Business Intelligence – factors, features and flaws

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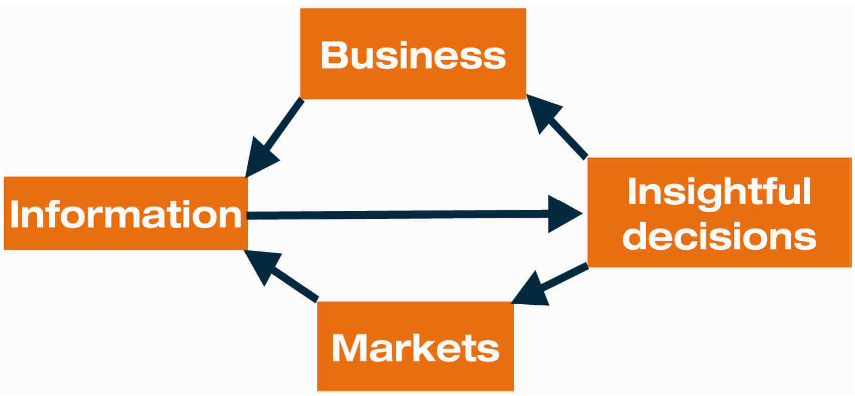
My use of the term Business Intelligence encompasses not only computer-based decision support systems, but a compendium of information and knowledge that is required in business. I am therefore using the term in its most basic and literal form.

The tech-oriented dominion of the term is understandable, if not misplaced, since it was conceived, and evolved, from an effort of mostly tech experts to make sense of business data. IBM researcher Hans Peter Luhn first used the term business intelligence in 1958 when he defined intelligence as: "the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal." In the meantime it has evolved from the computer-aided models to assist decision support systems which began in the 1960s and developed throughout the mid-80s, with its widespread usage flourishing in the late 1990's.

A more encompassing definition was provided by Howard Dresner in 1989, who proposed Business Intelligence as an umbrella term to describe "concepts and methods to improve business decision making by using fact-based support systems."

I tend to prefer the following definition: "Business Intelligence is the transformation of enterprise data into actionable information", which defines the process in a more encompassing way about the "raw" data that is out (or in) there, which needs to be organised and analysed into meaningful ways to help in the decision-making needed for action. Figure 1 gives a pictorial representation of this, with respect to the information inside a business and the data from the markets, which need to be processed to elicit insights and decisions about the same business and markets.

Figure 1



Some Factors and Features

So taking this interpretation of Business Intelligence as the starting point, one can see that there are two distinct types of information sources: internal information within an organisation, and external data garnered from various corners of the markets. The motivations for looking for and gathering such information can be wide and varied, with the prerogatives falling on the main functions of any business: Strategy, Marketing, Finance, People Management, and Operations. In many cases these functions can provide scope for gathering of information, both internally and/or externally. In all cases, it first starts with some need, or a question. And in the end, following the gathering of information, the analysis and interpretation of data, a recommendation and decision. It is worth remembering that even not taking a decision is a decision in itself. Here are some examples of what information can be gathered and why. Understandably some motivations overlap between different functional domains, as happens also in everyday business, with functions being interrelated.

- **Strategy**

Are you with the right business in the right place at the right time? A look at the industry life cycle of your business by gathering intelligence on the life stage the industry is in, would help you make an informed decision in this regard. Information could also be gathered on factors affecting (or that could potentially affect) your industry (and ultimately your business) from a more macro-perspective, such as changes in legislation, socio-demographic shifts and trends, and technological innovations among others. Internally information could be gathered and analysed about the strengths and weaknesses of the organisation, to see whether the full potential of the company is being attained.

- **Marketing**

Information about your customers, whether current, past, or potential could make a big difference to your business. What, why, how, when, where are they buying from you or from someone else? What is the competition offering? What is the enquiry to sales ratio? How many enquiries/sales are being produced by each advertising or promotion you have chosen to do? How can you expand your sales?

- **Finance**

What are the sales revenues per department or per product? How can you reduce any associated costs? Are certain customers costing you more than others, compared to what revenue they generate? Is your pricing structure giving you the maximum revenue and/or profit? What is the cost versus benefit of investing in your staff, for example by training them?

- **People**

How is the knowledge acquired by the different people in the organisation being shared with the rest of the organisation? What happens if someone leaves, does the organisation lose the information that person has garnered? How do the people's skill sets and competencies match with what they are doing? Should they be doing more of what they are doing, or should they be utilised in other areas where their potential can be better used? How do customers perceive the organisation through their interaction with the staff?

- **Operations**

Are the organisation's processes and systems effective and efficient? Are you utilising the operational capacity of the organisation in the best way possible? Are your logistics well structured? Would you benefit from a larger outlet, or a second one somewhere else? And do you have the resources and infrastructure for it?

Methods of Enquiry

Once you have decided what questions to ask of your organisation, you need to be able to gather information and analyse it. For this, and depending on which type of information you need, various methods can apply. In some cases, which would fall plainly into the traditional IT sense of the term, you may need an IT infrastructure and specialised software, to be able to perform data-, process- or text-mining, collaborative platforms for data sharing and electronic data interchange, or even predictive analyses, among others.

However, to my mind technology is just a wonderful tool, to be able to perform tasks that otherwise would be practically impossible to perform, especially when it involves large amounts of data. Technology, as some businesses have bitterly learned, is never the solution by itself. I once heard a very interesting remark, which I like repeating: Every problem is a people problem. I do not mean that all problems are caused by people, but that all problems involve people, and in the end, people have to solve problems.

Therefore, with or without the assistance of top-notch technology, the investigative process can be subdivided into three types: qualitative, quantitative and desk research. Whilst the latter generally (but not exclusively) deals with the gathering of information from secondary sources (that is, research conducted and conclusions already drawn by other people), the two former methods provide you with primary data. It is generally recommended that, if possible, you first start by getting some background information on the issue (through secondary sources), before then moving to some in-depth inquiry through qualitative and/or qualitative surveying.

Desk research can tap into various sources of information including, of course the vast but unruly and not always reliable information on the internet. Other sources could be: books and journals, libraries (such as the public or University libraries and Melitensia for local research), online commercial databases, which are usually at a fee but sometimes give free limited access, government sources (such as DOI, NSO, PR departments), company reports, and NGO's, depending on your needs.

Qualitative research can be performed either through in-depth group discussions or via in-depth one-to-one interviews (generally face-to-face). In both cases, the type of questions used is called open-ended, since they would require people to discuss and elaborate, rather than provide a monosyllabic answer. Another form of qualitative research is by observation. This method is frequently under-utilised or overlooked, or used subconsciously. It can be a very effective and powerful method of investigation. In some cases, observation can also be used as a qualitative method of inquiry, as in the counting of the number of people passing by a shop, or by looking at the number of times a particular machine malfunctions and trying to find a pattern.

Quantitative research is generally performed after you already have a very clear idea of what you need to know from a relatively large number of people or, as mentioned above, when gathering large quantities of specific data through observation. When gathering information from people, the most common methods include the face-to-face interview (either using a paper-based questionnaire or with a PDA or laptop/netbook), telephone interviews, web surveys and/or by return mail. Each one has its advantages and disadvantages, with respect to cost, validity and reliability, depending on your particular requirements and constraints.

Some Common Pitfalls

There are many pitfalls that one should avoid. In fact, there are too many to list here. I have therefore taken just a few examples of what I consider some of the main ones.

In any project in an organisation, its success or failure depends on whether it has a sponsor (who is generally very high up in the organisation) and a champion (who would be the driver and implementer) who would have the backing of the sponsor. This is especially true if the project takes - or threatens to take - people out of their comfort zone. The same applies for any business intelligence project. Since business intelligence deals with asking questions and providing answers, the concepts of validity and reliability come to the fore. It is vital that you make sure to measure what you want to measure. For example, if a hotel asks its' customers if they are happy with the housekeeping department they may get a higher score than if it asks them if they thought their room was clean and tidy when they arrived. Questions have to be clear and unambiguous. If you ask me whether I have toast and coffee for breakfast, I may be unsure whether I should answer yes or no, since I usually have tea with my toast for breakfast.

If you really want to get to know what people think, do not ask leading questions. Someone called me at home some time ago for a survey about TV programmes: "Do you know that this programme (mentioning the name) is transmitted on this weekday (mentioned)? "Now I do" I replied. I just love participating in these research exercises. Another common pitfall is the bias of self-review, especially if people are worried that they may be damaging themselves by answering truthfully, as in the case of performance reviews. Population mis-representation is also another danger. If you want to know something about the shop floor, ask the people working there, not the managers. If you want to know what your customers think, well, take a wild guess who you should be talking to.

Conclusion

There is a cost for knowing. There is no such thing as a free lunch. However, do not underestimate the cost of ignorance. Not optimising your effort has an opportunity cost, as does not increasing your efficiency. I feel that Sir Francis Bacon's statement that "Knowledge is power" is very appropriate for this subject, especially with the conditional "if you know how to use it" added to it. I may also add what we like to preach to all our programme members on the Henley MBA, that we prefer if you use this knowledge, and consequent power, responsibly and ethically.