

The 'Intelligence' in Business Intelligence Solutions

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Introduction :

Business Intelligence is not just about the capability of showing information in multiple ways. Any BI tool can show you unlimited combinations of various dimensions. For example a BI report on Sales Analysis can show you data by any combination of customer, year, month, quarter, product etc.

There will be an initial excitement at such a capability, but after some time the user will get overwhelmed by what he has to do in order to find meaningful conclusions. This is the proverbial searching of a needle in the haystack.

It is for the BI developer to put in 'intelligence' in Business Intelligence solutions to make reports more actionable. The key to this is to build **intelligent dimensions**.

Natural and Intelligent Dimensions

Natural dimensions are those which come directly from the data sources itself. For example in an Accounts Receivable report natural dimensions could be Customer, Business Unit, Due Date, Invoice Date, Invoice Number, Region, City, Country, Currency etc. These dimensions come from the ERP system using the base data and various master data. Using these dimensions a variety of views could be developed in the BI report.

Intelligent dimensions, however, are the ones a BI developer would build to make the report actionable. These dimensions are derived from the natural dimensions.

Identifying Intelligent Dimensions

Identifying Intelligent dimensions requires a deep knowledge of the domain area. Apart from this, the designer must put himself in the shoes of the decision maker (for whom he is building such solutions). He must try to understand what the decision maker is looking for and how he goes about making his decisions.

Sometimes he has to go beyond this. He has to demonstrate to the decision maker what type of intelligent dimensions can be built using these technologies. Such demonstrations spur the imagination of the end-user to come out with great ideas.

For example, an architect specializing in bungalow design would be expected to have a very detailed knowledge of construction processes, materials, interior products etc. But he won't be able to design a livable and good bungalow for his client, unless he makes a deep study of his client's desires, the way he lives, his likes and dislikes etc. As Ayn Rand (Fountainhead) says 'form should follow function'. As BI developers we have to understand the decision makers' needs in order to build an actionable solution.

Creativity in defining Intelligent Dimensions

Natural dimensions are finite in number. For example the AR report can be analyzed only to the extent of the dimensions available in the data and masters held in the ERP system.

However you can build any number of intelligent dimensions. It entirely depends on your creativity and understanding of the end-users needs.

The following three methods can help you in building BI reports which are 'intelligent', viz :

- Create Intelligent Dimensions by Observation
- Combine Data from Related Functional Areas
- Combine Traditionally Different Reports into One

Create Intelligent Dimensions by Observation

To identify intelligent dimensions try to understand how the decision maker uses the information which a BI report gives. Identify what exactly he is looking for in these reports. See how he interacts with the report. These observations give you a clue to an intelligent dimension.

Also, remember that the human mind will keep searching for new meanings in data. Hence this process is always iterative. You will have to keep observing ways in which decision maker actually reads the reports, get your clues and build the intelligent dimensions. After some time the end-user will know that you can build such intelligent dimensions, and then you will get your ideas right away from him.

Let's take the AR report which we discussed above. Some of the intelligent dimensions which a BI developer can build are :

- Aging Buckets: On the basis of the due date and the reference date, age of each invoice can be determined, and invoice can be grouped in aging buckets. In a BI scenario, you can however think of multiple aging buckets in the same report. For example one aging bucket could be just <180 days overdue and > 180 days overdue. Within this aging bucket the user could see <30, <60, <90, <120, <180 days overdue.
- Aging Categories: You could also classify the dues as Not Due, Current Dues and Overdues to give a more meaningful analysis. 'Not Due' identifies all the invoices whose due date has not yet passed, 'Current Due' identify all those invoices whose due date has passed but are within an acceptable number of days and 'Overdues' are those which have pass the acceptable number of days limit after passing due date.

The above dimensions have been traditionally used for analyzing AR.

The following dimensions can be added to give an extra edge :

- Impending Overdues: These are all invoices which are at present in the 'Current Due' category, but which will move into overdue category if not collected by the end of the month.
- Impending Critical Overdues : If your critical overdue limit is say 180 days, then identify all the invoices which are at present less than 180 days, but which will move into > 180 days by the end of the month is an intelligent dimension.
- Notional Interest : Interest loss due to delay in collection from the due date to the current date at a specified interest percentage (which should be the cost of capital for the business) can greatly help in identifying the seriousness of the problem. The user can easily sort the invoices in descending order of interest loss, and identify such invoices and take action for the same.

These intelligent dimensions make the reports more 'actionable'. Some of these are shown in the following report :

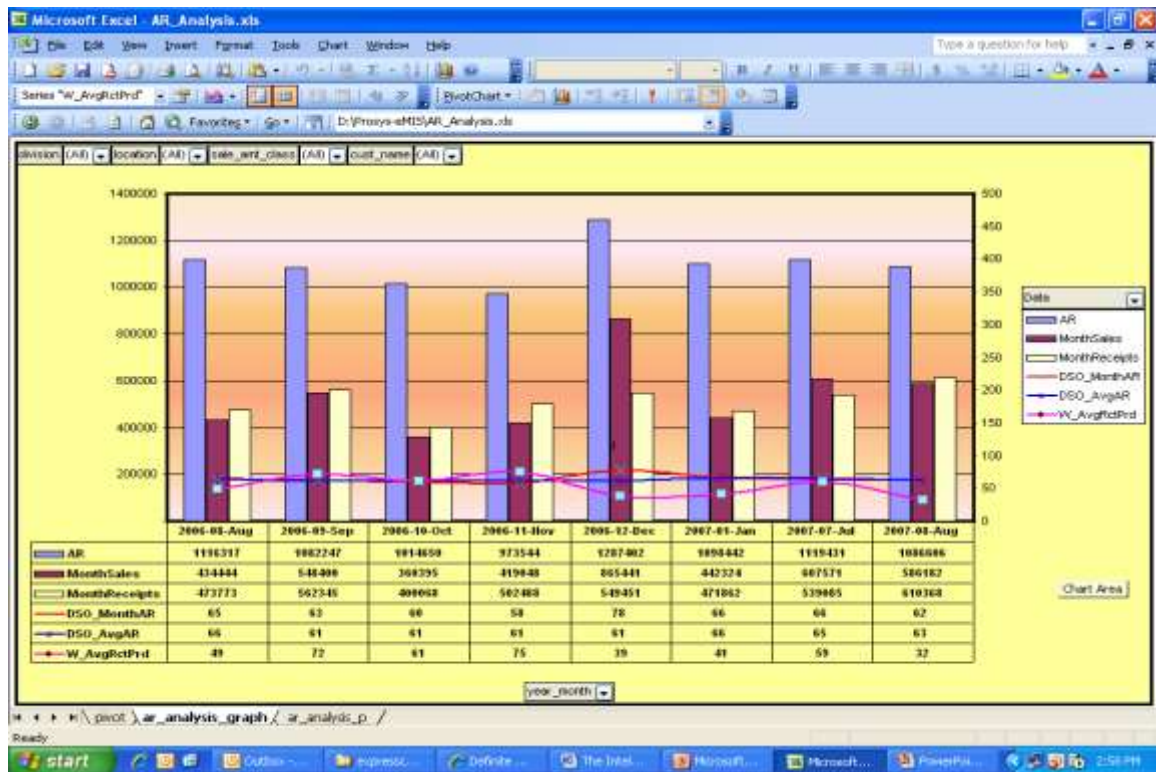
SR#	Current Due	P_PastDue	PastDue	30-90	91-180	181-360	361-720	721-1080	1081-1800	P_CriticalDue	CriticalDue	UnApd	Grand Total
SRLL1	14548	22731	10427	2335	4376	2515	1545	325	1019	4063	90	83734	
SRLL2	129102	69915	68320	88417	35219	23331	40188	23529	29909	25748	127	680349	
SRLL3	810809	345170	170404	120915	101371	52078	34935	10482	13518	350310	235	3358952	
SRLL4	8167	14129	7502	649	917	359	26	31	212	1650	37	32694	
SRLL5	12619					8245		6390		3552	24	30771	
Grand Total	975241	401445	246954	170216	141762	36627	76695	41044	43657	506220	673	3818211	

In the above report you can see that the receivables are classified into Current Dues and Past Dues. Further the current dues are classified into regular dues and potential past dues. Similarly the past dues are classified into regular past dues, critical dues and potential critical dues. The user now does not have to search for information. He can quickly put a filter and drill down to the customer and the relevant invoices in order to take his action.

Combine Data from Related Functional Areas

Sometimes juxtaposing data from related functional areas adds a considerable amount of intelligence to the area under consideration. The BI developer should try to find out where the data of the current area is getting impacted from.

For example in the above example, AR data is impacted by Sales Data as well as Treasury Data. So if data pertaining to sales and money receipts from customers can be shown along with the customers AR balances, it can bring greater clarity. Similarly if a monthly trend of sales, receipts and AR balances can be plotted, it can help the end user define credit policy for individual customers. See the following report of how data from multiple functional areas is plotted together:



In the above example you can see the data of AR, Sales and Receipts plotted in a monthly trend. Various metrics like DSO (Daily sales outstanding), weighted average credit period etc. also plotted. The user can now select a customer and check his credit pattern over the last 12 months and decide a suitable credit policy for him.

Combine Traditionally Different Reports into One

In the traditional method of reporting, generally one report format addressed one thought. For example :

- A report would classify Inventory as per ABC Class based on inventory value.
- Another report (based on transactions) would identify inventory as per its movement into FSN-Fast, Slow and Non Moving inventory.
- A third report would identify Inventory Turns.

By combining these three traditional reports into a single BI report with separate dimensions for ABC, FSN and Inventory Turns, you can give the decision make a fantastic view into inventory data. The user can study one within the other. Using this report, with a few clicks he can locate a problem area. The report becomes very actionable. See the illustration below :

In the above report you are able to see a summary of FSN class within ABC class. You can then drill down to the item level to identify a problem area.

Conclusion :

The BI reports should be actionable, and for this the BI developer should identify and build intelligent dimensions. This will be the key factor in acceptability of the BI Reporting system. In our practice we spend as much as 50% of the time of a senior consultant in discussing with users their requirements and observing how they use the BI Report in order to get clues and ideas for developing intelligent dimensions.

About the Author :



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