pay for it
- What discounts apply

You may collect data about your employees

- Salaries
- Qualifications
- Training
- Pension entitlements. Etc

You may collect data about your products:

- Size
- Colour
- Stock levels
- Cost to produce

This data is usually grouped around departments, finance, marketing, sales, human resources, customer relation's management etc. Each department performing a distinct function in the company and collecting its own data islands, These data islands are usually remote, cut off from each other, this makes it difficult to see an overview of the company and also to analyse the relationships between the functions in the company. For many companies the future will increasingly bring the need to not only analyse internal data but also their data relationships between customers, suppliers and business partners.

Companies are spending large amounts of money collection this information but few companies seem capable of turning this data into a valuable asset. As companies look to the Web and business to business communications this volume of data is set to increase. Many companies have adopted 'slimmed down'

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management hierarchies and have reduced the number of business analysts, this has had the net result of more data to process and fewer people to make sense of it. BI software aims to help organisations by providing decision makers with speedy access to relevant information that allows them to make better business decisions.

Traditional Reporting

Traditionally reporting in an organisation often flows up the management hierarchy of the business eg. Production operators will collect information about a production line, eg. units produced, production time, down time and utilisation %, this information will be passed to a shift supervisor who may well pass it in a summarised form to the production manager and then to a production director. As a general rule of thumb the further up the organisation the more summarised the information requirement becomes. This either means that same data has to be reformatted, summarised and reported three times or that decision maker is receiving levels of detail that are inappropriate for their needs eg. The production director receives every piece of detail when what he/she really wants to see are trends, patterns and exceptions in the data.

Many reports in an organisation will be on paper and be in a fixed format. The problems with traditional paper reports are:

- They are expensive and time-consuming to produce
- They can be out of date by the time they are received.
- They are inflexible and hard to analyse
- Time is often wasted by re-keying information from reports back into spreadsheets for analysis.
- Preparing data for business reviews, monthly reports, formal presentations can be very costly in both time and money.

One of the other problems can be that traditional reports although answering some questions generate others eg. A sales revenue report on your top 50 customers for the month may generate the questions:

- Are these the same 50 as last month?
- Are these the same 50 as last year?
- Which of these is the most profitable?
- What is the product mix for each?
- Which business sectors do they fall into?
- Who has bought through the internet?
- Who has seen the largest increased in the last 6 months?
- Who gets the biggest discounts?

Some of these can be answered by an enhanced report most cannot.

Even smaller companies can accumulate considerable amounts of data. Consider the example of a company who sells 50 products to 50 customers on a daily basis for 2 years this would produce the possibly of almost 2 million data

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points. If we add the dimension of 4 sales managers it goes to over 7 million potential data points. Of course, all customers won't buy all products so the actual numbers will be less but that's still a considerable amount of data.

What is Business Intelligence?

BI is a broad range of software tools and database architecture aimed at the collection, consolidation, and analysis of data.

It improves on traditional reporting in the following ways:

- It is interactive, as further questions become apparent during analysis answers can be obtained almost immediately by manipulating the data.
- It is hierarchical, just like most business structures, it can provide the high level overview but has the 'drill down' to detail if required.
- It is multidimensional, this gives the ability to analyse the data in different planes, a multidimensional BI cube may be designed to enable analysis which can achieve the following sequence:
 1. Drill down to a customer who needs further analysis
 2. Display the products bought by that customer
 3. Switch to the time dimension to see a monthly break down of profit made on those products
 4. Switch to see which sales person manages that customer
 5. View the outstanding debt on the account.

this sequence and thousands of other possibilities can be executed with the click of a mouse.

This level of analysis can only be achieved if the information requirements of the business have been thoroughly investigated. Just like there are no two identical business so there are no two identical information management requirements. The next sections will give guidance on how to evaluate a BI strategy.

Strategic or Tactical

Business intelligence applications can be deployed either **strategically** ie across functional department or **tactically** ie within a functional department.

Strategic

Strategic BI has the potential of big rewards. It can give senior managers a holistic view of the company and can identify trends and opportunities for growth. It can also be used for monitoring the company against its Key Performance Indicators (KPI's). Because it goes across departmental boundaries it encourages collaborative working in the organisation.

On the other hand the disadvantages of a strategic BI are:

- More difficult to implement
- More expensive to implement
- A higher risk of not delivering a successful solution

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- May produce a less clear-cut return on Investment (ROI)

Making faster and better decisions, having a clearer view of your business, monitoring performance against KPI's, having departments working more closely together, these all will have a beneficial effect on your business but are more difficult to measure in financial terms.

An example of strategic BI deployment might be to look at customer profitability, to do this you need to go across functional departments in order to include costs, discount structures, revenues and customer complaints/returns. There is a risk that data may not be compatible across departments (or even that the data doesn't exist!) and typically there is a political dimension to gathering information across departments. It may be easier to make the business case for a strategic BI solution if the ground has already been prepared by the delivery of a successful tactical solution within the organisation.

Tactical

Can be applied to the 'pain' areas of your business where the extra knowledge and insight that BI can bring will bring quick and quantifiable results. It is usually a good place to start if you have had no previous experience in BI. There should be clear goals of what is to be achieved and a clear business case made (and later proved) for a return on investment. The advantages are:

- Data is easier to collect as it comes from one or a few sources.
- There is little likelihood of data incompatibility
- Clear return on investment
- No politics

An example of tactical BI deployment might be to look at production yield from a manufacturing process, we might want to record inputs, output, wastage, plant breakdown. Hopefully all this data will be available from one source. There can be a definite goals and targets laid down eg. reduce waste by 10% or reduce plant downtime by 5% this will give monetary savings and a clear case for the return on investment made in software and consultancy.

Another example may be that a company puts all its quality control and customer feedback information into a BI system with the goal of reducing its customer complains by 5% or reducing its rejected goods by 10%

How do I assess the need for Business Intelligence?

In an ideal world everyone in your organisation has access to all the information they need at the time that they need it. In the real world the situation is different from this, to put it simply, the easiest way to drive out the information requirements of your business is to ask the decision makers in your business what information they require. The best way to do this is in a requirements workshop facilitated by a BI expert acting as a facilitator.

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Requirements workshops

Who do we invite?

In the case of a tactical deployment of BI this should be reasonably simple. You need a project sponsor/owner who may be the departmental head and a small group of experts from that department.

In the case of a strategic cross department deployment you need a project sponsor/owner preferably at board level, and a number of experts from each department, don't forget to invite someone from the finance function to bring a financial overview to the project.

I would suggest that you do not get IT involvement at this stage as this is a brainstorming session to flush out the business requirements and not to look at technical feasibility.

What will come out of this?

The requirements workshop should produce a number of business questions that either can't be currently answered or are difficult to answer, eg. the answer may take a number of days to collate and calculate.

The resulting questions may be similar to the following:

- Why does this product sell to this customer but not that one?
- Which of our customers is the most profitable to us this year?
- Which sales person had the highest sales in the northwest last month?
- Did our last product promotion result in increased profit rather than just increased sales?
- What is our fastest selling product on the web and why?

From these questions we should be able to determine the **measures** and **dimensions** of the possible BI solution or solutions.

Measures

these are the things we measure in the organisation, it could be, quantity sold, sales revenue, budgeted sales revenue, item cost, head count, units produced, Profit or sales revenue per employee.

Measures can be one of two kinds:

- **Base measures:** which are present in the raw data like *sales revenue*
- **Calculated measures:** which are derived from the base measures eg profit, which is calculated (sales revenue - cost of goods sold).

Dimensions

Measures by themselves have limited use, we need to put the measures into context. Dimensions are the **BY** in the questions eg. Sales revenue **BY** customer, quantity sold **BY** product, they also give us answers to the questions of **who, what, when and where**.

- Who - could be a customer, sales person, supplier or an employee

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- What - could be a product or service
- When - could be the day sold, the day delivered or the time it takes to restock a product. (This is our time dimension)
- Where - could be a sales territory, a customer location or a production plant

For example the questions:

Which of our customers is the most profitable to us this year?

Measure: a calculated measure of profit (sales revenue – cost of sales)

Dimensions:

- Who – the customer
- What - total product or service
- When – this year to date

Which sales person had the highest sales in the northwest last month?

Measure: sales revenue

Dimensions:

- Who – the sales person
- What - total product or service
- When – last month
- Where – North–West sales region

Having identified the dimensions and the measures we then need to make some business judgements about the feasibility of a BI solution or solutions. Here are some points to consider.

- Look for the easy wins, tactical solutions delivering business benefit that can be achieved quickly and cheaply.
- Identify measures where no current data exists, these are more difficult to implement as data collecting systems will have to be build and put in place before they can be used.
- Watch out for high data volumes, if they are very large it may be that data has to be summarised to reduce the volume.
- Strategic, cross-departmental solutions will need board level sponsorship and support to be successful.

Summary

There may be real business benefits for smaller and medium companies to use Business Intelligence software but the information management requirements should be investigated and business case made before any decisions are taken. Organisations should be able to focus on the business critical information by using the requirements workshop, it should also indicate how easy or hard it would be to make that information available in a BI solution. If a BI solution is proposed a clear return on investment should be proposed at the start of the project and verified at the end of the project to make sure it has been achieved.

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Business Intelligence or Knowledge Management is a critical business issue, decision makers will be more effective and efficient if they are empowered with the right information. The issues are mainly business ones and are not driven by technology, BI projects succeed because of clear and achievable goals, a business culture ready to embrace change, committed and visionary leadership and a imaginative workforce who can grasp the benefits.