

# Critical Factors for Successful Implementation of Business Analytics: Exploratory Findings from Select Cases

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## Abstract

Business analytics has proven itself as a high business performance tool that can be applied to multiple divisions of an enterprise and creates a fact based culture across the organisation. The use of Quantitative analysis, predictive models and statistical tools helps the business managers in gaining a different view of the data, and deriving maximum value out of it, which in turn contributes towards improved decision making and problem solving in an organisation. However, it has been observed that despite the several benefits that are anticipated with Business Analytics adoption, very few have achieved proficiency in its implementations and organizations are facing adoption barriers, most of them being management and culture related rather than being data and technology related. The present study was undertaken to bridge this gap between the highly proclaimed business benefits of Analytics and the problems faced by organizations in successfully implementing this tool. It presents a detailed analysis of success stories of 7 companies from different sectors viz. FMCG, banking, healthcare, transportation and online selling, who have capitalized on this tool. Case studies were developed and critically analysed on the basis of their objectives of implementing Analytics, tools that were adopted, results achieved and success factors leading to their enhanced performance. The results lead to identification of factors that contribute towards successful implementation of Business Analytics for enhancing the performance of companies from various industries and also companies with varied capital structures. This research also helps in critically analysing various factors that are pulling a company away from implementing the analytical models. Considering the various dimensions of successfully implementing analytics in organizations, as identified

through the study, we also propose a roadmap for successful implementation of business analytics. The findings from the study will help organizations in proactively finding a solution to counter adoption barriers that are generally faced during use of analytics and learning from the best practices of the industry.

**Keywords:** Business Analytics, Business Intelligence, Success Factors, Big Data

## Introduction

Business analytics is the broad use of data and quantitative analysis for decision making within organisations which encompasses query and reporting, but aspires to greater levels of mathematical sophistication (Davenport, 2010). Businesses worldwide are viewing business analytics as a tool for outperforming the competitors, thereby creating a competitive edge over the market. The use of quantitative analysis, predictive models and statistical tools helps the business managers in gaining a different view of the data, and deriving maximum value out of it, which in turn contributes towards improved decision making and problem solving in an organisation. Business analytics has proven itself as a high business performance tool that can be applied to multiple divisions of an enterprise and creates a fact based culture across the organisation. As per a survey, around 70% companies will adopt business analytics by 2013 (Detwiler, 2012). While Big Data is having a double figure growth, it is the need of the hour for the enterprises to capture the market insights and have data which is enriched with correctness, completeness, consistency and currency (Rajmanohar,

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2004). Considering these facts, it is reasonable to state that companies cannot disregard this extremely powerful tool that can extract managerial and decision-making value from computerised data. However, it has been observed that despite the several benefits that are anticipated with Business Analytics adoption, very few have achieved proficiency in its implementations (Davenport, 2006); organisations are facing adoption barriers, most of them being management and culture related rather than being data and technology related (Nexavis, 2012). The present study was undertaken to bridge this gap between the highly proclaimed business benefits of analytics and the problems faced by organisations in successfully implementing this tool. A common framework for successfully implementing Business Analytics has also been suggested.

## Methodology

This is an exploratory study that presents a detailed analysis of success stories of 7 companies from different sectors viz. FMCG, banking, healthcare, transportation, and online selling, who have capitalised on Business Analytics. Case studies related to companies who successfully and resourcefully implemented this tool were prepared and critically analysed. The companies included in the study were Procter and Gamble, ICICI Bank, Mayo Clinic, Marico, Huntington Bank, Yellow buses and Rosy Blue. This study is mainly based on secondary data which were collected from various sources such as research Journals, business and IT magazines, books and news agencies. Online sources such as Ebsco and Google Scholar were also used for gaining access to these resources.

Finally, a detailed analysis was carried out to identify their objectives of implementing the analytical tools, tools that were adopted, results achieved and success factors leading to their enhanced performance. The findings from the study will help organisations in proactively finding a solution to counter adoption barriers that are generally faced during use of analytics and learning from the best practices of the industry.

### Case 1: Procter and Gamble

Procter and Gamble, also known as P&G is an American multinational consumer goods company, with 127,000

employees and 300 brands sold in 180 countries. P&G has long been a leader in analytics. The company started building operations research capabilities for its supply chain around 1968, and also has a long history of focusing on marketing data and analysis. During 2008, P & G with approx. 4 billion transactions daily was focusing on developing a ground-breaking analytics system. They began with examining the use of Decision Cockpits, visual analytics software created by TibcoSpotfire. In this P&G put down the display of key information like business status and trends on desktops of over 58,000 P&G employees. Like this they structured the data visualisation with the help of tools such as control charts, drill-down capabilities, automatic alerts, and on-the-fly analysis as a primary tool of management. This was done with a motive to make better and faster real time decisions based on current position of the business, including all brands and business units. This advancement also helped P&G in reduction of its cost and duplication of data as Decision Cockpits collect and store data from various emails, letters and phone calls. P&G has now about two-thirds of the real-time data it needs and is loading more data every week than the week before. P&G covered 56 percent of processes, globally. It moved from 18 to 90 percent distribution in the global business units and market development organisation and also moved from 2,000 users to 58,000 users accessing Cockpits weekly. This also helped the organisation in gaining a “clearer version of the truth,” which eliminates the need for multiple requests for data, as opined by P&G’s CIO Filippo Passerini.

In 2010 P&G moved towards building meeting spaces called Business Sphere with a motive of transforming decision making practices by harnessing real-time business information from around the globe at P&G. This system combines global real time data, analytics models with high quality visualisations. In structural appearance at P&G’s Cincinnati headquarters they are spherical in shape having two 32-foot-by-eight-foot concave screens, physically surrounding business leaders with the data they need to make actionable decisions. It combines video with large screens that display data visualisations on sales, market share, ad spending and the like, so all the experts in the meeting globally see the same real time information, at the same time and in the same manner and there by facilitating problem solving. This high quality video conferencing is provided by Cisco Telepresence

systems which are used by executive council for having a real time session with colleagues worldwide. It now has more than 50 Business Spheres around the world. The key to P&G's successful implementation and utilisation of Business Analytic tools lies in the visualisation of information. As recommended by Davenport (2013), "... if decision makers have to spend too much time with the data figuring out what has happened in an important area of operations, they may never get to why it happened, or how to address the issue." For example, a Heatmap can show all the markets in a region where P&G competes and the relative share of its products. Red indicates low market share, and green symbolizes high market share. The creative and attractive visuals helps the managers to quickly identify what's going in the business, and also speeds up the decision making process about important areas of operations. It works on as much as 200 terabytes of data, allowing for unprecedented granularity and customisation. The interface is highly interactive and the data reflects insights, trends, and opportunities for the business leaders and prompts them to ask different and very focused business questions. The Business Sphere was developed in partnership with BOI, Cisco, HP, SAP, Nielsen, and TIBCO Spotfire. Recently Procter & Gamble's Business Sphere was selected as the Silver Winner in the "Innovative Services: Collaboration/Knowledge Management" category for the 2013 Edison Awards Competition.

## Challenges Faced

As quoted by Passerini: "Culture change is never easy". Earlier, employees used to view information in a certain way, but with Business Sphere and Decision Cockpits, P&G was trying to implement a powerful system of availability of real time data and also in a digitised fashion, which was not easy as it was a new way of doing business. And also by this real time access to data, an "information democracy" was formed. But sooner executives understood the importance and tremendous usefulness of these analytical tools.

## Case 2: ICICI Bank: Integration with Analytics

ICICI bank, India's leading private sector bank has a network of 3,382 branches and 10,943 ATMs in India,

and has a presence in 19 countries, including India. ICICI Bank offers a wide range of banking products and financial services to corporate and retail customers through a variety of delivery channels and through its specialised subsidiaries and affiliates in the areas of investment banking, life and non-life insurance, venture capital and asset management. ICICI provides very robust and sturdy internet banking to a very vast number of customers.

ICICI is one of the fast adopters of technology in banking sector in India. For a company with data crossing over 12 million terabyte, Business Intelligence (BI) has been a long journey. The main reason for this inclination towards IT is the increase in diversified customer base leading to growing expectations and changing customer behaviour. In order to compete with vast number of competitors, to integrate various business units such as banking, insurance and mutual funds and to provide efficient services to the customers, ICICI bank adopted many analytical practices.

Before implementing the BI systems, ICICI bank used multiple reporting systems that were difficult to handle. The IT team used to manually diffuse information across the enterprise. Security concerns of the data lying in the desktops were always an issue. One of the major business concerns was supporting the business if the growth in the number of users exceeded the planned number. Data was increasing day by day with high growth across the organisation.

In 2005, for handling such a vast data ICICI Bank, India's second largest bank with an asset base of Rs. 1812.27 billion replaced the existing reporting system which was very cumbersome and implemented a single user-friendly framework all over the enterprise with SAS. SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. The SAS Enterprise Intelligence Platform fulfilled the needs of bank to achieve flexibility to support the reporting needs of various business units, scalability to support the exponentially growing data in ICICI Bank and its goal to derive a "single view of the customer". This analytical initiative of ICICI bank is first of its kind in the banking sector of India. By this, ICICI bank tried to develop a framework that will fulfil the need of information of users across the bank with the help of a web-based solution that will provide access to all users across the enterprise.

The implementation of BI system has helped the bank in solving some of its very peculiar problems such as collection of debts from the credit card customers, particularly during post economic slowdown period. Debt collection is a very stringent process, because of this ICICI wanted to carry out debt collection process smoothly without losing its customers. Bank was able to differentiate between serious delinquencies and low delinquencies as very high risk and low risk respectively. For low risk customers methods such as SMS, e-mail and reminder calls alert are being used, while for high risk, legal action may be taken. This has been achieved with the help of behavioural analysis of the potential defaulters and identification of the creditworthiness of the customer. For this purpose, the historic data of customers based on certain parameters and behavioural pattern is generated and analytical models are developed to identify the probable defaulters. As soon as the programme identifies a customer who has a high probability of non-repayment, he is then evaluated on the risk scale score which helps in identifying the intensity of default in future by the customer. The efficiency of the programme can be understood from the fact that it can identify various relations of more than 3 million customers who are using the loans and credit card facility, with the bank. ICICI Bank selected SAS to develop a 'centralised debtors' allocation model' to allocate delinquent cases to the right channels till the last mile. This data is made available to the collection work flow system, which delivers the details of the case assigned to each individual. This focused on several parameters like efficiency of collectors, customer profile, risk behaviour and exposure.

Another advantage was in the area of risk management in the form of Loss Forecasting.

### **Case 3: Adoption of Analytics by Healthcare Industry**

Big Data has its deep roots in almost every sector, and so healthcare is also not left untouched. Numerous amount of data i.e. approx. 4 terabytes of data of a patient is being generated due to advanced and sophisticated medical practices. Two main sources of health big data are genomics-driven big data (genotyping, gene expression, sequencing data) and payer-provider big data (electronic health records, insurance records, pharmacy prescription, patient feedback and responses) (Miller, 2012). According to a survey conducted for a Global CEO study, 90 percent

believed that the complexity of data will rise even higher in next 5 years and moreover 40 percent are unprepared to deal with it. In order to handle this voluminous data healthcare industry need to bring out more precise and relevant information that will generate better outcomes and will provide enhanced value to more demanding customers and also satisfy governmental regulations. Healthcare analytics is the systematic use of data and related business insights developed through applied analytical disciplines such as, statistical, contextual, quantitative, predictive, cognitive, other including emerging model to drive fact-based decision making for planning, management, measurement and learning. Healthcare-related data helps in studying past situations such as operational performance or clinical outcomes to improve the quality and efficiency of clinical and business processes and performance (marketsandmarkets.com, November 2012). Implementing the Analytics is giving hospital executives access to real-time data that has never been more critical and useful to hospital operations and enhanced value delivering.

### **Challenges in Adoption of Analytics in Healthcare**

It has been found out that data generated in healthcare industry are far more complex than other industries. There is a tremendous stake involved in this industry. Healthcare practice involves art as well as science factor, and so many physicians are reluctant to depend upon database generated recommendations. The major problem faced by healthcare organisation is the high financial burden of implementation and licensing of the advanced analytical tools. These tools can cost the hospital about \$100,000 for the implementation and also adds up another 25 percent of operating cost every year. This poses the problem not only for small health organisations with limited funds but also to other organisations in justifying this huge expense.

Fractured data syndrome is a term which depicts unstructured health data that is hindering the ability of the hospitals to make strategic decisions both for their organisations as well as for the patients. This inconsistent and unstandardised data is affecting proper utilisation of the analytics. Also the vision of the company towards paperless environment requires complete shift of all the practices in an electronic fashion. A team that adopts an EMR (Electronic Medical Record) may enjoy internal

efficiencies, but until everybody uses the technology, staff will still have to grapple with paper coming in from clinical departments, specialists and other clinics. They may even have to add staff to scan and enter all of that paper-based information into new computer systems.

Outdated and slow performer software are still being used by most of the health organisations. These tools are mainly used only at departmental level or to generate some reports. Many companies hesitate to implement the advanced analytical tools due to high cost, lack of time to train the employees and also lack of efficiency in collecting the data.

Not only this, barriers to Health Information Technology (HIT) is lack of standards and concerns about privacy and confidentiality about the records of patient. There is lack of manpower with cross-functional analytical skills and also physicians are hesitant to change their working habits.

There is lack of integration of clinical information with financial and administrative data which is very important for implementing a comprehensive data analytics strategy. This integration is required from multiple disparate sources to standardise the data.

## Future

Even after all these barriers in adopting analytical practices there is a double digit growth in its adoption. As predicted by consulting firm Frost & Sullivan many healthcare organisations in U.S. will adopt the advanced analytical software in next 5 years; this can better be understood by seeing that the healthcare analytics market is estimated to be \$3.7 billion in 2012 and is growing at a rate of 23.7% from 2012 to 2017 to reach \$ 10.8 billion (Kolakowski, 2012)

The top C&BI vendors that provide advanced analytical solutions are Truven, Elsevier, Cognos, SAP, SAS, MedeAnalytics, Health Catalyst, QlikView, ReportingMD and Humedica.

## Mayo Clinic

Mayo clinic is a non-profit worldwide leader in advanced medical care, education and specialised researches. It

operates with 55,000 employees which includes 3,700 physicians and scientists and a health support staff of 49,100. This very first integrated medical group serves around 70 communities across the Northern Midwest region of US. Mayo Clinic delivers medical help to around 1 million patients annually. Healthcare industries are facing expansion not only in volume but also in providing value-based services. This is creating pressure for the healthcare industry to generate better outcomes. HIMSS (Healthcare Information and Management Systems Society) Analytics is one such organisation that provides tools to collect, analyse and distribute essential health IT data related to products, costs, metrics, trends and purchase decisions. HIMSS Analytics' EMR Adoption model is involved in tracking the adoption of EMR in various healthcare institutions. Stage 7 is the highest stage which can be achieved by adopting a paperless environment. This stage of HIMSS analytics implementation is a pinnacle achievement that comes with many challenges and rewards. Mayo Clinic achieved Stage 7 Award with an objective to provide meaningful use of technology to improve patient care. As a result, Mayo achieved true sharing and use of patient's data to process performance, enhance the quality care and also ensure patient's safety.

## Challenges

But every change comes with bundle of challenges. Effective utilisation of all these software needed a trained workforce. The major problem faced by Mayo Clinic was to schedule the timing for training of the clinicians. Bringing change in the organisation needs to adjust and develop the staff to adapt the new style. One of the challenges was to install bedside workstations in order to have proper monitoring.

## Results

Implementing the HIMSS Analytics helped Mayo Clinic in providing value-based solutions with lower cost and improved operational performance.

## Case 4: Business Analytics for Financial Data at Marico

Marico is one of India's leading Consumer Products & Services companies in the global beauty and wellness

space. Today one out of every three Indians uses a Marico product. Marico has a global presence in more than 20 countries and offers a variety of products and services ranging from healthy foods to hair and skin care. The company has experience fast growth in past few years with double turnover in 3 years and 7 acquisitions in 35 months. This growth introduced lot of changes in the company and its old, worksheet based budgeting, planning and finance reporting system soon turned out to be insufficient for the tremendous change in business. Finance teams were finding it difficult to collate data, manage various budget versions and produce reports. This led to a vast increase in manual work and critical analysis could not be carried out. As a result, the company decided to implement IBM Cognos TM1 which is a user-friendly, flexible, efficient and easy to maintain automated solution for superior financial analysis. With the implementation of TM1, it was observed that the employees now had more time to analyze financial performance and identify opportunities, giving them a significant advantage in the area of Financial Performance Management.

## Case 5: Huntington Bank

Huntington Bancshares Incorporated is a \$56 billion regional bank holding company headquartered in Columbus, Ohio. It provides full-service commercial, small business and consumer banking services, mortgage banking services and foreign exchange services. The primary distribution channels include a banking network of more than 725 traditional branches. Huntington wanted to implement a new incentive scheme across the business based on sales performance. But the problem was to track, adjust and link the compensation scheme all through the business. Earlier company used to have its own home-grown legacy system for managing incentives and compensation for its employees. But this system was generating heavy costs in maintaining it and also IT team was finding it difficult to deploy the updates whenever company wanted to make a change in its compensation schemes. Company soon realised that having a unified compensation management can address these issues.

### Selecting the Right Solution

Company wanted to have a solution that is specialised in sale performance. For this, bank sent request for Proposals and received number of vendors. Company

evaluated each and shortlisted two solutions, one of them was IBM Cognos Incentive Compensation Management. In order to select one of them bank conducted proof-of-conduct projects with both the products, and seeing the ability of the IBM Product, company selected it. So, finally IBM Cognos Solution was implemented integrating with OpenSymmetry, a global IBM Business Partner that is a global Sales Performance Management (SPM) consulting. This IBM Cognos Incentive Compensation Management is a cloud-based solution i.e. it is delivered via SaaS (Software as a Service) model, which eases the implementation because company need not to purchase any additional hardware or install a software.

OpenSymmetry not only provided necessary training through the project work but also supported them with the configuration of the system. The Huntington's team worked with OpenSymmetry to decide the company's future state and developed a roadmap to guide the transformation. Challenge in the beginning was, OpenSymmetry team was provided with hundredsof pages of requirements which gave quite material of information but due to the time constraint different teams need to focus on their specific independent assignments. The first run of the solution was implemented on a telephone banking division and likewise, Huntington needed to transform its processes so that the solution could flow into the different channels too.

OpenSymmetry worked to ensure a seamless change management process. For bringing change into the organisation OpenSymmetry implemented a comprehensive communication strategy that will communicate status of the project and its overall effectiveness of the solution in this field to all the stakeholders. Moreover, the understanding of the business processes by OpenSymmetry allowed the tool to be implemented in such a manner so as to minimize any impact on the productivity while rolling out the solution to three business segments in parallel.

Main feature that helped in successful implementation was dedicated Huntington resources specifically set up for the project; OpenSymmetry worked very close to Huntington's team specially for the design and build phase which not only helped them to learn the business and work through all questions that OpenSymmetry design team had, but also helped Huntington in building its powerful design component. OpenSymmetry also had

a global project team which provided them round the clock coverage.

## Results

Bank has already started observing the benefits. Employees can now view their compensation easily and the compensation system is updated on a daily basis. Solution also helped greater visibility of the performance and in enhancing strategic decisions by senior managers related to the balancing the schemes, increasing employee engagement without reducing cost-efficiency.

One very excellent facility is provided by the tool that company can make many types of adjustments itself within 24 hours just by putting business logic in Cognos example - making changes in the current incentive scheme. This logic is added by the company into the solution that records information pertaining to incentives paid, sales and changes to sales.

OpenSymmetry provided value to Huntington through their knowledge and expertise in IBM Cognos application.

## Case 6: Yellow Buses: Employing Budgeting Solutions

Yellow Buses (YB) is a bus operator based in Bournemouth, on the south coast of England, owned by the RATP Group, a company owned by the government of France. Each year yellow buses carry more than 13 million passengers on its 135-strong bus fleet, clocking up over 5 million miles across Bournemouth, Poole, Christchurch and East Dorset. The company achieves an annual turnover of around £20 million.

In order to handle the vehicle system, determining the routes and providing efficient services to customers, Yellow Buses needed to implement an analytical solution. Business analytics is proving its efficiency in mid-sized bus companies by providing them economic ability in delivering the services faster and in a more environment friendly manner by reducing cost of fuels, budget costs and reducing economic uncertainty. In 2011, Yellow buses was sold to RATP DevUK, due to which company lost their access to IBM Cognos TM1 environment(TM1 is an enterprise planning software used to implement collaborative planning, budgeting and forecasting solutions, as well as analytical and reporting applications).

Due to this a gap was created in its reporting capabilities.

The management identified that TM1 was a larger scale solution, but they wanted to have a right solution as per the size of their business. So they undertook IBM Cognos Express which provides the same analytical capabilities but was designed for mid-size businesses. With a focused study yellow buses identified the need of developing its business information requirements. Using IBM Cognos, Yellow pages automated its reporting and forecasting processes. This also helped in having evidence based information used for better decision making. In order to have a sustainable transport system, they needed to harness and enhance everything from better value fares, route planning, differentiated fair types, passenger numbers and motor vehicle efficiency. For this the software helped the company in tailoring its services. The first stage of the project was to develop two OLAP cubes in IBM Cognos Express. OLAP cube i.e. Online Analytical Processing which is a computer-based technique for analysing business data in the search for business intelligence. The first OLAP Cube contained information relating to bus's ticketing system, encompassing routes, vehicle numbers, fare types, passenger numbers, boarding and alighting stages and timing data; these data were used to have in-depth reporting of specific areas of business. The second cube contained aggregated data and provided a basis for forecasting. Also company produced yearly forecasts to determine the profit and loss, so as to take financial decision and also set up annual budgets. Forecasting the cash flow also helped in establishing how much capital needs to be kept in. These forecasting models helped company to identify different scenarios and their consequences by applying "what-if" analysis. For this company took the existing data and made changes on it to recognise various results generated from such changes. example- raising or lowering the price of a certain type of fare, or running a route more or less frequently. With this model Yellow Buses could access those information which it could never do before, like identifying profitability of each route, finding the ways to improve low-yield routes and maximising the revenues. The ability to perform both top-down and bottom-up analysis helped to guide the company's strategy and make better decisions to achieve financial and operational targets.

In future Yellow Buses is planning to implement vehicle analysis solution, which will provide complete analysis of

vehicles of the company such as maintenance costs, the frequency of breakdowns, fuel costs and routes travelled. This will help company in identifying which buses are running at fault, how to save fuel and reduce maintenance cost, increasing the life of vehicles and overall enhancing the reliability of bus services. Once this analytics will yield its benefits, then company is also planning to have driver analysis based on their performance. For this they have already started collecting data about how drivers operate their vehicle.

## Case 7: Rosy Blue

Rosy Blue is one of the largest names in the diamond industry with an annual turnover of US\$ 2 billion. It produces high quality polished diamonds and finished jewellery. The company has global presence with diamond trading offices in India, Belgium, USA, UAE, Hong Kong, Japan, and Russia. The diamond factories are located in India, Thailand, Sri Lanka, China, Armenia, and South Africa.

Considering the widely distributed operations, the company was looking for a solution that could help in managing the inventory worldwide. The sensitive nature of business also made it important to get updated information regarding availability of stocks and their location. Similarly, the management wanted to track the stocks and manufacturing cycle times in factories. The sales department wanted to know the buying patterns of customers and market trends so as to streamline the procurement and manufacturing processes. The solution that was finally implemented was IBM Cognos 7 and 8 Business Intelligence systems, which was integrated with Oracle JD Edwards. 180 reports, 30 alerts and 10 dashboards were developed to ensure smooth functioning of the business. Cognos 8 was also integrated with Microsoft Office for monthly presentations. As a result, Rosy Blue gained several benefits, such as reduced manufacturing turnaround time, lower inventory levels, tracking of yields at different stages, tracking of customer trends and requirements, sales management and profitability analysis.

## Framework for Implementing Business Analytics

The study not only focuses on large corporate giants

having global presence, but also small and medium enterprises with limited operations. The results lead to identification of factors that contribute towards successful implementation of Business Analytics for enhancing the performance of companies from various industries and also companies with varied capital structures. This research also helps in critically analysing various factors that are pulling a company away from implementing the analytical models. Considering the various dimensions of successfully implementing analytics in organisations, as identified through the study, we also propose a framework for successful implementation of business analytics. The salient features of this framework are provided below:

- **Developing plans to implement analytics-** For implementing analytics, a strategy must be developed to decide the goals and allocating resources to achieve goals. The planning process contains following points -
  1. Determining the Vision and Mission of the project
  2. Budgetary planning
  3. Setting a benchmark
  4. Identifying project scope
  5. Identifying infrastructure requirements
  6. Identifying key performance indicators
- **Deciding the stakeholders demand and expectation** - It is important to understand and manage the stakeholder's needs and expectations from the project. Methods such as brainstorming sessions, questionnaires and discussion forums can be used to gather insights from the stakeholders. Although, roles of stakeholders change with every stage yet they play a crucial role in shaping the projects at early stage. Throughout the project, company should stay in communication with key stakeholders and check in to see whether their support level has changed. With the consent of all the internal as well as external stakeholders, the project should be carried forward. A Sign-Off Document should be signed that highlights the acceptance of the project implementation from the stakeholders.
- **Team Formulation** - Implementing analytic tool in the organisation involves creating various internal teams. The ownership team being the most important of them, lead this project and will be responsible for all the activities. The other teams include technical team, functional team and developer team

and domain expert.

- **Roadmap** - Selection and management of the right supplier is the key of obtaining the desired level of quality, on time, and at the right price; the necessary level of technical support; and the desired level of service. (Bruno Završnik, 1998). The vendor selection process begins with establishing a vendor selection team, followed by defining the service for which a vendor is needed along with the technical and business requirements. As seen in case of Huntington Bank, proof-of-conduct projects were conducted to evaluate the vendors. This was also observed in Yellow Buses analytic implementation, where IBM Budgeting Solutions provided demonstration of its Cognos software to the company and made them realise that this tool is appropriate for their size of the business.

A point worth noting here is that the company treats the vendor as the partner in the value developing and delivering process. Instances can be seen in the Huntington bank project where Open Symmetry fulfilled its dedicated partnership towards the company by providing side by side working and coaching with customer team, knowledge sharing about the IBM Cognos application, assessing the organisational needs, developing a Future Mode of Operations (FMO) playbook and training the employees of the bank.

- **Change management** - change, in its own being, is the biggest restraining force itself in the implementation of the tool. Resistance from employees may arise, as it may bring increased risk due to heavy investment, change in working methodologies, loss of power and necessity to learn new techniques of working. All these forces adversely hamper the implementation process. To solve this issue, company may engage some consultant from the vendor firm itself, as they are trained to handle such situations. The consultant can apply various measures to unfreeze the situation and allow change to enter into the organisation. These consultants can act as change agents and can smoothly bring change in the organisation.

As it was seen in the case of Huntington bank that communication strategy was considered to be the best way to smooth the change process. Comprehensive Communication strategy helps not only teams that will work live on this system but also the business stakeholders

and future users that want to be kept informed about the status of the project and its overall effectiveness of the solution in this field.

- **Implementation of the tool** - Till this stage everything was planning and preparing, now the real implementation of the tool takes the ground. This step involves four major sub-steps-design, build, deploy, operate.
- **Training** - Implementation also includes training and coaching of organisational staff to adopt the new system into their working. For this various e-learning technologies can be used like virtual training developer and computer based training courses. Sharable Content Object Reference Model can also be used to evaluate a group or individual's competence levels. Also a help desk can be setup to provide prompt solution to the problems faced by the employees. Experts from the vendor company can provide short run webinar coaching sessions to acquaint employees with the new system.
- **Kick off meeting** - The Service Level Agreement is reviewed again and is matched with the performance. This makes sure that the tool is working and yielding in accordance with the performance. After all the implementation and successful run, vendor hands over the tool to the company's technical team.
- **Support** - The role of vendor is not over yet. Infact it will continue till the life of the tool in the company continues. Here, vendor will provide time to time assistance to the company, will regularly update the tool and amend it as per the changing needs of the company.

## Critical Success Factors

Based on the detailed analysis of above cases, following key factors have been identified that have contributed towards implementing Business Analytics successfully across various industries:

1. **Think before you act** - Implementing an analytical tool involves complete change in the organisational structure and working. Such technological advancement demands heavy investment and structural development. So in order to prevent debts, company needs to answer 5 questions, viz. Why, What, Where, Who and How before taking a final decision. The analyses of these questions will provide efficient

strategic planning and thus smooth implementation can be done.

2. **Put 3 things in place-** It was found from the study that the most common adoption barrier in most of the selected cases was resistance to cultural changes brought upon by the implementation of Business Analytic tools. Hence, to successfully implement these technologies, it is extremely important to strike a balance between technology, culture and processes.
3. **Visuals: 3rd eye view towards the data-** It was observed in most of the cases that the acceptance of Business Analytics depends upon the ease of using the tools and clarity of information. One of the examples is P&G's adoption of Business Sphere which gave them a unique insight of data. Charts, graphs, drawings, consolidated data, and other visual tools provide useful inferences which lead to better quality of decision making and thus save time and energy of understanding the raw data.
4. **What to do with data-** There are three key findings from the case studies, as far as the usage of data are concerned viz. share it, make it accessible and make it easy to understand. As it was seen in P&G case study, the use of Decision Cockpits put down the display of key information like business status and trends on desktops of over 58,000 P&G employees. This helps in creating a culture of involvement and trust. It was also observed that locking up the data decreases the ability to get value from data. So organisations must strive for allowing free flow of information so that every employee at different levels can access the data they want for their working.
5. **Nothing is waste-** In order to achieve desired results from analytic solutions, it is imperative to have the right data. A Canadian Bank faced disaster just because they missed one minute detail in the whole data mining process. This particular instance leads to the fact that the importance of data collection, storage and retrieval cannot be overlooked by the organisations. Data needs and approach is different for different employees throughout the organisation, so nothing should be treated as waste.
6. **One at a time-** Organisations need to prioritize the data requirements and efficiently plan the adoption process. Appropriate planning should be done in advance so as to have smooth flow of adoption

all through the organisation. It is very important to break the adoption process in parts, so that only after testing and full implementation of the tool on one business function the tool moves forward. This planning acts as a shield from getting heavy implementation costs and fierce resistance from employees all through the organisation.

7. **“What- if” analysis-** “What if” analysis is commonly known for its function of evaluating the expected value of a proposed investment or business activity. Similarly in case of business analytics implementation “What if” analysis can play a very strategic role. By putting various conditions to the framework, an appropriate method of implementation can be gathered that will provide cost efficiency and reduced complexity. “What if” analysis can be done on a smaller scale also to further improve the decision of selecting the best alternative.
8. **Be at par with competitors-** A detailed research needs to be done about the competitors' analytical tool, various advantages it is experiencing out of the tool, its strategy of functioning etc. All this research will help the company in setting up a benchmark of performance and will also provide insights about the various do's and don'ts in implementing the tool.
9. **“The clock is ticking”-** As observed from the select case studies, the delays in implementation process are mainly caused due to delay in vendor selection, delay in acquiring funds or delay due to some uncertain events. In all such cases the right time of implementation may get hindered and then cost starts increasing, data may get obsolete and disturbance in the organisation may build up. So to prevent this, teams can be assigned separate implementation processes that will assure timely and correct application of the tool.
10. **Environmental friendliness-** Companies need to keep in mind the environmental concerns and should acquire all the possible ways to prevent its depletion. For example - HIMMS Analytics' EMR Adoption model's stage 7 is adopting a paperless environment. Mayo Clinic achieved this stage and digitised all its data. Similarly several other environmental sustainability practices can be adopted by the company. This not only improves the efficiency but also generates positive image in the mind of customers.

11. **Loss forecasting-** It is not necessary that every project will work out well. Organisations take huge risk while implementing such projects. Any undesired event may happen or the selection decision may go wrong, such errors leads to high level of losses. In order to prevent such unplanned conditions contingency plan should be developed. Estimate the future loss in case of failure and have appropriate preparedness about handling such events. This loss forecasting method will help the organisation to stand still even in the case of mishap.
12. **Safety of the data-** Primary concern should be the safety and privacy of the data. Data which is collected by the organisations contain major part of customer's details like personal information, purchasing information, social details etc. Using this data for company's interest may evolve some security issues if not properly kept secured. As studied in case of Mayo Clinic's Analytics implementation, safety about the patient's record is of key importance in the healthcare sector.
13. **Integration of the organisation's data-** In a large organisation like ICICI bank, data is generated from the smallest to largest segment of the company. This vastness of data collection may lead to duplication, loss of important data, increased time and cost, and accumulation of huge amount of unstructured data. Company should strategically integrate this multi sourced data with the help of appropriate vendor of the analytical tool. Such consolidation will enhance the availability of relevant data and its usage.

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