



# BUSINESS INTELLIGENCE - A SURVEY

**Nallamilli Veerraghava Reddy, Sriram Avinash and Chakka Shanmuk Sai**

KLEF, Guntur, India

## ABSTRACT

*The Present research work discusses and implements the view relative to changes made in the technology and business which are presented with specific rules. Using data as a tool, there has been a rapid change in the concept of implementation and creating factorization of given Model in a specific atmosphere. Initially, the issue of BI was identified and year wise growth in BI development was presented. Then, the most important IT tools used in the development of BI were discussed. At last, discussed some strengths and weaknesses of the tools which were mentioned in the paper. The study was mainly based on a critical analysis of literature, creative thinking, and an interpretive philosophy. The results of this research can be used by IT and business leaders in their planning and development of BI applications in their organizations. The Business Intelligence concept is a multi-dimensional topic in which there is no exact or global conception of what business intelligence is. This topic is to provide a detailed examination of business intelligence definitions and relevant intelligence concepts, such as the content of every key concept describing how intelligence concepts are related to each other. Next objective of this paper is to raise the intellectual understanding and status of this current field of research on business intelligence.*

**Keywords:** business intelligence

**Cite this Article:** Nallamilli Veerraghava Reddy, Sriram Avinash and Chakka Shanmuk Sai, Business Intelligence - A survey, International Journal of Mechanical Engineering and Technology 9(1), 2018, pp. 190–197.

<http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=9&IType=1>

## 1. INTRODUCTION

Present challenges and up gradation to new technology, business, complexity has been presented based on specific rules and increase level of risks. Using a clear point in an organizations approach for performance will be made through quick decisions. In order to address the issue relative to market and change in technology. It further helps in making effective business solutions and also to do a clear and effective review of business performance and other decision in relative. Based on new technology BI system are used to enhance the growth of the organization and to interpret the big amount of transformation and identifying a mistake in addressing them. Using technology business solutions and management information system and there need for business intelligence and its Strategy.

## Literature Review

It is known that research workers had organized a survey in BI and how it plays a vital role in business decision-making process. In early days the huge numbers of the organization is not aware of strategic decisions and are far away from business intelligence tools. BI tools respond quickly from internally and externally based on the criteria. In this research work, a development model will help in bringing the attention of the customer and also provide them with a solution toward the respective working model. Taking the view of these process and other required details, the approach for business intelligence will be generated as per tools and will have a strong strategy and fixed based on the business intelligence tools. Using a process forayed through effectively paid attention and has strong bases to look for buildup abilities and other performance for the decisions to be made.

As per Murugan, Asokan & Cadambi (2004), there's need for business intelligence tools to have organizations to successfully present and create things based on customers loyalty and admirations. Diverse research workers do identify and address business intelligence through combination and addressing data storage in collating, retrieving and analysis process. Using the process of right decisions and other improving the deliverable process, performance of a clear business process is gone. As per William(2007), the approach of key business and integrations for management in addressing for technology and referencing their packages for developing things far more as per fulfillment of high-level productivity and efficiency in business decision-making.

For BI, various tools are created for effective work and decision support for business actions. Consideration of Business intelligence and tools work in supporting in decisions for management of executive and other operational levels. As per Maria(2005), the approach of BI tools is used for methodological use in decisions support and decisions making for right future decisions and predictions. These integrations fill gaps for functions for specific information for historical data. Using this approach to BI system for data-driven systems have their own model for making decisions in result and predictions for collection and processed data.

As per Petrini & Pozzebon(2008), there is a need for BI system in processing historical information and allows decision making. Using this study, BI systems are two-sided managerially and technically approaches the data generated for an external and internal environment for addressing. Using the data being processed, analyzed and retrieved for supporting semi-structured data for making things in the software manipulations.

Ranjan (2008) discusses that BI systems take right decisions at the stipulated time to get highly efficient and effective use of resources. From the strategical point of view, we can notice that the Business Intelligence systems are special applications that fix data and modify it in to knowledgeable to backing problem-solving and to make the correct accord.

Generally, derogate applications used by subject matter experts will be proved to be a facilitator for required changes since subject matter experts are highly pressurized as they are responsible for trends in technologies. Thus, business intelligence systems seem to be the appropriate option for IT firms, granting usage of improvements in IT, and to deploy applications in a particular software for business processes. This affirmative advancement is in accordance with the integration of software, allowing these changes of instruction flows from suppliers and clients for remodeling and formalize business processes. It is not approved that a Business Intelligence system will create a return on investment because not every business will be successful with Business Intelligence Solutions.

The competent and unified Business Intelligence can develop the competitive advantages required for subject matter experts be successful. It is essential to figure out and develop what type of business intelligence solution should maintain for a subject matter experts to meet its business needs. Before finding the problem, The business processes must be identified and the stakeholder roles should be defined along with the necessary useful requirements such as analysis, information reporting, and delivery. Subject matter experts that have taken into consideration of the business intelligence systems swiftly comprehend that they can compete more productively in the market, with added details about their patterns, customers, and more efficient financial management.

A precise search of online databases and research indices provide a study featuring BI systems and the effect they have on business decision-making. Firstly there are four common components of a business intelligence system is Data Warehousing, ETL tools, Data Mining and OLAP techniques. Secondly, it analyses how every common component relates to the managerial decision-making events as discussed. These events reporting information, gathering information, analyzing information, and finding information. The third aspect determines how BI systems can be employed at three different levels of management: operational, tactical and strategic.

There are differences relative to market data and other competitive intelligence (CI), which will make a case for a competitor, strategic, technical. As per North American literature, the use of CI frequently works based on the external environment and other data sources for emphasis. (Cottrill, 1998; Fuld, 1995; Kahaner, 1996; Vibert, 2004). Based on European literature, use of business intelligence is like a broad umbrella and concept of CI will be definitive and other concepts in relation to the defined correlations are made.

The purpose of Business Intelligence is to assist in regulating the large flow of business information within and out of the firm by initially by identifying and then processing the information into short and useful manageable intelligence and knowledge. The Business Intelligence operations include new topics, addresses historical complications and it is one of the primitive tasks among various management tools: analyzing the complex business environment inline to make better decisions. Firms have collected information about their opponents since the dawn of capitalism (Gilad and Gilad, 1986).

Using BI literature and other advantages, which will develop things as per BI and other benefits happening as per system. It is based on the evaluation of business performance and long cultures will be effective and other relations selecting equally with that Business Performance and important function (Solomon, 1996; Viva Business Intelligence Inc., 2000). It is more of native view that scholars make up the best use of these and hard to understand and express things in a clear manner. From a new survey, only a few organizations have their own metrics in order to measure the worth of BI. (Marin & Poulter, 2004).

A literature survey of a group of articles enables to interpret a given subject and to identify the trends of research and possible flaws which may lead to new studies and discoveries. It was a major step which will reveal new insights for BI research. This important thing was expressed through various publications by conduction literature review across various science. Exhaustive literature reviews by the considerable amount of efforts from researchers which will lead to a new study.

With of new technologies facilitate it is easy to access online library databases from various location, they were offering a huge amount of available articles. Retrieving the articles in the library by search query according to the given subject is a Challenging task like reading all the content in each paper even though small parts of the articles(eg., abstract, keyword, title.,).

For resolving this problem a few traditional human approaches have been discussed for evaluation of literature. It was the first traditional human effort approach.

Four frameworks are chosen to present different and recent literature review methodologies on areas closely similar to BI, Which was the current research applied to the banking industry.

One important advantage of human readers can easily understand the meaning of a word by context. (e.g., "senior" may refer to senior professionals or older people, or, which may not be so old), while an automated approach cannot.

The time required to conduct such manual analysis is a been applied when we had a huge number of manuscripts. Other frameworks use TM methodologies for analyzing a number of particles i.e greater than thousand

### **Market highlights for BI predictions**

For last two years, Bi was most established technological solutions. According to Gartner Bi and analytics are one highly-ranked technology for 2012. Forrester predicts companies will spend \$8 billion on BI in 2012, it was the highest amount for information management application category. A survey from Morgan Franklin consultancy investments in BI is an indicator that firms had identified the importance of proper usage if BI. It explains that 75% of income was invested in Development of BI. In the same manner, Investments was increased day by day because they are used for decision making.

### **Tools used to achieve Business intelligence and techniques**

In the present market, we had well-developed tools which include various techniques for achieving Business intelligence. These tools made the work easy especially in the task which involves gathering and analyzing a large amount of unstructured data. Each tool developer was defining their Techniques in their own way, Business Intelligence was depended on the way they had approached. Tool Which generates accurate results will lead to the market and people will willing to utilize that tool for their growth of the business.

### **BI tools include various tools those are following:**

- Business Performance Management and Performance Measurement
- Finance and Budgeting
- Data mining, Data Farming, and Data warehouses
- Document warehouses and Document Management
- Business Planning
- Visualization of Information
- Dash boarding
- Score carding
- Enterprise Management systems
- Associative Query Logic
- Executive Information Systems
- Human Resources
- Decision Support Systems and Forecasting
- Business Planning
- Knowledge Management

## Data Analysis Model

In customer data analysis model we will identify key elements which will impact customer behavior and select them for analyzing. First, the client will be attracted to offers by understanding the clients and then he will make a sign on contract by that actor. For supporting the offers company has their own costs and stocks of products. By that offer, a client will make free voice class and browse the internet, make transactions all those things are getting done by that company network. If the client faces any issue with their services they will interact with the customer by establishing customer care services and collect the data and stored and data will be documented.

In olden days data was not available abundant if we want the data we need to wait two or four months and that data will not help to analyze the managers to take decisions by analyzing it. Bi often uses key performances indicators for assessing present state if business and for a course of action. Nowadays people are using internet for every basic need so data was becoming available in shorter intervals and have reduced delays. For example for business usage a large multinational bank KIP-related data available weekly. Due to the automation of it industry and the use of IT systems data becoming available within 24 hrs.

By analyzing the data and generating the number of questions we will take resultant decisions such as:

Queries for Achieving Goal: What are the strategies we have to for addressing the program? Does the organization vision/ mission is related to that? We have to need detail that our initiative will improve results/performance by our strategy?

### Basic queries:

Gathered information need to be assessed for avoiding wrong results. Did the organization is ready for monitoring important sources of information? What is the data that they had collected and how they are handling that huge amount of data? what is the statistical parameter of that data? For example, what is the random variation that it contains? Did the organization measure that?

### Risk and Cost queries:

We have to be aware of the consequences of BI initiative. It is mandatory to assess the cost of operation at present and future and at what percent they were increasing if they were increased? They should be aware of the risk they have to be taken if the initiative will be failed? while in the stage of planning The risk should be converted into a financial metrics.

**Table 1** Technique and Description

Technique	Description
Predictive modeling	It will predict values for a specific data item for the specific attribute.
Clustering and outlier analysis	Similar characteristics are grouped together and partition a set into classes.
Exploratory Data Analysis	Explore dataset without a strong dependence on assumptions. our main aim is to identify patterns in an exploratory manner
Online Analytical Processing	OLAP tools will enable a user to analyze different dimension of multidimensional data.
Visualization	using charts, plots, histograms, and other visual discovered data will be easily understood

Sequential and Temporal patterns analysis	Deviation and Trend, periodicity, sequential patterns
Descriptive and Characterization data mining	Dispersion, Data distribution, an exception
Correlation, Association, causality analysis	relationships between attributes are Identify
Classification	It Decides to which class a data item belongs to.

According to the Gartner report 2012, the global BI market grew only 10% in 2013. Only in 2012, the growth rate was 6.8% (it was an increment of 17% when compared to 2011), This was connected directly to the global economic crisis due to lack of trust in BI Data and new trends towards the development of BI. The survey conducted by MIT Sloan Management SAS showed business analytics was a competitive advantage in 2012 by 67% companies. Their analysis showed that currently, 64% of surveyed executives believe that BI solutions will provide growth in business development.

From different data analysis and BI studies show, for the last few years decision that had made by BI is prioritized for decision-makers and managers of most businesses and institutions.

As data was kept on growing development will need to keep on developing both inside and outside the organization. BI solutions area mainly with the pace of their development, Adaption of BI in business will have to be increasingly flexible and easy to adapt to analysts and controllers. It also leads to new considerations about "agile" approach for implementing BI solutions.

## Flowchart for Business Intelligence



Figure 1 Dataflow Structure

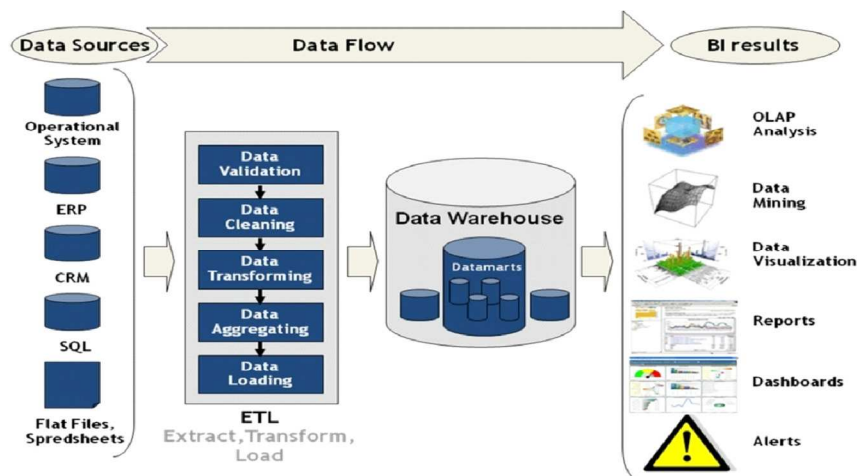


Figure 2 Typical architecture of the BI system

**Table 2** Traditional BI vs Agile BI

	<b>Agile BI</b>	<b>Traditional BI</b>
Data Format	Any format is accepted(unstructured, semi-structured, structured, Big data, etc.,)	Only structured data and excel sheets are accepted
Period of data	Real-time data	Stored data
Data refresh	According to real-time	After loading the data completely
Bussiness Analytics	Agile	Traditional

Financial, Educational, Weather, Stock Markets etc., not only one or two all the organizations are continuing their struggle about which algorithm or method should be implemented such that their accuracy in predicting the future will be increased. Day by Day the market is changing according to which the organizations should also change to sustain their self in the currently growing competitive market. To achieve the sustainability of the customers the transformation of BI Techniques should occur from normal waterfall method to agile approach. In this paper, we have presented the benefits of the agile methods where the user is continuously involved in the process. In this modern era, the people cannot wait for the longer duration to get the results of the implementation of system or model.

The factors that can be achieved through Agile approaches:

- Flexibility and Adaptability to the changing market,
- Quick Return On Investment(ROI),
- Delivering the Updates and functionalities frequently.
- Economical and Profitable maintenance even after BI implementation.

By following the agile approaches the above factors can be met successfully. Agile approaches play a key role in achieving our goals, effective and efficient Business Intelligence implementation. Agile approaches help in providing the accurate data and efficient analysis. Agile approaches help to increase the throughput of the Business intelligence.

## CONCLUSION:

This article discusses the effect of using the BI tools and algorithms on data analysis and decision-making process. Business intelligence created trend in the world's market which helped in attracting and retaining the customers. In this paper, we have seen the trends and growth of the Business intelligence and tools for business intelligence. In this paper, we have mainly focused on the agile approach because everyone must shift to the agile approach to meet their user demands and for accurate results. We can implement agile BI using the very large number of technologies. Business Intelligence is vast area to discuss in this paper we have given the brief intro to Business Intelligence

## REFERENCE

- [1] A Y.-H. L. (2009). Business intelligence approach to supporting strategy-making of ISP service. Expert Systems with Applications.
- [2] Bose., R. (2009). Advanced analytics: opportunities and challenges. Industrial Management.
- [3] Darius, H. (2007). ARTICLES Data-driven decision making for the enterprise: an overview of business intelligence applications. journal of information and knowledge.
- [4] Han, J. W.-K. (2014). Bringing structure to text mining phrases, entities, topics, and hierarchies. international conference on Knowledge discovery and data.
- [5] Hwang, H.-G. K.-Y.-C. (2010). Critical factors influencing the adoption of data warehouse technology: a study of. Decision Support Systems.
- [6] Malhotra, Y. (2010). From information management to knowledge management. beyond hitch.
- [7] Milton, S. (n.d.). Location Intelligence – The Future Looks Bright.
- [8] Petrini, M. P. (2010). What role is “Business Intelligence” playing in developing countries? A picture of Brazilian companies. Applications for Empowering Knowledge Societies.
- [9] Ranjan, J. (2009). Business justification with business intelligence.
- [10] Thomsen, E. (2002). OLAP solutions: Building multidimensional information systems. John Wiley & Sons.
- [11] Wixom, B. H., Watson, H. J., & Anne Marie Reynolds, & J. (2010). Business Intelligence: An Analysis of the Literature. Information Systems Management.
- [12] Apeksha Hooda, Business Intelligence over Cloud, International Journal of Management (IJM), Volume 5, Issue 2, February (2014), pp. 90-100
- [13] R.Sharmila, Dr.A.Subramani, Impact of Business Intelligence Tools In Executive Information Systems, International Journal of Computer Engineering & Technology (IJCET), (Online) Volume 4, Issue 1, January- February (2013), pp. 01-07
- [14] Abdallah S. A. Shatat and Zawiyah M. Yusof, The Impact of System Quality and User Participation on Business Intelligence Success, International Journal of Computer Engineering & Technology (IJCET), (Online) Volume 5, Issue 9, September (2014), pp. 138-147