Leveraging BI tools for Advanced Analytics and Control System for Multi-Brand Automobile Dealership.

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Abstract

Data is useful for every function of business. No matter it is a Sales, Marketing, Logistics, Operations, Finance or HR. But data is meaningless unless it can be converted to insight. On to the record of every booking cancellation and customer preferences of automobile sales it is not helpful unless one can establish whether or not they are linked to on-time performance of organization. Data alone is not the answer, in fact from the business point of view data is still part of a problem, as it can drain time, technology and monetary resources. One can start getting answers of a problem when value is extracted from data in the form of insights. However, it does not stop there. There is a major push today for Data Mining, Correlation Analysis, Forecasting, Machine Learning and anything else that people can think to solve the problem of gaining insights. On the other end, controls and control system is also important. It’s a challenge to put control over their data. If controls are made, then also by one or the other way analysts fails to communicate the same to the concerned person.

This paper describes how to convert data into the insights and tell your story from your data using Microsoft Power BI and other packages. How to leverage Business Intelligence tools to make and send autogenerated alerts and notification on the data and take the action plan from the account managers if something is going wrong.
**Keywords:**

Insight, Machine Learning, Control System, Business Intelligence, Power BI

**Introduction**

In today’s competitive, knowledge-based economy, organization requires the assistance of Business Intelligence (BI) and Business Analytics (BA) to achieve the competitive advantage. (Hedgebeth, 2007). With the adequate amount of exploitation of business analytics and intelligence, company can drive itself for achieving the sustained competitive advantage, as business analytics skills are valuable, rare, imperfectly mobile and enrooted in the firm’s fabric. As per resource based view (Barney, 1991), the business analytics can be the source of the competitive advantage for organization, when exploited properly. Bill gates (cited at [http://www.billgatesmicrosoft.com](http://www.billgatesmicrosoft.com)) also tells that, “Information technology and business are becoming inextricably interwoven. I don't think anybody can talk meaningfully about one without talking about the other”. Every company is using the new technology, new skills and new analytical methods with the increase in the data.

Improving the productivity of knowledge is important to drive the decision taken by means of Business Intelligence/ Business Analytics (Sharma and Dijaw, 2011). There are many observations that the terms business intelligence and business analytics are used interchangeably, however, there is a difference in both the terms – Business Intelligence is all about the automation triggering, live dashboarding and reporting structure of the data. where as business analytics is about the mathematical and modelling process on the data, which includes, Resource planning and management, Rules Management, Workflow management etc (Nastae and Stioca, 2010).

The automobile industry in India is a highly competitive with many global players. There is always a fight between the national players like, Maruti, Mahindra, TATA and global players like, Nissan, Ford, Hyundai etc., in mass market personal segment. Products of these vehicles are similar to each other in many aspects like, looks, physical features, utility, price, service schedules etc. there is an always fight for the brand. Company having a strong brand value in the eyes of customer will win the market. The automobile business is running through the dealers, who are appointed by OEM (Original Equipment Manufacturers) with the huge investments on showroom and workshop cost,
manpower cost, purchasing cost of vehicle and the loan credit period cost. There are some big dealers in the country like Kataria, Landmark, Jay Bhagwan Group Organization, Varun Group etc. who do the business with more than 5 OEMs simultaneously.

Every OEM has a different systems for capturing the data and record, on the other end, dealer principal will also have to look for their own performance across all the brands they are in. dealers do not have to look and worry about the financial performance only, but they have to look after the non-financial performance also like the market share in their territory, conversion ratio, park space etc. Automobile dealers also sells accessories, finances (in collaboration with financial institutes) and insurance (in collaboration with the insurance provider companies) as a value-added service and take their pay-out. Dealer’s system should also manage all these extra and value-added services also. For that dealers have to make their own systems, as OEM system will not provide the space where value added services can be added.

**Key Challenges**

Every OEM is using the different data capturing structure, like Ford is using the Microsoft dynamics 365, Mahindra is using DMS made by Wipro, TATA is using DMS made by TCS and Nissan using DMS made by IBM. Base file structure for all the DMS (Dealer Management Systems) are also different and every company covers the different aspects of the same data. Like, ford concentrates only on booking ratio, while Nissan talks about the conversion ratio and Mahindra always talks about the test drive ratio. Whereas dealer’s concern is about the financial growth of the dealership, maintaining the market share and selling the value added services which can turn up with the high profits for the dealers. Here, there is an inconsistency between the strategic goal of OEM and dealer principal, which needs to be resolved.

Dealer needs consolidated reports for the operations of the dealership. Like consolidated overall sales, consolidated profits generated, consolidated cost, consolidated expenses and expenditures, consolidated revenues etc. which is possible when the dealers have a multiple showroom of the same OEM, but not possible while working with more than one OEM due to the data inconsistency.

In automobile dealership industry always, a relative growth can be taken for the performance in compare with the economic growth and downtown. This needs the comparison of your data with the economic data, on the other side it needs the comparisons between two brands at a same location, one brand at a multiple
locations and multiple brands at multiple locations to know the potential of the business. This comparisons should not be only for sales, but it should also include the revenue, profits, parking space, market share etc. with the different data capturing style of every software lack of data integration and coordination is there, which may be harmful for the business.

In this traditional system, live dashboarding is possible only for the particular brand, consolidated dashboarding, geographical mapping is not possible. On the other end, control can be triggered from the OEM side only. But if dealer principal wants to put the control than it’s not possible as OEM will not allow dealers to intervene in their systems.

“you cannot manage, what you cannot measure”, here there can be the measurement issue due to lack of integration, coordination and drill down facility. As dealer principal does not have consolidated sheet with all the details, they are likely to do the simple summation of stocks (inventory) and make the decision for the same, but if the inventory can be measured brand wise, colour wise, variant wise than it will be easy to take the decision based on that. Here, in this situation, one can measure the inventory and by drill down approach one can take the decision based on the valid and reliable data.

Solutions to the issue

A solution to the issue can be created by incorporation of IT and business analytics or Business Intelligence software. All the data from the DMS can be easily extracted by Microsoft Excel, as it is a powerful and universal computational software for the machines. Because of its own capabilities excel can perform the analytics also. But, excel has its own limitations of the data security and validity. As anyone can change the data value in the cell as per the convenience which cannot be recorded (Who has edited the sheet last?), so, here the data validity and reliability can be an issue. On the other side, for more than one showroom, more than one sheet is needed, which can increase the compacity in the analysing process and row level security cannot be maintained by the excel.

Excel has a unique capability for the reporting as well as computations. Pivot table and pivot chart in the excel can be used for the better numerical and graphical presentation of the data, but the issue is to combine all the data from all the DMS into one sheet only, which can be the complex task, also file size will be on a higher side, which requires high processor and the computational capability for personal computer. Also, the automation and triggering can be the issue with excel. Conditional formatting can be used for seeking the attention to the data in
that cell but excel cannot trigger the rule-based solution and cannot share the triggered issue via personal massages or email. Conditional formatting is good for the operational level and tactical level managers. Hence, one can say that, conditional level formatting is for the operational use only, not for the strategic use.

**BI framework for the solution**

There are some tools and software which are exclusively designed for the business intelligence and analytics purpose, using which a user can perform many operations in alignment with their business strategy, business goals or even a monthly target for the operational and tactical level manager’s decision making. Here, in this study, we will look for the Business Intelligence tool made by Microsoft Inc. – Power BI and how it can solve the issues.

*Figure – 1. Proposed BI Framework*

Our first issue was regarding to the alignment and integration of data from the various DMS, power BI as a capability to merge the data from the difference sources and making a query, which can give answer to the all related questions that we ask about the data and helps manager to take the suitable decision. Power BI can merge the query from the various data sources like, MS Excel, MS Excess, Oracle, My SQL, SAP HANA, Amazon Redshift, Microsoft Dynamic 365 and many more. So, issue of the data integration and coordination can be resolved.
Here, power BI will provide the user friendly and cost-effective business analytics tools kit compare to other. With the consolidation of data, it will also create the live managerial dashboard for quick decision making, by which managers can take the decision in a constantly changing dynamic environment of automobile markets.

In a backend, Bi can also integrate with the flow, which analyses the trigger and run on the trigger-based rules. For an example, during the month end, if the sales consultants have enough number of booking and by just converting the booking in to the retail consultants can achieve their sales target and it will notify to the customer via e mail or text message that, convert the bookings. On other end, if the consultants have not enough bookings, then it will advise the customer to take the necessary steps by tracking the customer’s past record. Like the conversion ratio from the inquiry source, if in the past consultants has the highest conversion ration from the Referral (in which from the reference of past customers and word of mouth a new customer came), than the system will automatically trigger and advise the consultant to contact the potential customers who can create the referrals. With this, system will also trigger to the sales manager (sales) to go for an event and generate the inquiry if the walk-in inquiry shows the sudden drop or the conversion ratio from the event is higher for the particular brand and showrooms.

BI has an amazing facility to drill in and comparison of data, that strategic team can observe what a one sales consultant doing. That’s how management team can go into the depth of the performance related issues. Also, it can suggest the training needs if the data from the internal trainer (pre and post training performance and training type) is there in the database. Based on that, HR or manager can arrange the training sessions for the consultants along which type of training is required like technical training o soft skill training for the underperformed sales consultant.

The software can be integrated to the open source R which has a good analytical and graphical capabilities. With the commands required in R, developer of dashboard can generate the solution for which pre existing templet is not there. Also, there are many visualizations are there which will support the R and have a better decision aiding capacity.

BI offers the RLS (Row Level Security), by which the data in the dashboard can be displayed to the authorized and concern persons only and not to others. Thus, one doesn’t have to make the multiple dashboards. Here, the data duplication issue is resolved. Because multiple dashboarding means the multiple data operations and duplication of data, which may lead to the waste the organizational resources.
With the capabilities of BI, user can see the reason for the increase or decrease in the sales. Figure 2 shows the same in detail, in which user is analysing the reason for increase in sales and BI shows that, the increase is due to the individual increase in the sales consultant’s sales. After that, the data can be merged with the training sessions attended by that consultants also, which will help the manager for the decision making.

Along with the graphs and visualizations, with the integration of narrative science software, it can also generate the narratives about the data, which gives the insights written in the English language which will easy to read, understand, analyse and present in a way that quick actions can be taken on that. With the narration, user can also ask for the query or questions in a natural language like, “what is the sales by month for the particular brand and location?”. And BI will answer that, by some auto generated graphs, which can be changed by user later, if better visualization for the same is needed.

Autogenerated insights is the key feature of BI, in which software itself finds the correlation between two events and give the information on something new, which user may not have though about. However, correlations are the mathematical calculations only and does not know about the business processes also. So, user must have enough knowledge about the business domain and
business process to get the powerful insights from the same (Klatt et al., 2011; Schafke et al., 2013; Sircar, 2009).

**Challenges with the BI approach**

Although the dashboards and analytics system was made according to the principles and phases given by DMS, there are still an issue with the implementation of the system as managers don’t like the change and they want to stick on the previous practices only as managers seeking for the locus of control and they think that, implementation of such systems may be harmful to their performance or value addition to the firm.

Quality of the data can be the issue, as every MIS person have their own way to write down the data points in their own style of abbreviations. Sometimes the query cannot be generated due to the different nomenclature and data are again to be analysed in silos (Hauser, 2007). Appling six sigma for the quality purposes can increase the cost many folds, so it is advisable to create the correct data in first time itself.

Managers training and knowledge about the methods is not enough to run the analytics in a proper way. As most of the managers think that, marketing and sales is more about the soft skills and 4Ps and less about the data analytics and information generation. Because of that, decisions are taken on the wrong data which may be harmful to the business.

**Conclusion**

BI approach is found to be better for the coordination, integration, analysing and making the decisions in a dynamic environment with its capabilities of making the visualizations, analytics skills and narratives and query in the natural language. For the using the same company can get the competitive advantage as the decisions are taken fast and in a better manner and managers efforts can be utilized into the other value chain activities. The challenge is to clean the data for the high-quality analysis and decision making and manager’s attitude and their training & knowledge level to use the techniques. However, BI is a tool which can be easily learnt by the managers, but data is data and for capturing the insight manager’s knowledge is required. In a holistic view, implementation of such tools
can be profitable to the business in a long run as it can create the complementarity and routed in the process and firm’s fibre.

References