

व्यापार में नवाचार : अवसर एवं चुनौतियाँ

Innovation in Business : Opportunities and Challenges

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इस पुस्तक के सर्वाधिकार सुरक्षित हैं। प्रकाशक की लिखित अनुमति के बिना इस पुस्तक या इसके किसी भी अंश का किसी भी माध्यम से अथवा ज्ञान के संग्रहण एवं पुनर्प्रयोग की प्रणाली द्वारा, किसी भी रूप में, पुनरुत्पादित अथवा संचारित-प्रसारित नहीं किया जा सकता, इसे संक्षिप्त, परिवर्धित कर प्रकाशित करना कानूनी अपराध है।

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Driving Innovations Through Business Intelligence

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Abstract

Tableau, Informatica, MSBI, IBM Cognos Analytics and Power BI these are some tools for Business Intelligence (BI) being used by the most of the enterprises for improvement and smoothen the business operations, betterment of decision making, performance management, Analytics, predictive modelling data and text mining & a lot of more. Basically Business Intelligence (BI) refers to a group of tools and techniques that collects and organises your data and presents in a way that is useful and make sense. Furthermore, we are also going to discuss how technological capabilities such as user access date quality and integration of BI with other systems in by the various entities as well as flexibility and risk management support , are essential for BI success regardless of business environment. In Indian parlance, currently amazon, flipkart, swiggy, zomato, Ola, uber, is some example of organisations that are using BI for their innovative business ideas. Information technology Act, 2000 is working as a regulatory authority for creating security umbrella under which any entity can use BIs without any fear of technical frauds and also providing grievance redressal system to general public for improving innovative environment condition in India. For instance, when we search for any particular product in any

browser because of BIs system it automatically suggest us where we can that particular product like amazon & flipkart in accordance with searched products. So BI is becoming a major concern for entities regardless of its size to take it into consideration whether we should invest in the system or not.

Key Words: Business Intelligence, ETL, Metadata, BI capabilities, BI Architecture.

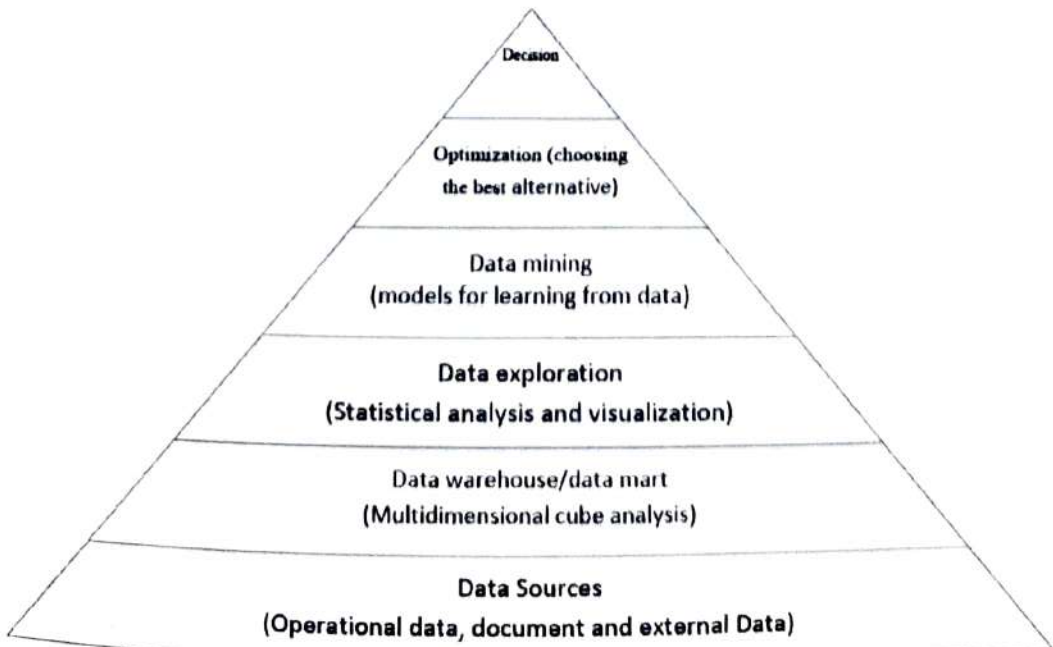
Introduction

In 21st century the competition has been reached at its peak point in every sector, especially in business sector. A businessman has to be very careful & active towards rapidly changing business environment so that the prediction for future could be made properly. The term Business Intelligence refers to set of processes, architectures and technologies that convert raw data into meaning full information that drives profitable business actions. It is a suite of software and services to transform data into actionable intelligence and knowledge. In 1865, Richard Millar Devens presented the phrase "Business Intelligence" (BI) in the *Cyclopædia of Commercial and Business Anecdotes*. He was using it to describe how Sir Henry Furnese, a banker, profited from information by gathering and acting on it before his competition. More recently, in 1958, an article was written by an IBM computer scientist named Hans Peter Luhn, describing the potential of gathering Business Intelligence (BI) through the use of technology. Business intelligence, as it is understood today, uses technology to gather and analyse data, translate it into useful information, and act on it "before the competition." Essentially, the modern version of BI focuses on technology a way to make decisions quickly and efficiently, based on the right information at the right time. In 1968, only individuals with extremely specialized skills could translate data into usable information. At this time, data from multiple sources was normally stored in silos, and research was typically presented in a fragmented, disjointed report that was open to interpretation. Edgar Codd recognized this as a

problem, and published a paper in 1970, altering the way people thought about databases. His proposal of developing a “relational database model” gained tremendous popularity, and was adapted worldwide¹. Also International travel, high-speed network connections, global supply-chain, and outsourcing have created a tremendous opportunity for IT advancement, as predicted by Thomas Freeman in his seminal book, *The World is Flat* (2005).

(DSS) was the first database management system to be developed. Many historians suggest the modern version of Business Intelligence evolved from the DSS database. The number of BI vendors grew in the 1980s, as business people discovered the value of Business Intelligence. An assortment of tools was developed during this time, with the goal of accessing and organizing data in simpler ways.

Tableau, Informatica, MSBI, IBM Cognos Analytics and Power BI these are some tools for Business Intelligence (BI) being used by the most of the enterprises for improvement and smoothen the business operations, betterment of decision making, performance management, Analytics, predictive modelling data and text mining & a lot of more. The paper deals to make understand complex structure of BI for



entrepreneur who are not aware of BI.

Architecture of Business intelligence

Figure: The Main Components of a Business Intelligence System (Carlo, 2009-10)

Carlo (2009) uses the following pyramid to describe how business intelligence system is constructed.

Data sources: The sources mostly consist of data belonging to operationalize systems, but may also include unstructured data, such as emails, and data received from external providers.

Data warehouse/Data mart: Data warehouses are used to consolidate different kinds of data into a central location using a process known as extract, transform and load (ETL) and standardize these results across systems that are allowed to be queried. Data marts are generally small warehouses that focus on information on a single department, instead of collecting data across a company. They limit the complexity of databases and are cheaper to implement than full warehouses. **Data exploration:** Data exploration is a passive BI analysis consisting of query and reporting systems, as well as statistical method.

Data mining: Data mining is active BI methodologies with the purpose of information and knowledge extraction from data.

Optimization: Optimization model allows us to determine the best solution out of a set of alternative actions, which is usually fairly extensive and sometimes even infinite.

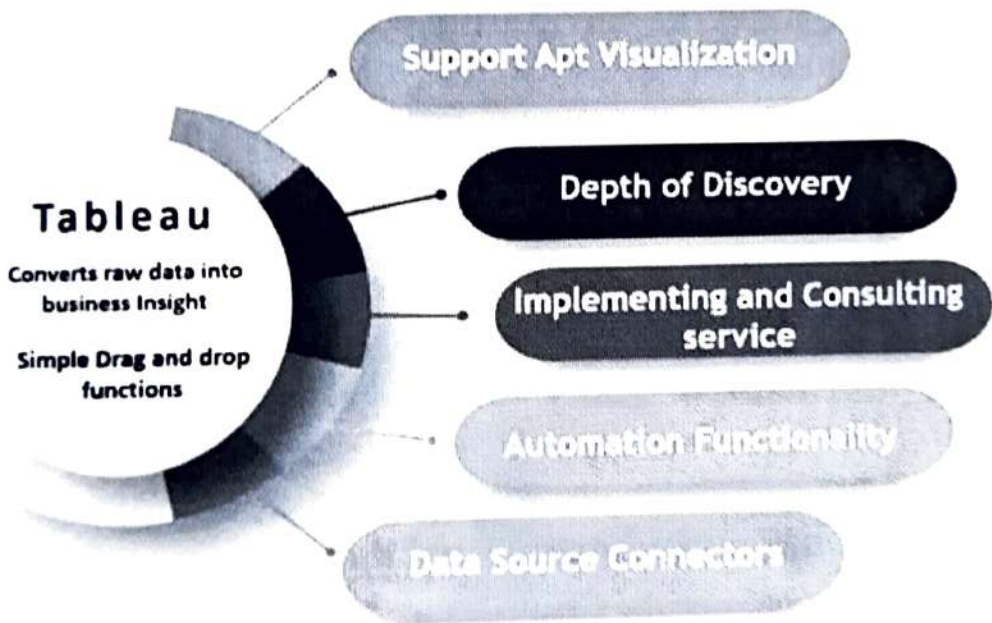
Decisions: When business intelligence methodologies are available and successfully adopted, the choice of a decision pertains to the decision makers, who may also take advantage of informal and unstructured information available to adapt and modify the recommendations and the conclusions achieved through the use of mathematical models.

Business Intelligence Tools

There are five most used business intelligence tools which are as follows

- Tableau
- Informatica
- msbi
- IBM Cognos Analytics
- Power BI

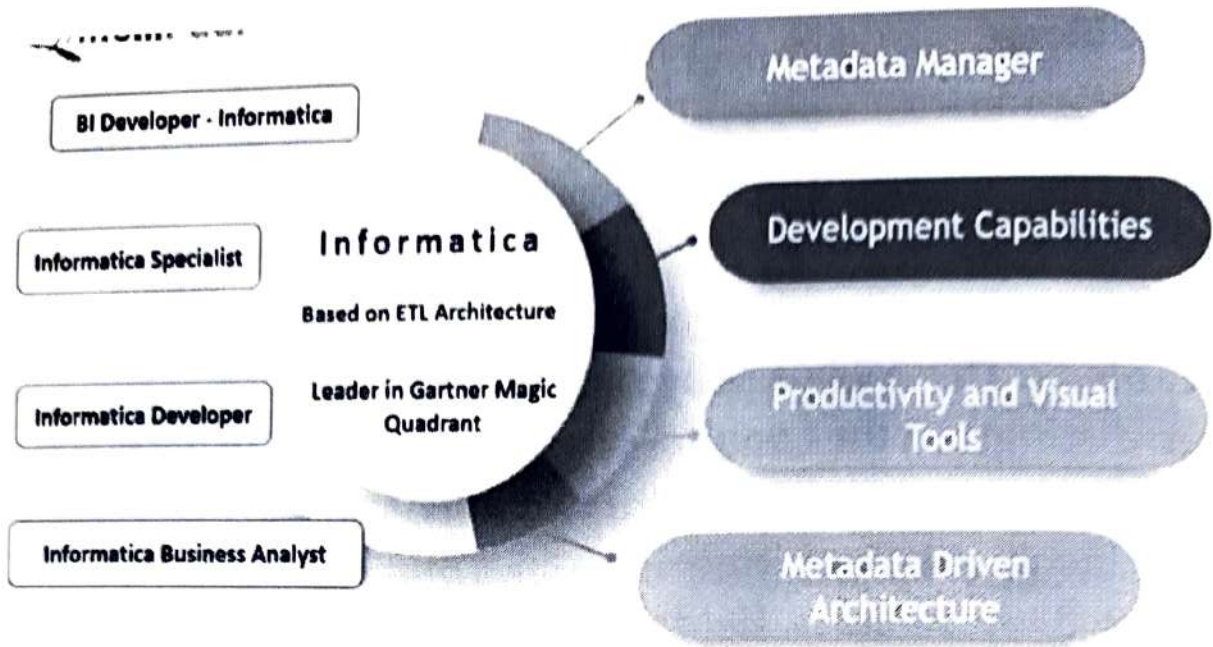
Tableau: This tool used by majority of enterprises. Tableau lets you distinguish the complex trend pattern and then convert them into actionable insights. Now one can simply create tableau dashboard in minutes through simple application of drag and drop of data fields, it doesn't need to have any technical knowledge for exploring and building tableau dashboard , it simply accessible in any device. It offers five main project.



Source: Intellipaar Youtube Channel (accessed on October 28, 2019)

Informatica: Based on ETL architecture. Garter magic quadrant for data integration tool for the 11 consecutive years. So it actually gather data from various sources and then loads it into distinctive target then it is also capable of handling.

MSBI (Microsoft business intelligence): It is the one of the top business intelligence and mining to so it actually helps the organizations by creating Interactive dashboard and scoreboard .it helps the organizations-



Source: Intellipaath Youtube Channel (accessed on October 28, 2019)

Again MSBI divided into three categories –

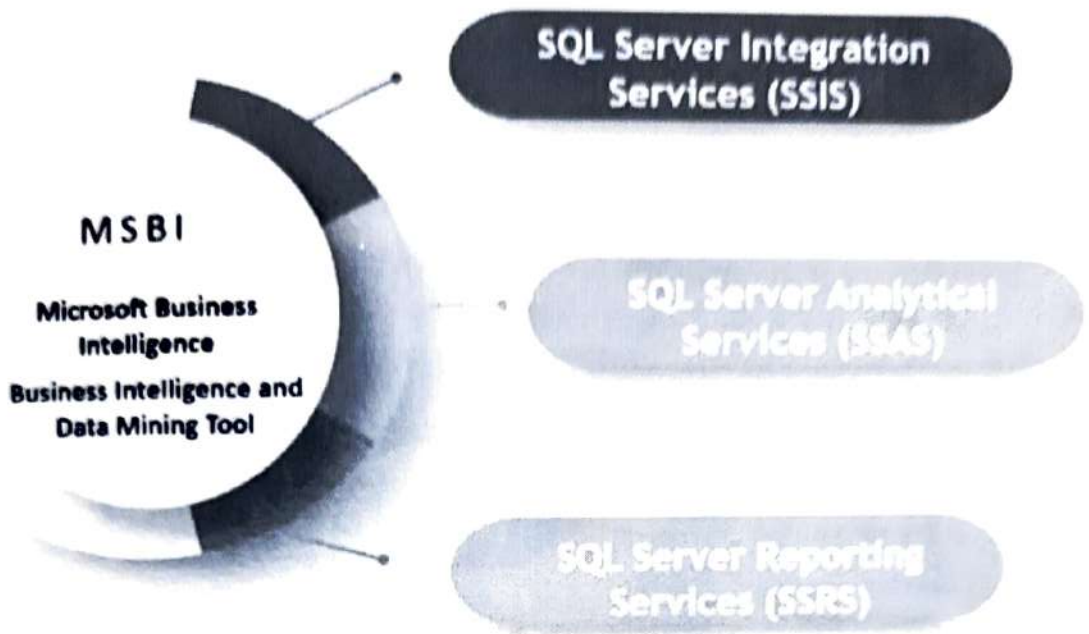
SSIS(SQL Server Integration Services) – This platform for building high performance data integration and workflow solution including extractions, transformation and loading operations.

SSAS(SQL Server Analytical Services): – this is the process of converting the dimension or row and column data into the multi dimensionised data model.

SQL(Structured Query Language) – it is an enterprise reporting platform that supports both tradition and interactive reports delivered the web and again it also supports both dimensional and multi-dimensional data.

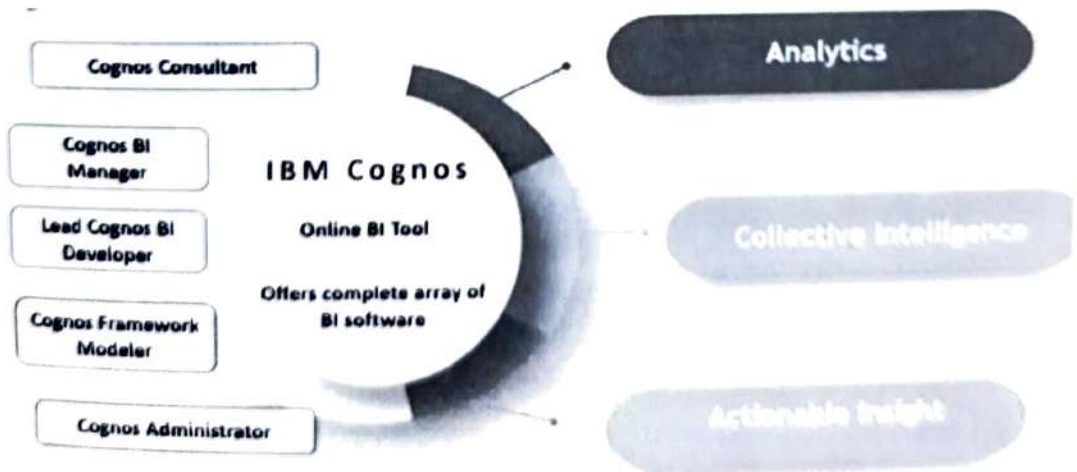
Source: Intellipaath Youtube Channel (accessed on October 28, 2019)

IBM Cognos eleven: This software is an online based business intelligence platform that offers complete arrays company goals. Comprised our 30 different products so its abilities includes following:



Source: Intellipaart Youtube Channel (accessed on October 28, 2019)

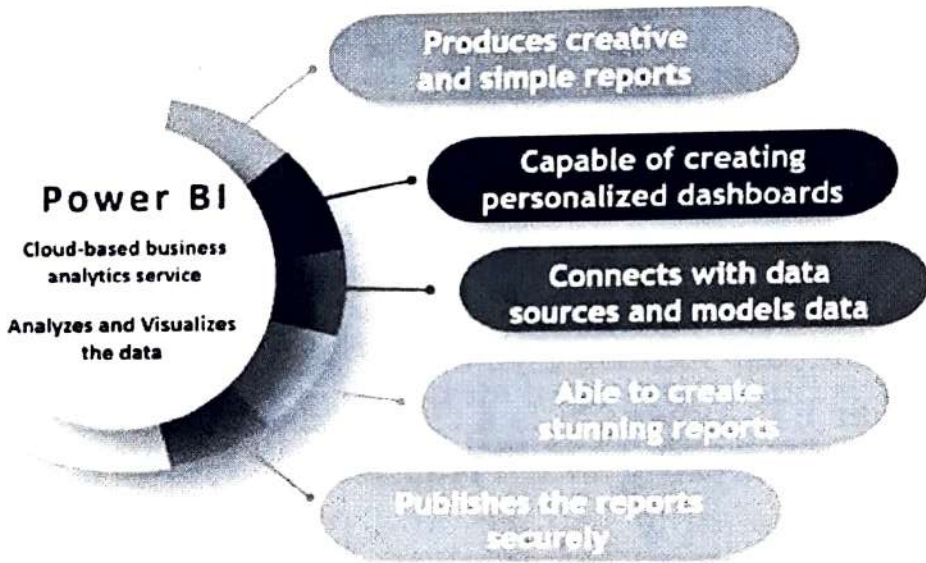
Power BI - power bi is a cloud based business analytics service for analysing and visualising daataso it produces creative and simple reports and publishes on a specific organization usingpower bi anyone can simply create



personalized dashboards with a unique 360 – degree view of their business so first it will connect with a wide variety of data sources and then shape the data according to your needs and then it models the data using relationships calculations measures and hierarchies also using visual tools and custom gallery you can create stunning reports for our business all sides.

Companies that use business intelligence: There are five companies that have used BI in innovation ways recently.

1. Amazon
2. Starbucks
3. Netflix
4. Yes Bank
5. American Express



Source: Intellipaath Youtube Channel (accessed on October 28, 2019)

Amazon uses BI to optimize the supply chain – Amazon is known for using some of the most advanced, innovative technologies in the world. Amazon has an incredibly large supply chain that includes more than 3 billion products sold in 11 different market places.

To solve this complex challenge, Amazon relies on thorough data collection, analytics and visualization to generate insights into every aspect of the supply chain.

The company gathers demographic data about customers interested in certain products. From there, Amazon uses BI and data analytics to determine where to store these products so that they can be shipped to customers quickly.

Starbucks Analyses - Amazon uses a complex data analytics system to address a wide range at once but other companies that use business intelligence focus on more specific

services. Starbucks is an example of this.

When customer used the card to make purchases, Starbucks kept a log of these transaction. Using detailed predictive data analytics, the company was then able to offer addition reward and recommendation to customers based on their shopping histories.

Netflix – Companies that uses business intelligence often identify new way to improve their services in response to the data they gather. A great example of a company that used this method to dramatically improve its service is Netflix.

This video streaming company gathers massive amount of data on their customer's behaviour ,including which type of videos they click on or hover over, how long they spend looking for something to watch, which titles they type inot the search bar and whether they make use of experimental services that the company introduces for the first time.

Conclusion

Even though the concept of BI just emerged several decades ago ,it now is becoming major concern for enterprises regardless of its size to take it into consideration whether they should invest in this system or not in order to satisfy the customer needs and wants . Our case studies demonstrate the usefulness of the framework and reveal interesting patterns, **Comparison between Different BI Tools:**

Compare Microsoft Power BI vs IBM Cognos

When it comes to Microsoft Power BI or IBM Cognos? Evaluating products for the top Business Intelligence Software does not always have to be hard. Get our review platform. It is possible to match Microsoft Power BI and IBM Cognos and immediately see their matching features. We also allow you to take a look at their features, supported devices, level of support, pricing rates, terms, and much more.

You may also compare their overall score (9.1 for Microsoft Power BI vs. 9.1 for IBM Cognos) and overall customer satisfaction level (99% for Microsoft Power BI vs. 99% for IBM Cognos). Based on these data and compare your leading alternatives and discover which one is best for your company's business, you must assess the software vendor's reliability, and you ensure all main and not they still be operating in the future!

To learn you need to verify that the selected Business Intelligence Software according to our review team results or you take a look at one of these products: [Microsoft Power BI](#) or [IBM Cognos](#)

Microsoft Power BI	IBM Cognos	Sisense
OVERVIEW OF MICROSOFT POWER BI ASK VENDOR A QUESTION	OVERVIEW OF IBM COGNOS ASK VENDOR A QUESTION	FREE DEMO VISIT WEBSITE
 Power BI <small>NO. 1</small> SmartScore™ 9.1 User Satisfaction 97%	 IBM Cognos <small>NO. 1</small> SmartScore™ 9.1 User Satisfaction 99%	 Sisense <small>NO. 1</small> SmartScore™ 9.7 User Satisfaction 99%

List of Features

- ✓ Customizable dashboards
- ✓ Datasets
- ✓ Reports
- ✓ Navigation pane
- ✓ Q&A Question Box
- ✓ Help & Feedback button
- ✓ Ad Hoc reporting
- ✓ Ad Hoc analysis
- ✓ Online Analytical Processing (OLAP)
- ✓ Trend indicators
- ✓ Interactive reports authoring
- ✓ Complete reporting & data visualization tools

List of Features

- ✓ Simple, intuitive interface
- ✓ Smart search works in context
- ✓ Personalized experience
- ✓ Scheduling and alerts
- ✓ Interactive content available online or offline
- ✓ A complete web based experience
- ✓ Easy upload of personal/external data
- ✓ Report directly off a data source
- ✓ Effortlessly combine data sources
- ✓ Data models can be automatically generated based on keywords
- ✓ Dashboards created using drag and drop on mobile device or desktop
- ✓ Best automatic visualizations

List of Features

- ✓ Data collection, filtering, consolidation & storage
- ✓ Data connectors
- ✓ Data export to various formats
- ✓ Scalable data handling
- ✓ Scalable analytics
- ✓ Drag and drop functionality
- ✓ No restrictions on data size
- ✓ Embeddable widgets & dashboards
- ✓ Widgets library
- ✓ Apps & sites integration
- ✓ Single Sign-On
- ✓ Visualizations
- ✓ Metrics identification

Source: Finances Online Website (accessed on October 29, 2019)

Languages Supported

- | | | |
|------------|---|---------|
| English | ✓ | Chinese |
| German | | Hindi |
| Japanese | | Spanish |
| French | | Russian |
| Italian | | Dutch |
| Portuguese | | Polish |
| Turkish | | Swedish |

Prominent Clients

MediaCom, ABB, Conde Nast, Chevron, CAT

Integrations

Microsoft Power BI integrates with the following business systems and applications:

- Microsoft Dynamics
- Salesforce
- Google Analytics
- Microsoft Excel
- MailChimp
- CRMHub
- conScore
- Adobe Analytics
- Acumatica
- Circuit ID
- Azure Mobile Management

Available Devices

- | | |
|----------------|---|
| Windows | ✓ |
| Linux | |
| Android | ✓ |
| iPhone/iPad | ✓ |
| Mac | |
| Web-Based | ✓ |
| Windows Mobile | ✓ |

Company Size

- | | |
|-------------------|---|
| Small Business | |
| Large Enterprises | ✓ |
| Medium Business | ✓ |
| Freelancers | |

Available Support

- | | |
|--------------|---|
| Email | |
| Phone | ✓ |
| Live Support | ✓ |
| Training | ✓ |
| Tickets | ✓ |

General Info

Power BI is a suite of business analytics tools that analyzes data and shares insights. It enables users to monitor their business from every device and at any time.

Languages Supported

- | | | |
|------------|---|---------|
| English | ✓ | Chinese |
| German | | Hindi |
| Japanese | | Spanish |
| French | | Russian |
| Italian | | Dutch |
| Portuguese | | Polish |
| Turkish | | Swedish |

Prominent Clients

Becker Underwood, Mueller, Inc., Coates Hire

Integrations

No information available.

Available Devices

- | | |
|----------------|---|
| Windows | ✓ |
| Linux | ✓ |
| Android | |
| iPhone/iPad | |
| Mac | ✓ |
| Web-Based | ✓ |
| Windows Mobile | |

Company Size

- | | |
|-------------------|---|
| Small Business | |
| Large Enterprises | ✓ |
| Medium Business | ✓ |
| Freelancers | |

Available Support

- | | |
|--------------|---|
| Email | |
| Phone | ✓ |
| Live Support | ✓ |
| Training | ✓ |
| Tickets | ✓ |

General Info

IBM Cognos Analytics empowers offers a set of analytic tools for business users to create and/or personalize dashboards and reports on their own.

Languages Supported

- | | | | |
|------------|---|---------|---|
| English | ✓ | Chinese | ✓ |
| German | ✓ | Hindi | |
| Japanese | ✓ | Spanish | ✓ |
| French | ✓ | Russian | ✓ |
| Italian | ✓ | Dutch | ✓ |
| Portuguese | ✓ | Polish | |
| Turkish | | Swedish | |

Prominent Clients

NASDAQ, Merck, Dannon, Booking, Corncast, NASA, ESPN, Sony

Integrations

Sisense provides APIs and additional developer tools that let you interact with the Sisense platform. These tools give you more options and flexibility for managing, enhancing and customizing the functionality and user experience of the Sisense platform.

Applications:

- Salesforce
- Zendesk
- QuickBase
- Google Adwords
- Google Analytics
- Google Spreadsheets
- Amazon Redshift
- Heroku Postgres

Available Devices

- | | |
|----------------|---|
| Windows | ✓ |
| Linux | ✓ |
| Android | ✓ |
| iPhone/iPad | ✓ |
| Mac | ✓ |
| Web-based | ✓ |
| Windows Mobile | ✓ |

Company Size

- | | |
|-------------------|---|
| Small Business | |
| Large Enterprises | ✓ |
| Medium Business | ✓ |
| Freelancers | |

Available Support

- | | |
|--------------|---|
| email | ✓ |
| phone | ✓ |
| live support | ✓ |
| training | ✓ |
| tickets | ✓ |

General Info

Sisense is the winner of the 2018 Best Business Intelligence Software Award. It lets you join, analyze, and visualize all the data you want.

Source: Finances Online Website (accessed on October 29, 2019)

which answer important questions in the domain of business intelligence². Nowadays ,BI establishes a real business value of data asset and provides remarkable improvement in recognising and taking advantage of business opportunities, like Extract ,transform and Load (ETL) and metadata which provides information about other data .with the reference of given distinctions an entrepreneur can choose BI application relevant to their organisation, however in India there are comparatively less number of companies using BI to analyse their complex data ,reasons behind this may be the complexity of data analysis system but it can be resolved by using and spreading more awareness for BI ,this will lead to faster decisions of company as they can contribute in the growth of our economy.

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- <https://www.yumpu.com/en/document/view/62164905/business-intelligence-carlovercellis/>
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- <http://www.jstor.org/stable/41703503>
- <http://www.jstor.org/>

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