

Bikash Dhakal
BUSINESS INTELLIGENCE

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Part 1

Produce a presentation which

- Examines business process and supporting processes using specific examples
- Shows the differentiate between unstructured and semi-structured data
- Evaluates the advantages and disadvantages of using application software for business process

Note: you need to produce a written document which summaries your presentation.

Introduction

I founded an IT company “BDK Technology”. Also, I am working as a business analyst in the company. I started a small company but now we are experiencing tremendous growth and there are lots of data. That can be structured, semi structured and unstructured. Now, being a business analyst, I have to manage data using different business intelligence tools so that I can take decision effectively. Furthermore, there may be a lots of projects or tasks in my company. I want to track records of every employee and progress of projects and tasks. So, for this I need to develop Business Intelligence tools or application or programs which can solve specific problem of our project.

But, before designing any tools / application / program, I have to conduct small scale research to identify other organizations that have used business intelligence to improve their operation. And, one of the most important things is to determine whether designed tools are user friendly or not.

So, first of all in this part I am going to make a documentation about business process, supporting process, structured, semi-structured, unstructured data and also going to evaluates advantages and disadvantages of using application software for business process.

Examine, using examples, the terms ‘Business Process’ and ‘Supporting Processes’.

Business process:

An activity or series of activities what can accomplish specifics company goal is known as business process. A business process contains series of steps that performed by a group of stakeholders of company to achieve a concrete goal. Each step in a business process indicates a task that is

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appointed to a participant. It is the fundamental building block for several related ideas such as Business Process Management, Process Automation, and so on.



In above pictures we can see three very important factors of business process i.e. business steps, business goals and stakeholders. It refers to wide range of structured and it implemented to accomplish a predetermined organizational goal. Business process use in all organizational levels; some may visible to customers and some may not.

The need and the advantages of a business process are quite apparent in large organizations. A process forms the lifeline for any business and helps it streamline individual activities and make sure that resources are put to their optimum use. Business process helps to identify what tasks are important to your larger business, stream line them to improve and also help to streamline communication between people, functions, departments, to accomplish specific tasks. It sets a hierarchy of approvals wherever relevant in order to ensure accountability and a maximum use of resources, keep chaos from creeping into your day to day operations and standardize a set of procedures to complete tasks that really matter to your business. (SearchCIO, 2019)

Steps of Business Process:

Step 1: Define your goals

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In business process first of all we have to know about purpose of business process, why was it created? How will we know if it is successful?

Step 2: Plan and map your process.

In second step we have to know what are the strategies needed to achieve the goals? And need to make broad roadmap for the process.

Step 3: Set actions and assign stakeholders.

To conduct successful business process, we have to identify the individual tasks for teams and machines need to do in order to execute the plan.

Step 4: Test the process

Testing is the experiment of design process whether it works successfully or not. So, we have to run the process on a small scale to see how it perform. Notice any gaps and make adjustments.

Step 5: Implement the process

After successful testing of the process, we can implement the process that means start running the process in live environment. Properly communicate and train all stakeholders.

Step 6: Monitor the results

Monitoring the process is review of the process, analysis of its pattern and documentation of the process history.

Step 7: Repeat

If the conducted process is effective and successful to achieve the goals set, we can replicate it for the future processes.

Example of business process

As an example, let's take the content marketing process. It's a process you'll find in every marketing department out there. The issue is, it can be rather hectic and chaotic unless you know the process. There will be writers, designers, SEO experts, and web designers, all working together to create a single piece of content.

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Naturally, this involves a lot of steps and communication. Although this can vary from organization to organization, the basic steps would be as follows.

- The content writer would receive the draft and write the content, whether it's a blog article or piece of copy. The first draft is written and reviewed to create the final draft, which is then passed on to the next person in the workflow.
- The editor reviews the content to ensure there are no grammatical or copy mistakes in the content. Once this is done, it moves to the designer.
- The designer takes the content and adds any infographics or images suited to the content.
- After this, the SEO expert reviews the article to ensure that keywords are all present as they should be, and if needed, make any changes.
- Once that's done, the article is published on the internet, with the marketing team promoting visibility.

If the content is copy work, then there's an additional step for the web engineers to code the website for the changes needed.

Business processes categories:

On the basis of company, industry, organization and nature of work, business process are categorized into different types and category. Such as:



1. Operational processes

Operational process also known as primary processes. It deals with the core business and value chain. Operational process constitutes the core business of the organization and create the primary value stream. Operational processes represent essential business activities that accomplish business objectives, e.g., generating revenue. Some examples of this include taking customer orders and managing bank accounts.

2. Supporting processes

Supporting process is secondary process. The processes that support the core processes. Examples include accounting and technical support.

3. Management processes

The processes that govern the operation of a system. It measures, monitors and control the activities related to business procedures and systems. Examples of management processes include

internal communications, governance, strategic planning, budgeting, and infrastructure or capacity management.

Supporting processes

Support processes are defined as those processes in the organization which enable the optimal performance of the core organizational process. Since they support the main processes, they ensure the business resources in the quality and quantity needed, ensuring the quality of resource supplies or support services and covers the overall effective functioning of the organization. It provides some of the underlying activities and concepts that are needed to support of all the other categories. Support processes support the adoption and ongoing maintenance of all of the data organized processes described in the document.

Areas of supporting process

Supporting process possess the following process areas.

- **Measurement and analysis:** Support process identifies how the practice can measure the effectiveness of how they have implemented data management processes.
- **Process management:** Support process assists the practice with developing work products, for examples policies, procedure, business glossary, etc.
- **Process quality assurance:** It focuses on making improvements in how the data management processes are implemented. (Healthit.gov, 2019)

Example of supporting process:

Supporting processes includes following instances:

- ❖ Manage finance including costing.
- ❖ It manages information system.
- ❖ Human resources management.
- ❖ It processes.
- ❖ Vendor management processes.
- ❖ Risk management processes.
- ❖ Security management processes.
- ❖ Quality management processes.

❖ Corporate governance processes.

Unlike core processes they are relatively similar in different types of organizations. Support processes are usually more complex and complicated in larger companies, because more people are involved, organizational structure is taller, and so. Whereas in small companies only one person can be responsible for a particular support process or activity. These processes do not directly generate value to the customer. Having said that, the support processes are also vital for the enterprise. The processes like management processes, accounting processes, and human resource processes facilitate the working of an organization.

Enhancing these processes means making the fundamentally and strategically strong. Although the support processes, do not add value to the client directly, they help in developing a solid working environment. (ManagementMania.com, 2019)

Differentiate between unstructured and semi- structured data within an organization.

Data is a raw information or unorganized form that represents condition, ideas or objects. It is limitless and occur everywhere in the universe. In business intelligence data can be in different forms such as structured, unstructured and semi-structured data.

Unstructured Data

Any data that does not have a recognizable structure is known as unstructured data. Unstructured data is unorganized and raw and can be textual or non-textual data. It is information in many different forms which does not hew to conventional data. One of the most common form of unstructured data is text, it generates and collects in wide range of forms, including word documents, email messages, PowerPoint presentations, survey responses, from blogs, social media sites, etc. Because of its nature, unstructured data isn't suited to transaction processing applications, which are the province of structured data. Instead, it's primarily used for BI and analytics. (SearchBusinessAnalytics, 2019)

Semi-structured Data

Data that is neither raw data, nor typed data in conventional database system is known as semi structured data. Semi structured data is somehow structured data but it is not organized in rational model, in a table and object-based graph. Semi-structured data lies somewhere between structured and unstructured data. It is not organized in a complex manner that makes sophisticated access and

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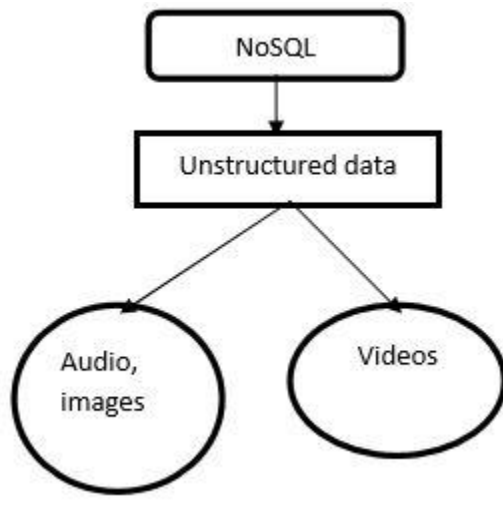
analysis possible; however, it may have information associated with it, such as metadata tagging, that allows elements contained to be addressed. (Techopedia.com, 2019)

Difference between unstructured and semi- structured data.

Big data in a company includes large volume, high velocity and extensible variety of data. Below we can study the comparative information between unstructured and semi-structured data.

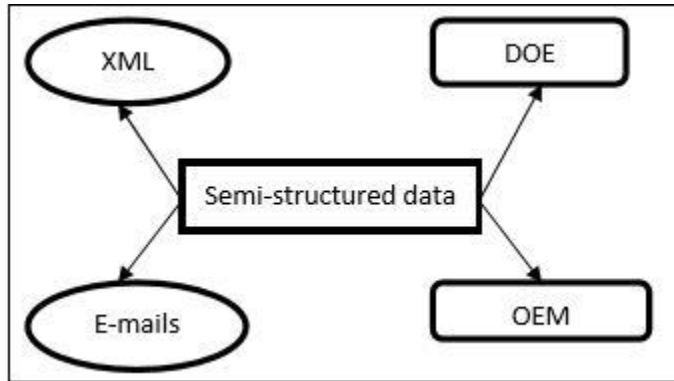
Properties	Unstructured Data	Semi-structured Data
Technology	It is based on character and binary data.	It is based on XML/RDF
Transaction management	No transaction management and no concurrency.	Transaction is adapted from DBMS not matured.
Version management	Versioned as whole.	Versioning over tuples or graph is possible.
Flexibility	It is flexible and there is absence of schema.	It is less flexible than unstructured data.
Scalability	It is very scalable.	It is less scalable than unstructured data.
Robustness	Robust property is absent.	New technology but not very spread.
Query performance	Only textual query is possible.	Queries over anonymous nodes are possible.

As an owner and data analyst of an IT company I have to deal with various kinds of data that may be in any form. I have to categorize them and to do analysis of collected data. Unstructured and semi-structured are two different form of data sources. Unstructured data includes videos, images, and audios. Today, in our digital universe 90% of data which is increasing is unstructured data. This data is not fit for relational database and in order to make them store, scenario came up with NoSQL database. Today there are four family of NoSQL database: key value, column-oriented, graph-oriented, and document-oriented. Most of the famous organization today(Amazon, linkedIn, Facebook, Google, Youtube) is dealing with NoSQL data and they are replaced their convention database to NoSQL database.



Unstructured data is not based on Schema. It is not suitable for relational database and 90% of unstructured data is growing today. It includes digital media files, Word doc., pdf files and stored in NoSQL database.

Semi-structured data includes e-mails, XML and JSON. Semi structured data is not fit for relational database where it is expressed with the help of edges, labels and tree structures. These are represented with the help of trees and graphs and they have attributes, labels. These are schema-less data. Data models which are graph based can store semi-structured data. MongoDB is a NOSQL model that support JSON (semi-structured data). Data consist of tags and which are self-describing are generally semi-structured data. They are different from structured and unstructured data. Data object Model, Objects Exchange Model, Data Guide are famous data model that express semi structured data. Concepts for semi-structured data model: document instance, document schema, elements attributes, elements relationship sets. (Google.com, 2019)



Semi-structured data is not based on Schema. It is represented through label and edges and generated from various web pages. It has multiple attributes.

Hence, in my company I can organized those kinds of data successfully.

Evaluate the benefits and drawbacks of using application software as a mechanism for business processing.

Application Software:

Application software is a software which is developed to help the user to perform specific tasks is known as application software. It is created for a specific purpose. Business intelligence application software is a set of tools used by companies to retrieve, analyze, and transform data into meaningful information. It includes data visualization, data warehousing, dashboards, and reporting. Word processing software, Database programs, Entertainment software, Business software, Educational software, Computer-aided design (CAD) software, Spreadsheet software etc. are some example of application software. Also, ad-hoc solution, simplified workflow, full BPM, custom application software etc. are application software uses in business processing mechanisms. (Technologyadvice.com, 2019)

Benefits of application software using in Business Process:

Following are some benefits of uses of application software in business process mechanisms.

1. **Business process modeling:** Application software helps to create and test multiple processes and work flows within company using a visual process design tool.
2. **Agility:** Any company can face with the need of changed constantly. So, change may become necessary as a result of new regulation. Application software facilitates the design of processes

that are flexible. We can get flexibility of making changes to business process with minimal costs.

3. **Productivity:** It facilitates the automation of a lot of repetitive elements within regular workflows. So, application software of business process improvements like removal of bottlenecks, parallel processing, and elimination of redundant steps can easily be achieved. It allows employees to spend more time on other activities.
4. **Efficiency and reduced risks:** The visibility of business processes allows for concentration on inefficiencies. Because application software gives organizations the opportunity to work more efficiently, they are able to save their resources. It also results in the creation of better-designed, executed and monitored processes which can help reduce the risk of fraud.
5. **Consistency, Repeatability & Transferability:** With application software, each task is executed the way it was planned and designed. Identical problems are addressed the same way and there is no need to reinvent the wheel, even if roles do change.
6. **Workflow Management:** Design, test and implement advanced workflows by integrating robust communication between team members, systems, and data.
7. **Sustainability:** Business Processes are continually improved to adapt to changing organizational conditions so that they can deliver the expected results. This adaptation can be achieved with application software while maintaining control or managerial oversight.
8. **Business Rules Engine:** Design business rules and conditions for each business process.
9. **Analytics:** Application software define metrics, get insights in real time, and run any report with ease. (Famuyide and Famuyide, 2019)

Drawbacks of application software using in Business Process:

1. Developing application software designed to meet specific purpose can prove to be quite costly for developers. This can affect their budget and their revenue flow, especially if too much time is spent developing a software that is not generally acceptable.
2. Some software that are designed specifically for a certain business, may not be compatible with other general software. This is something that can prove to be a major stumbling block for many corporations.
3. Developing them is something that takes a lot of time, because it needs constant communication between the developer and the customer. This delays the entire production process, which can prove to be harmful in some cases.

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4. Application software that is used commonly by many people, and then shared online, carries a very real threat of infection by computer virus or other malicious programs. (Anon, 2019)

Presentation slides

Here I am going to attach my presentation slides which includes and summarize above documentation on bullet points highlights.



WHAT IS BUSINESS PROCESS ?

- BUSINESS PROCESS AS AN ACTIVITY PERFORMED BY GROUP OF PEOPLE FOR THE PURPOSE OF ACHIEVING SPECIFIC GOAL OF AN ORGANIZATION OR AS PER THE NEED OF CUSTOMER. IN THE BUSINESS PROCESS IT IS VERY IMPORTANT TO HAVE A SPECIFIC GOAL AND SINGLE AS WELL AS CONSISTENT OUTPUT AS BETTER PRODUCT CAN BE DEVELOPED AND IF THERE ARE ANY TYPES OF PROBLEM THEN IT CAN BE SOLVED WITH AN EASE.

FACTORS OF BUSINESS PROCESS

- MANAGEMENT PROCESS
- OPERATIONAL PROCESS
- SUPPORTING BUSINESS PROCESS

BENEFITS OF BUSINESS PROCESS

- PRODUCTIVITY OF AN ORGANIZATION CAN BE INCREASED
- DUE TO MORE EFFICIENCY, RISK CAN BE REDUCED
- CONSISTENCY, REPEATABILITY AND TRANSFERABILITY
- PERFORMANCE AS WELL AS DEVELOPMENT OF AN ORGANIZATION CAN BE MEASURED
- TECHNOLOGY INTEGRATION

SUPPORTING PROCESS

- SUPPORTING PROCESS AS AN ACTIVITY WHICH ASSIST INDIRECTLY IN THE DEVELOPMENT OF A SPECIFIC PRODUCT. IT ENSURES THAT THE PRODUCT IS DEVELOPED ACCORDING TO THE PLAN AND PROCESSES. SUPPORTING PROCESSES ARE COMPLICATED AND COMPLEX ON LARGE COMPANIES WHEREAS IT IS QUITE MUCH EASY IN SMALL COMPANIES AS LESS PERSON ARE RESPONSIBLE FOR COMPANIES' ACTIVITIES.

BENEFITS OF SUPPORTING PROCESS

- COST EFFICIENCY
- BUSINESS AGILITY
- COMPLIANCE EASE AND VISIBILITY
- CUSTOMER FOCUS
- STAFF SATISFACTION

UNSTRUCTURED DATA

- TEXT,
- IMAGES,
- AUDIO,
- VIDEO, ETC.

SEMI-STRUCTURED DATA

- BITE FILES,
- EMAIL,
- DATA ON A WEB,
- XML,
- MARKUP LANGUAGES, ETC.

DIFFERENCE BETWEEN UNSTRUCTURED DATA AND SEMI-STRUCTURED DATA

S. N o		Unstructured data	Semi-structured data
1.	Technology	Character and binary data	XML/ RDF
2.	Flexibility	Very flexible, absence of scheme	Flexible, tolerant scheme
3.	Scalability	Very scalable	Schema scaling is simple
4.	Robustness		New technology not widely spread
5.	Query performance	Only textual query possible	Queries over anonymous nodes are possible
6.	Transaction management	Not transaction management, no concurrency	Transaction management adapted from RDBMS not matured

APPLICATION SOFTWARE

- APPLICATION SOFTWARE CAN BE DEFINED AS A PROGRAM OR A GROUP OF PROGRAMS WHICH IS CREATED FOR A SPECIFIC PURPOSE FOR END USER. IT CAN SIMPLY REFER AS AN APPLICATION OR PRODUCTIVITY PROGRAMS WHICH RESIDE ABOVE SYSTEM SOFTWARE.

EXAMPLES:

- WORD PROCESSING SOFTWARE,
- SPREADSHEET SOFTWARE,
- BUSINESS SOFTWARE,
- DATABASE PROGRAMS, ETC.

Advantages

1. Low Cost
2. High quality
3. Immediate availability
4. Good vendor support
5. Conducive to share application and data

Disadvantages

1. Purchasers may pay for features they don't need
2. Impossible to alter to meet specific requirements
3. Vendor may go out of business, leaving user without support
4. Software often addresses only a narrow spectrum of business needs



Hence, in above screen shots I have highlighted different factors, advantages, disadvantages and etc. about business process and its role in the business intelligence techniques.

Conclusion

Hence, business process helps to identify what tasks are important to your larger business, streamline them to improve and also help to streamline communication between people, functions, departments, to accomplish specific tasks. It sets a hierarchy of approvals wherever relevant in order to ensure accountability and a maximum use of resources, keep chaos from creeping into your day to day operations and standardize a set of procedures to complete tasks that really matter to your business. So, in this part I have explained about business process, supporting process, different types of data such as structure, unstructured and semi structure and about application software, their advantages and disadvantages while using in business process.

Part 2

Write an article which

- Compares the different types of support available for decision making at varying levels within an organization.
- Justifies the key features of business intelligence functionality with reference to specific examples.
- Compares and contrasts different information systems and technologies that can be used to support organizations at operational, tactical and strategic levels.

Introduction

In this part I am going to prepare an article which compare the different types of support available for decision making ideas at varying levels within an organization, justification on the key features of BI functionality and also going to compare and contrast different information systems and technologies that can be used to support organization at operational, tactical and strategic levels.



“The tools and technologies associated with business intelligence functionality.”

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15th June 2019

Business intelligence is a technology-driven process for analyzing data and presenting actionable information to help executives, managers and other corporate end users make informed business decisions. In today’s dynamic world business firms have to take a number of decisions every now and then. Managers know how important decision-making is from the organizational point of view. For example, in research and development management has to decide whether to pursue one or multiple design strategies

Compare the types of support available for business decision making at varying levels within an organization.

Types of support available for business decision making.

In today's dynamic world business firms have to take a number of decisions every now and then. Managers know how important decision-making is from the organizational point of view. For example, in research and development management has to decide whether to pursue one or multiple design strategies. Decision making capacity plays vital role in every types of business. So, we have to make correct decision in our every step of business. For that we can use different types of support system available for business decision making at different level that helps us to make correct decision. A decision support system is a computerized information system used to support decision-making in an organization or a business. A DSS lets users sift through and analyze massive amounts of data, and compile information that can be used to solve problems and make better decisions. Decision support systems allow for more informed decision-making, timely problem-solving, and improved efficiency for dealing with problems with rapidly changing variables. (Managementstudyguide.com, 2019)

Following are some decision-making supports available:

1. Communication- driven support

It is a type of support system that emphasizes communications, collaboration and shared decision-making support. It enables communication between groups of people, facilitates the sharing of information, supports collaboration and coordination between people and also supports in group decision tasks.

2. Knowledge-driven support

“Knowledge should be shared. It only grows by sharing”. Like it's important to share knowledge within the organization, it's equally important to determine what to share with whom. Not all details can be shared with everyone. This means that it is absolutely necessary to decide knowledge sharing rules and regulations, so that it can be used effectively and appropriately. It is a computer-based reasoning system that provides information, comprehension and suggest to users and support them in decision making.

3. Document-driven support

A document driven support helps in document retrieval and analysis a collection of related, unstructured documents searches engines, document indexing and summarization document and knowledge management. The decision support systems is capable of gathering and presenting several typical information such as comparative data figures, accessing information assets that include relational and legacy data sources, consequences of diverse decision alternatives, providing past experiences in a particular context as well as projecting figures according to assumptions or new data.

4. Data-driven support

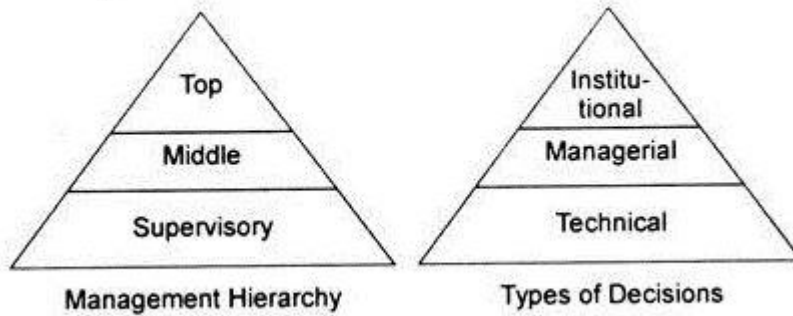
It is a type of support that emphasizes access to and manipulation of a time-series of internal company data and sometimes external data. Simple file systems accessed by query and retrieval tools provide the most elementary level of functionality. Data warehouse systems that allow the manipulation of data by computerized tools tailored to a specific task and setting or by more general tools and operators provide additional functionality. Data-driven DSS with On-line Analytical Processing (OLAP) provides the highest level of functionality and decision support that is linked to analysis of large collections of historical data. Executive Information Systems (EIS) and Geographic Information Systems (GIS) are special purpose Data-Driven DSS

In above I have discussed different types of support available in business decision making. Now I am going to discuss this support system in different varying level regarding our company “BDK Technology”.

Decision-Making at Different Levels in the Organization:

Continuous analysis of organizational decision-making process is essential to high quality and transparent decisions; otherwise a business runs with a prejudice: the notion that it is good at making decision, even if in reality it is not. Some decisions are related to evaluating investments, allocating resources or assessing mergers and acquisition proposals while some are about introducing new products, studying their shelf life or enhancing manufacturing efficiency. There are also day-to-day decisions that are valid for a point of time. Typically, more objective decisions are made at lower levels of hierarchy, which can be quantified. Higher levels of hierarchy deal with unstructured or ill-structured decisions, which are subjective in nature.

While objective decisions may not require creativity, subjective decisions do. (Essays, Research Papers and Articles on Business Management, 2019)



Like decisions made in each department at each level are different, similarly a decision support system analyst must take into consideration the type of decisions and distinguished factors influencing decision-making before going to the drawing board and designing the architecture. Above fig gives an indication of the relative number of each type of decision made at each level in the organizations. However, the categories should not be treated as exclusive. For example, the production manager of a machinery manufacturing firm might primarily be engaged in technical decisions, while the legal adviser of the company might be involved in institutional matters.

From above, we have three different types of decision-making level. They are.

1. Strategic level (top level management)
2. Tactical level (middle level management)
3. Operational level (bottom level management)

Comparative study on different decision making at varying level:

Given table shows the comparative study on the types of support available for business decision making at varying levels within an organization.

S.N.	Strategic level (top level management)	Tactical level (middle level management)	operational level (bottom level management)

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1.	It includes technology decisions (i.e. choice of appropriate technology, equipment's, process choice and degree of automation), capacity decisions (amount, timing and type), facilitates decisions (size, location and specializations), vertical integration (direction, extent and balance).	It includes establishing parameters (for measuring operational efficiency and productivity), making plans to improve utilization of existing resources, planning for modernization, make or buy decision, planning for medium term maintenance (preventive and condition monitoring) to enhance the availability of production facilities.	It develops operational plans, establish actions that are necessary to achieve operational goals, Quality specifications and inspection and test details.
2.	Creative skills are needed in Top level management.	Persuasive skills are needed in Middle level management.	Operative skills are needed in low level management.
3.	Strategic level production planning helps to achieve the goals in the best possible way.	Focus is on fixing performance parameters and generating data to compare actual and planned performance and taking steps to reduce gap between planned and actual.	Plans are definite, and action oriented and plans are expressed in terms of parameters, which can be quantified.
4.	All the strategic level planning is always associated with risk and it is used in some futuristic assumption.	Plans to enhance equipment availability and overall productivity of the production function.	It helps to monitor the progress of the plan and take corrective action if needed to achieve the target.

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5.	This type of support is carried out for a long period of time.	This type of support is for certain period of time.	Operation are normally carried out for a short period of time.
6.	This type of support coordinates the activities of different department.	This type of support co-operates with other department for smooth functioning of organization.	This type of support ensures whether good working condition is provided to the workers.
7.	Only certain number of persons are needed to support.	Moderate number of persons are needed to provide support.	Support from large number of persons are needed.

Justify, with specific examples, the key features of business intelligence functionality.

Business intelligence is a technology driven process which analyze the data and present actionable information to help executives, managers and other end users to make effective business decisions. BI uses wide variety of tools, applications and methodologies that enable organization to collect data from various sources. Business Intelligence delivers the insight executives need in order to make the right decisions because it connects the data, technology, analytics, and knowledge that business professionals need to ensure success. It is with Business Intelligence that organizations and enterprises gain competitive advantage. Organizations around the globe are just now beginning to realize all of the potential benefits of Business Intelligence, as they harness the power of Big Data. Companies that use BI effectively also identify market trends and business issues that need to be corrected.

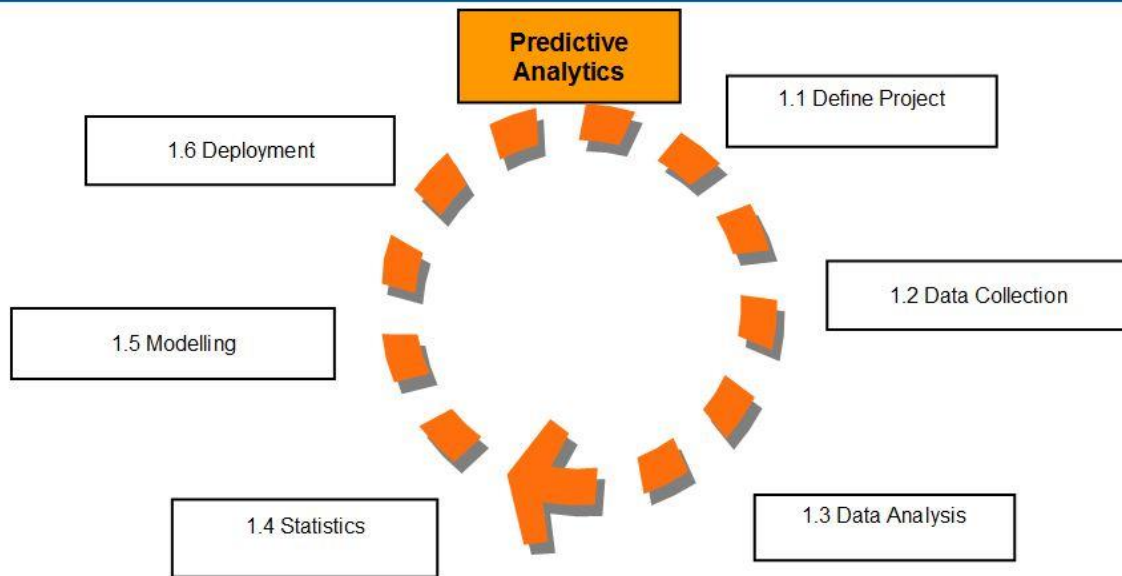
Business intelligence functionality

Some of the key features of business intelligence functionality are as follows:

1. Predictive Analytics and Modeling:

BI solution majorly helps you to analyze the data and trends by analyzing your previous data sets. But one capability which a BI solution must have is the predicting capabilities, it enables the decision makers to predict the market trends, and other business requirements like sales, staffing, market trends etc. With the use of predictive analytics, it helps an organization to be

proactive, forward looking, retain and grow their customer with improving business operation on their business. (Examples, n.d.)



Predictive analytics is reflected in today Big Data Trends, and its tools are essentially Big Data Technologies. The market demand for predictive analytics software corresponds with a closely related toolset, Big Data Analytics Tools. It helps optimizing marketing campaigns, improving operations, fraud detection and reduce risks. For example, retail is Probably the largest sector to use predictive analytics, retail is always looking to improve its sales position and forge better relations with customers. One of the most ubiquitous examples is Amazon’s recommendations. When you make a purchase, it puts up a list of other similar items that other buyers purchased. Much of this is in the pre-sale area – with things like sales forecasting and market analysis, customer segmentation, revisions to business models, aligning IT to business units, managing inventory to account for seasonality, and finding best retail locations. But it also acts post-sale, acting to reduce returns, get the customer to come back and extend warranty sales.

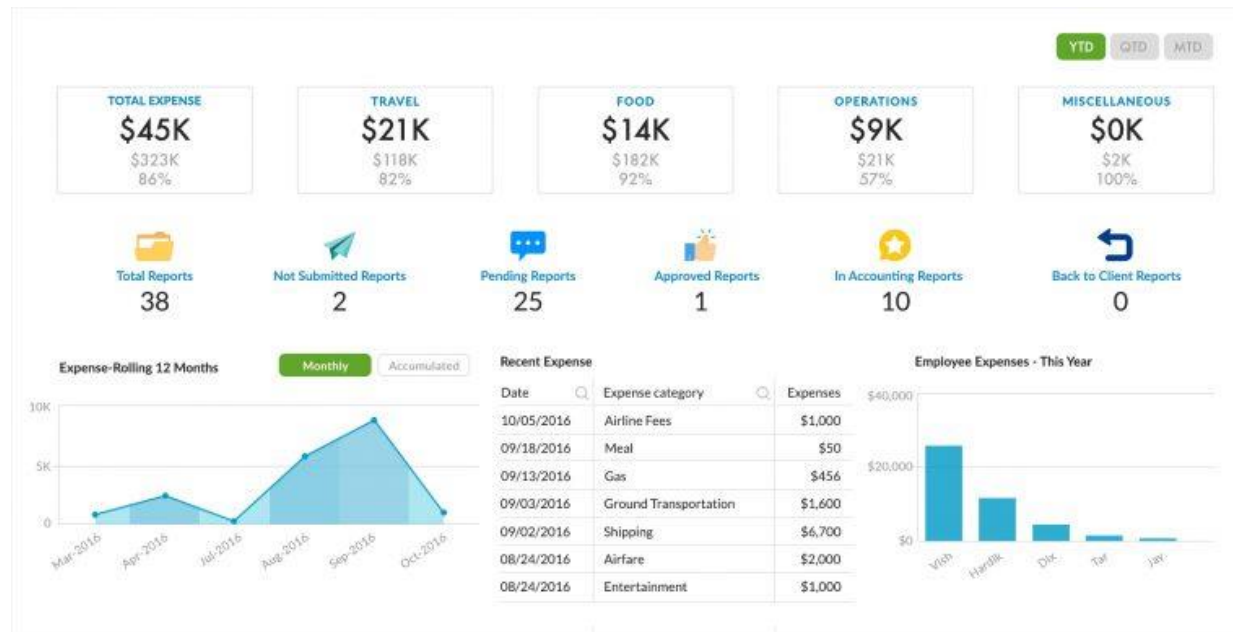
2. Interactive Reports and Operational Reports

Interactive reports allow users to condense the massive amounts of collected data into a wide variety of possible views. Users can take advantages of features like statistical analysis and regression to identify trends, anomalies and outliers in the data whereas At the end of each day, business intelligence features like these can provide your organization’s executives with a

detailed summary of the daily events, giving them the information they need to make critical decisions.

3. Data visualization

Data visualization is the process of interacting with clients to understand patterns, trends, and insights by transforming data into a visual context. Data visualization is to generate visuals from the data. It can be in any form like tables, graphs, charts, images, patterns, movies, etc. (SearchBusinessAnalytics, 2019)



In above figure we can see monthly expenses report that compares spending data across categories—travel, office supplies, etc. or even across departments. While such trends could be easily overlooked in a spreadsheet, a bar chart will visualize the data. It's an easy way to compare information, as it will uncover highs and lows at a quick glance. An accounting department can present the information to leadership or department heads and gain immediate understanding of challenges.

4. Open integration

Smart BI platforms will be able to access not only your organization's own data, but information from email, social media, websites and more. For example, instead of only providing your internal sales data, your BI platform could accompany that information with reviews and comments about your products. With so many data formats and so many applications to pull

from, it's important that your BI platform is able to integrate as many different types of data as possible under a single roof, seamlessly combining disparate forms of information into an actionable report.

5. Ranking Report

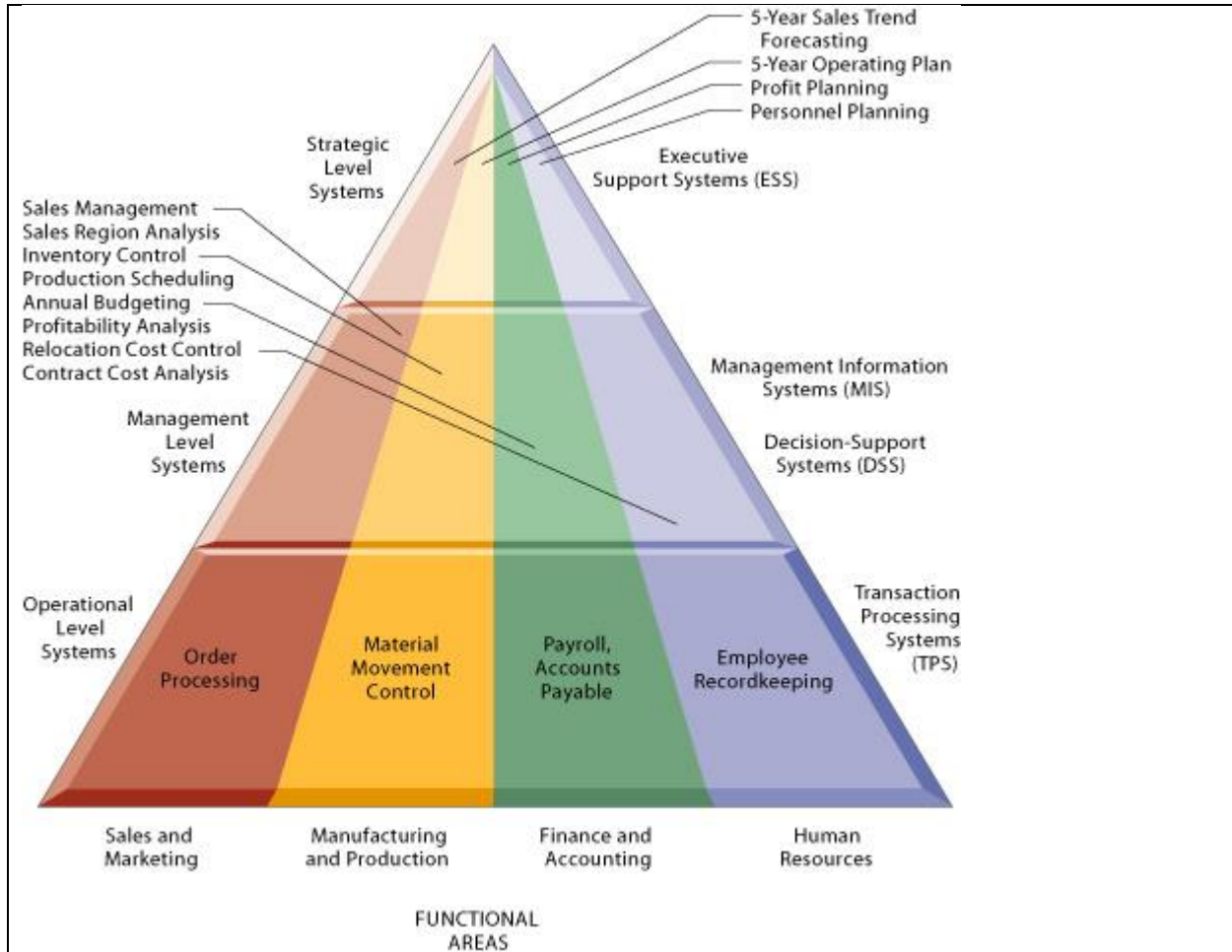
This feature allows you to create reports that order specific categories of information, from across multiple dimensions, by selecting specific criteria. With the help of ranking report an organization get an idea of what aspect is going good and what aspect is going bad on their business. An organization can take critical decision by analyzing ranking report which helps them to change their state. Ranking reports let you view the best and worst performing aspects of your business. For example, you could create a report that ranks your 10 best-selling products, regions or sales people. (Features and Conrad, 2019)

Compare and contrast a range of information systems and technologies that can be used to support organizations at operational, tactical and strategic levels.

For the last twenty years, different kinds of information systems are developed for different purposes, depending on the need of the business. In today's business world, there are varieties of information systems such as transaction processing systems (TPS), office automation systems (OAS), management information systems (MIS), decision support system (DSS), and executive information systems (EIS), Expert System (ES) etc. Each plays a different role in organizational hierarchy and management operations. This study attempts to explain the role of each type of information systems in business organizations. (I, 2019)

Four Major Types of Systems

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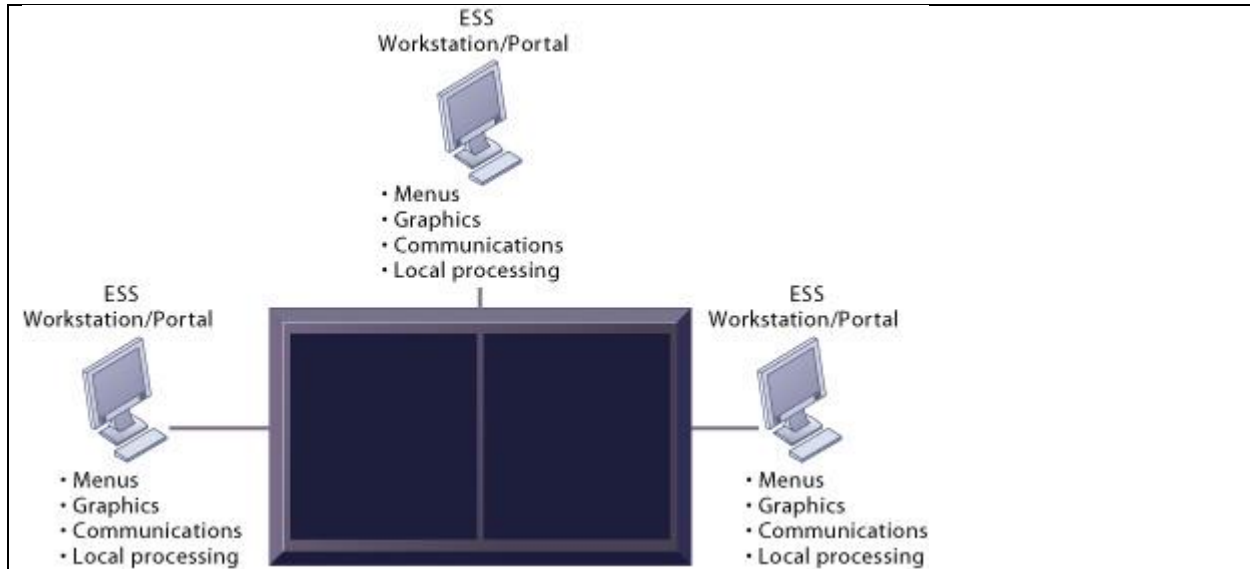


Above figure shows the specific types of information systems that correspond to each organizational level. The organization has executive support systems (ESS) at the strategic level; management information systems (MIS) and decision-support systems (DSS) at the management level; and transaction processing systems (TPS) at the operational level. Systems at each level in turn are specialized to serve each of the major functional areas. Thus, the typical systems found in organizations are designed to assist workers or managers at each level and in the functions of sales and marketing, manufacturing and production, finance and accounting, and human resources. The four major information support systems are discussed below:

Executive support system (ESS)

Executive Information Systems have been developed, which provide rapid access to both internal and external information, often presented in graphical format, but with the ability to present more detailed underlying data if it is required.

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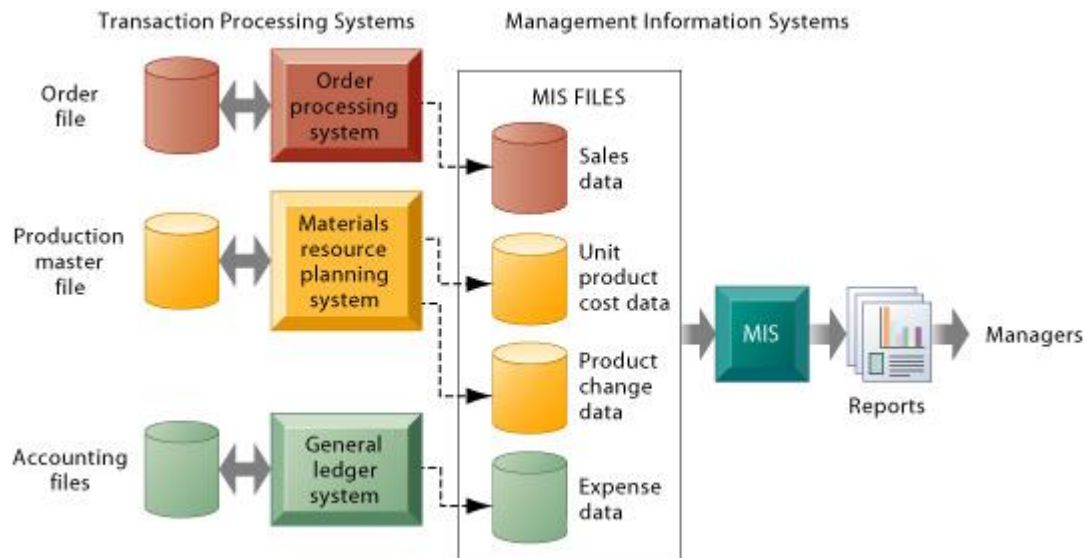


Senior managers use executive support systems (ESS) to help them make decisions. ESS serve the strategic level of the organization. They address nonroutine decisions requiring judgment, evaluation, and insight because there is no agreed-on procedure for arriving at a solution. Executive information systems provide critical information from a wide variety of internal and external sources (from MIS, DSS, and other sources tailored to the information needs of executives) in easy-to-use displays to executives and managers. An EIS provides senior managers with a system to assist in taking strategic and tactical decisions. An executive information system is designed to generate information that is abstract enough to present the whole company operation in a simplified version to satisfy senior management

Management information system (MIS)

Management information systems are a kind of computer information systems that could collect and process information from different sources in institute decision making in level of management. Management information systems Provide information in the form of pre-specified reports and displays to support business decision making. The next level in the organizational hierarchy is occupied by low level managers and supervisors. This level contains computer systems that are intended to assist operational management in monitoring and controlling the transaction processing activities that occur at clerical level. Management information systems (MIS) use the data collected by the TPS to provide supervisors with the necessary control reports. Management information system is type of information systems that

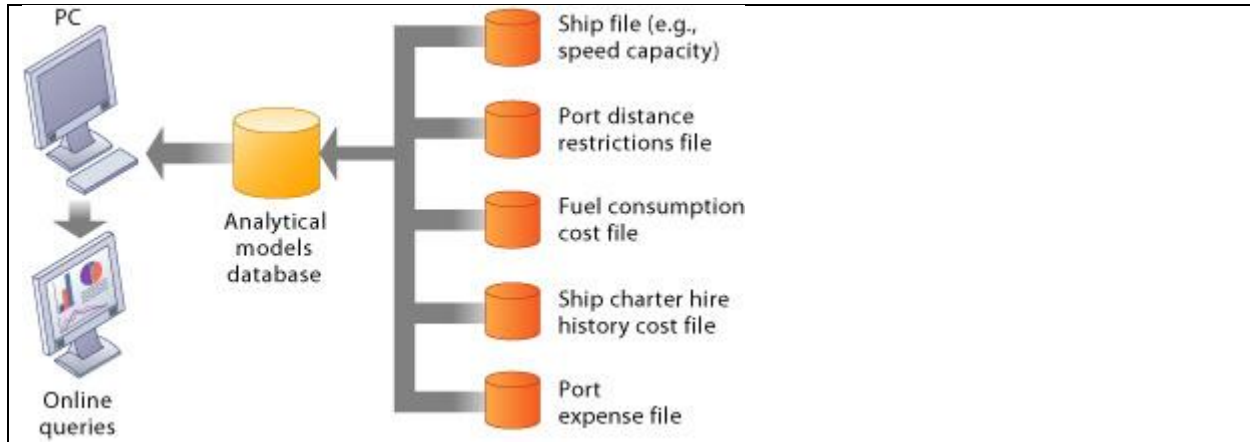
take internal data from the system and summarized it to meaningful and useful forms as management reports to use it to support management activities and decision making.



Above figure shows how a typical MIS transforms transaction level data from inventory, production, and accounting into MIS files that are used to provide managers with reports.

Decision Support Systems (DSS)

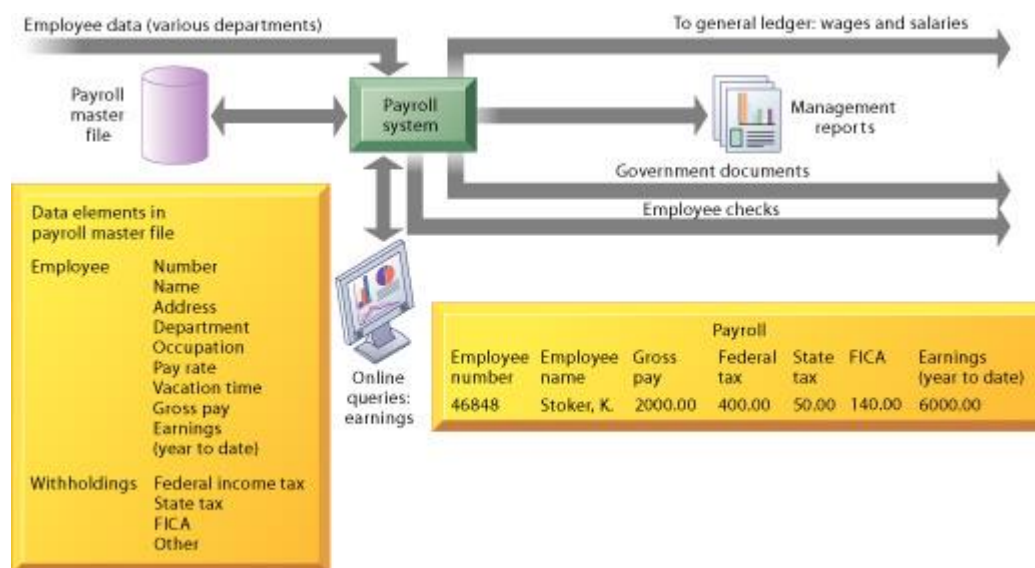
A Decision Support System is a computer-based system intended for use by a particular manager or usually a group of managers at any organizational level in making a decision in the process of solving a semi structured decision. Decision Support Systems are a Kind of organizational information computerize systems that help manager in decision making that needs modeling, formulation, calculating, comparing, selecting the best option or predict the scenarios. Decision-support systems are specifically designed to help management make decisions in situations where there is uncertainty about the possible outcomes of those decisions. A decision support system is a computer-based information system that assists managers in making many complex decisions, such as decisions needed to solve poorly defined or semi structured problems.



Above figure illustrates the DSS built for this company. The system operates on a powerful desktop personal computer, providing a system of menus that makes it easy for users to enter data or obtain information.

Transaction support system (TPS)

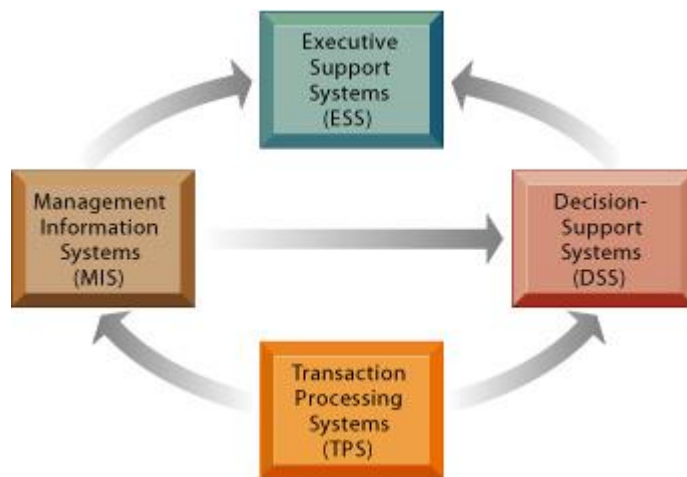
Transaction processing systems (TPS) are the basic business systems that serve the operational level of the organization. A transaction processing system is a computerized system that performs and records the daily routine transactions necessary to the conduct of the business. At the lowest level of the organizational hierarchy we find the transaction processing systems that support the day-to-day activities of the business.



Above figure depicts a payroll TPS, which is a typical accounting transaction processing system found in most firms. A payroll system keeps track of the money paid to employees. The master

file is composed of discrete pieces of information (such as a name, address, or employee number) called data elements. Data are keyed into the system, updating the data elements. The elements on the master file are combined in different ways to make up reports of interest to management and government agencies and to send paychecks to employees. These TPS can generate other report combinations of existing data elements. (Paginas.fe.up.pt, 2019)

Relationship of system to one another



Above figure describe how the systems serving different levels in the organization are related to one another. TPS are typically a major source of data for other systems, whereas ESS are primarily a recipient of data from lower-level systems. The other types of systems may exchange data with each other as well. Data may also be exchanged among systems serving different functional areas. For example, an order captured by a sales system may be transmitted to a manufacturing system as a transaction for producing or delivering the product specified in the order or to a MIS for financial reporting. (UKEssays.com, 2019)

Characteristics comparisons of different information support system.

Types of system	Information inputs	Processing	Information outputs	Users
Executive information system (EIS)	Aggregate data; external, internal	Graphics; stimulations; interactive	Projections; responses to queries	Senior managers

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Decision support system (DSS)	Low volume data or massive databases optimized for data analysis; analytic models and data analysis tools.	Interactive; stimulations; analysis	Special reports; decision analyses; responses to queries	Professionals; staff managers
Management information system (MIS)	Summary transaction data; high volume data; simple model	Routine reports; simple models; low-level analysis	Summary and exception reports.	Middle managers
Transaction processing system	Transaction; events	Sorting; listing; merging; updating	Detailed reports; lists; summaries	Operative personnel; supervisors

Summary

There are different types of information systems used in business organizations. transaction processing systems designed to records the daily routine transactions necessary to the conduct of the business. Office automation systems designed to support office tasks. Process control systems designed to Monitor and control industrial or physical processes. Management information system (MIS) basically concerned with converting data from internal sources into information which is then communicated to managers at all the levels, in all functions to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible. Decision support systems designed to help manager in decision making that needs modeling, formulation, calculating, comparing, selecting the best option or predict the scenarios. Executive information systems provide senior managers with a system to assist in taking strategic and tactical decisions. Expert system program designed to emulate human

reasoning. This study attempts to clarify the role of each type of information systems in business organizations.



Hence, in this part I have discussed different types of support available for decision making, key features of business intelligence functionality and different information systems and technology that used to support to support organization at operational, tactical and strategic levels.

Part 3

Prepare a report which includes the followings.

Section1

- In order to determine (establish) the concept what business intelligence is, illustrate the concept with reference to specific examples. And, list out tools and techniques associated with it.
- Design a business intelligence tools/apps/program that can perform specific task to support problem solving or decision making for your organization. Ensure how the design is user friendly and has a functional ability.
- Write a few concluding paragraphs to provide a critical review of the design.

Section 2

- Discuss how business intelligence tools can contribute to effective decision-making.
- Explore the legal issues involved in the secure exploitation of business intelligence tools.
- Conduct small survey to identify specific examples of organizations that have used business intelligence tools to enhance or improve their operations.
- Evaluate how organizations could use business intelligence to extend their target audience.

Introduction

Being founder as well as Business analyst of IT company I should have very good knowledge about the BI to run the business in profitable order. So, on this part of task I am going to produce a report which determine, with examples, what business intelligence is and the tools and techniques associated with it as well as I am going to design a business intelligence tool, application or interface that can perform a specific task to support problem-solving or decision-making at an advanced level also I am going to provide a critical review of the design in terms of how it meets a specific user or business requirement and identifying what customization has been integrated into the design and also, I am going to discuss how business intelligence tools can contribute to effective decision-making, I am also going to explore the legal issues involved in the secure exploitation of business intelligence tools as well as I am going to conduct small survey to identify specific examples of organizations that have used business intelligence tools to enhance or improve their operations and finally I am going to evaluate how organizations could use business intelligence to extend their target audience.

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“Demonstrating the uses and implementation of business intelligence tools and technologies”



SUBMITTED BY:

Bikash Dhakal

SUBMITTED TO:

BDK Technology Pvt. Ltd.

25th June 2019

Bikash Dhakal
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Executive summary

The main motive of using business intelligence is for faster and more accurate business reporting, to make better business decision, to provide satisfaction to their user, to increase business productivity, etc. BI has a direct impact on organization's strategic, tactical and operational business decisions. In order to run the business in intelligence way it is much more necessary to have the concepts about the tools and techniques associated with BI. Being founder as well as Business analyst of IT company I should have very good knowledge about the BI to run the business in profitable order. Here, I am going to determine, with examples, what business intelligence is and the tools and techniques associated with it as well as I am going to design a business intelligence tool, application or interface that can perform a specific task to support problem-solving or decision-making at an advanced level also I am going to customize the design to ensure that it is user-friendly and has a functional interface and finally I am going to provide a critical review of the design in terms of how it meets a specific user or business requirement and identifying what customization has been integrated into the design and going to discuss how business intelligence tools can contribute to effective decision-making, I am also going to explore the legal issues involved in the secure exploitation of business intelligence tools as well as I am going to conduct small survey to identify specific examples of organizations that have used business intelligence tools to enhance or improve their operations and finally I am going to evaluate how organizations could use business intelligence to extend their target audience.

Scope

- Helps in the measurement of performance and progress toward business goals.
- Initiates quantitative analysis through predictive analytics, predictive modeling, business process modeling and statistical analysis.
- Helps in obtaining goals of the organization.

Objectives

- To determine the concept what business intelligence is, illustrate the concept with reference to specific examples.
- To design a business intelligence tools/apps/program that can perform specific task to support problem solving or decision making for your organization.
- To provide a critical review of the design.

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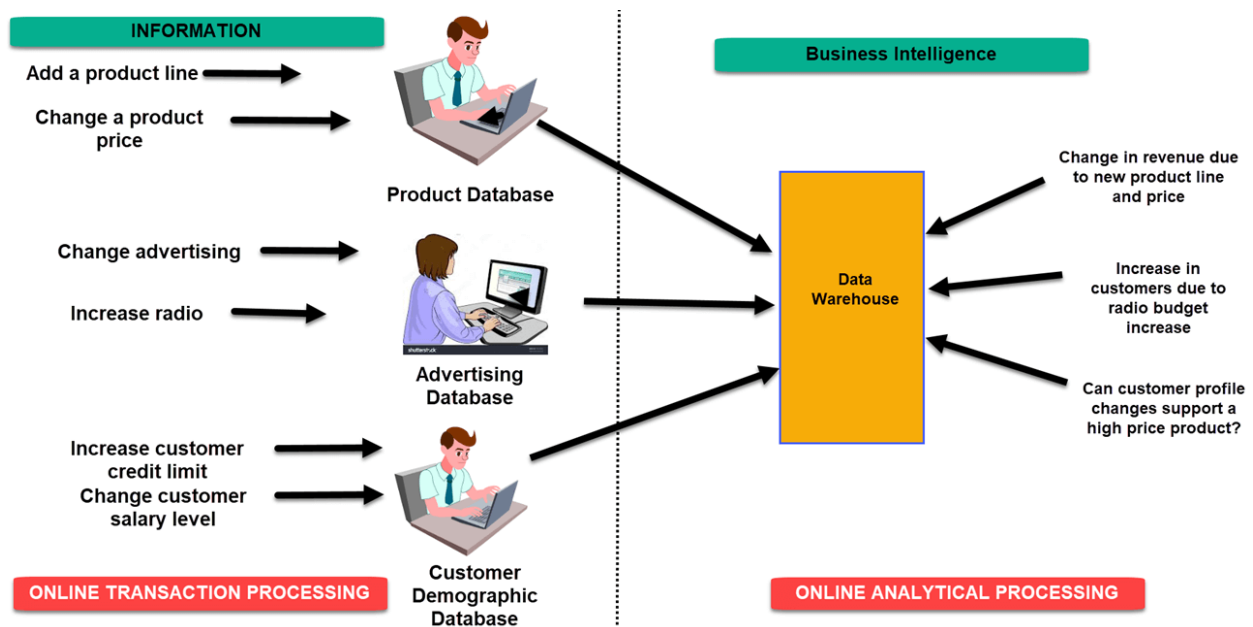
- To discuss how business intelligence tools can contribute to effective decision-making.
- To explore the legal issues involved in the secure exploitation of business intelligence tools.
- To Conduct small survey to identify specific examples of organizations that have used business intelligence tools to enhance or improve their operations.
- To evaluate how organizations could use business intelligence to extend their target audience.

Introduction

The term business intelligence originated in 1989; prior to that many of its characteristics were part of executive information systems. Business intelligence emphasizes analysis of large volumes of data about the firm and its operations. It includes competitive intelligence (monitoring competitors) as a subset. In computer-based environments, business intelligence uses a large database, typically stored in a data warehouse or data mart, as its source of information and as the basis for sophisticated analysis. Business Intelligence also can be defined as a technologies and strategies used for collection and analysis of raw data, then converting it to meaningful information for business actions. The main motive of using business intelligence is for faster and more accurate business reporting, to make better business decision, to provide satisfaction to their user, to increase business productivity, etc. BI has a direct impact on organization's strategic, tactical and operational business decisions. BI supports fact-based decision making using historical data rather than assumptions and gut feeling. (Guru99.com, 2019)

Examples of Business intelligence

Example 1:



Above figure illustrates what is business intelligence basically. It shows process of collecting data and analysis of data in systematic steps. In an Online Transaction Processing (OLTP) system information that could be fed into product database could be add a product line and change a

product price. Correspondingly, in a Business Intelligence system query that would be executed for the product subject area could be did the addition of new product line or change in product price increase revenues.

In an advertising database of OLTP system query that could be executed by Changed in advertisement options and Increase radio budget. In BI system query that could be executed would be how many new clients added due to change in radio budget. In OLTP system dealing with customer demographic data bases data that could be fed would be increased customer credit limit and changed in customer salary level.

Correspondingly in the OLAP system query that could be executed would be can customer profile changes support higher product price.

Example 2:

A bank gives branch managers access to BI applications. It helps branch manager to determine who are the most profitable customers and which customers they should work on. The use of BI tools frees information technology staff from the task of generating analytical reports for the departments. It also gives department personnel access to a richer data source. So, business intelligence is very useful technique in 21st century business modality.

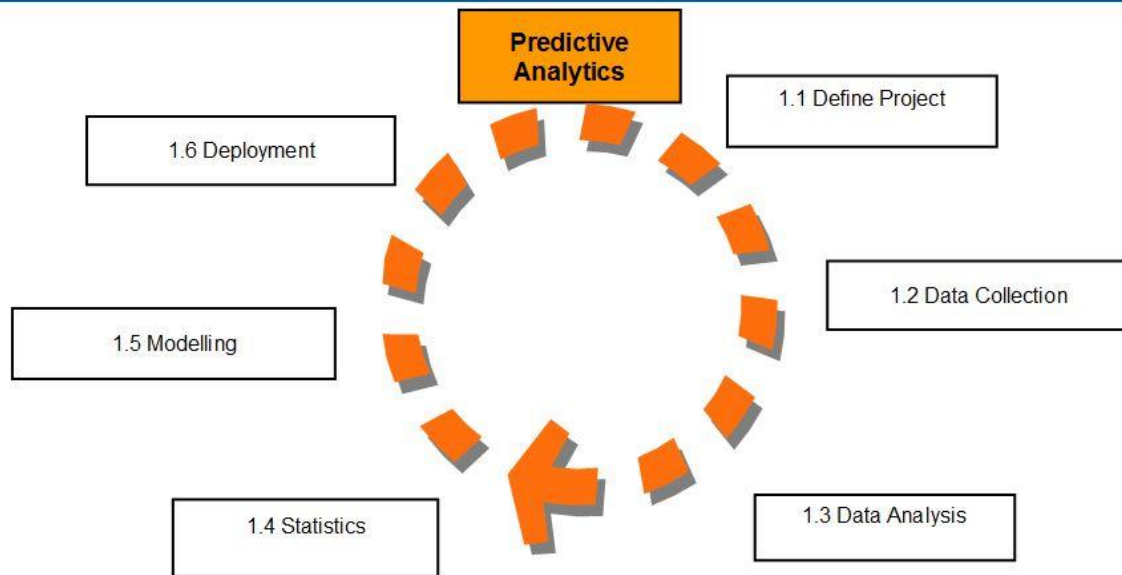
Tools and techniques associated with Business Intelligence

BI has a direct impact on organization's strategic, tactical and operational business decisions. BI supports fact-based decision making using historical data rather than assumptions and gut feeling. BI tools perform data analysis and create reports, summaries, dashboards, maps, graphs, and charts to provide users with detailed intelligence about the nature of the business. Business intelligence tools can be a great resource to improve your business.

With the rise of data in today's digital age, business intelligence tools have exploded, making data and analytics assessable for more than just analysts. What is business intelligence? Business intelligence technology is a tool used to analyze and present information to help decision makers make more informed and smart business decisions and strategies. Following are some tools and techniques available in BI.

Predictive Analytics Tool

BI solution majorly helps you to analyze the data and trends by analyzing your previous data sets. But one capability which a BI solution must have is the predicting capabilities, it enables the decision makers to predict the market trends, and other business requirements like sales, staffing, market trends etc. With the use of predictive analytics, it helps an organization to be proactive, forward looking, retain and grow their customer with improving business operation on their business



Predictive analytics is reflected in today Big Data Trends, and its tools are essentially Big Data Technologies. The market demand for predictive analytics software corresponds with a closely related toolset, Big Data Analytics Tools. It helps optimizing marketing campaigns, improving operations, fraud detection and reduce risks. For example, retail is Probably the largest sector to use predictive analytics, retail is always looking to improve its sales position and forge better relations with customers. One of the most ubiquitous examples is Amazon’s recommendations. When you make a purchase, it puts up a list of other similar items that other buyers purchased.

Much of this is in the pre-sale area – with things like sales forecasting and market analysis, customer segmentation, revisions to business models, aligning IT to business units, managing inventory to account for seasonality, and finding best retail locations. But it also acts post-sale,

acting to reduce returns, get the customer to come back and extend warranty sales. For example, the financial industry could use it to calculate investment risks and see where the market can go while marketers use it to try to understand consumers' buyer's journeys and where the most optimal location is to set up call to actions. Predictive analytics tools can help you understand the future by learning from the past.

Multi-Cloud Strategy

Cloud-based technology has developed significantly in recent years and has greatly impacted the business world. Today, many companies are moving towards it due to its accessibility and easy to use attributes. Gartner forecasted that by 2019, cloud-based strategies will become the primary strategy for about 70% of companies. Cloud-based technology offers reduced risk and more flexibility that can allow your teams to collaborate easily. If you haven't yet, consider leveraging a cloud-based strategy this year. So, more businesses will be shifting to this technology. As per their predictions within a couple of years, the spending on cloud-based analytics will grow 4.5 times faster. (Techfunnel, 2019)

OLAP (Online Analytical Processing)

OLAP (Online Analytical Processing) is the technology behind many Business Intelligence (BI) applications. OLAP is a powerful technology for data discovery, including capabilities for limitless report viewing, complex analytical calculations, and predictive "what if" scenario (budget, forecast) planning. OLAP performs multidimensional analysis of business data and provides the capability for complex calculations, trend analysis, and sophisticated data modeling. It is the foundation for many kinds of business applications for Business Performance Management, Planning, Budgeting, Forecasting, Financial Reporting, Analysis, Simulation Models, Knowledge Discovery, and Data Warehouse Reporting. OLAP enables end-users to perform ad hoc analysis of data in multiple dimensions, thereby providing the insight and understanding they need for better decision making. By using OLAP technique a company that can take advantage and turn it into shared knowledge, accurately and quickly, will surely be better positioned to make successful business decisions and rise above the competition. (OLAP.com, 2019)

Data Mining

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Business Intelligence is the ability to transform data into information and information into knowledge. It is the best way to optimize the decision-making process in business. In this sense, Business Intelligence is a set of methodologies, applications and technologies to collect, refine and transform this data from transactional systems and unstructured information (internal and external to the company), in structured information for direct exploitation or for analysis.

Data mining tools provide better customers relationship management, too, through mining real habits and diverse patterns. In resume, Business Intelligence strategy should be used to apply the knowledge to maximize the benefits of the company.

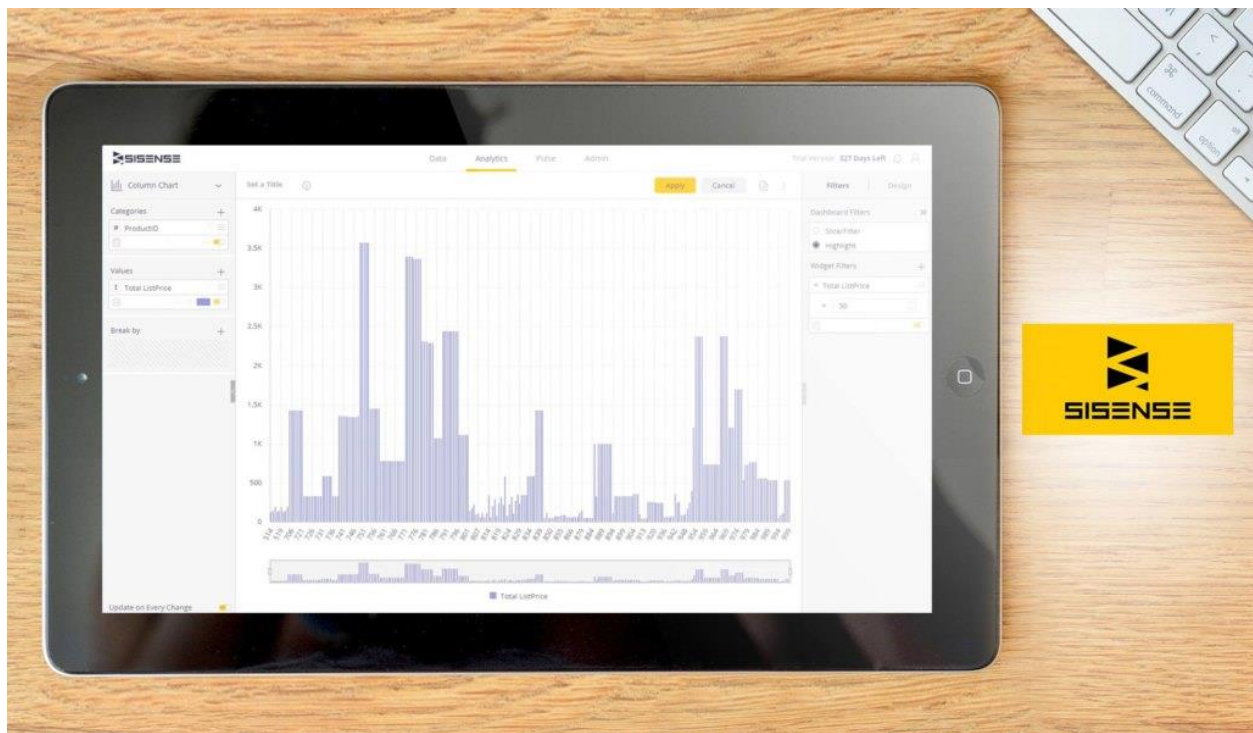
Thus, Business Intelligence acts as a strategic factor for a business, providing insider information to respond to business problems: entering new markets, financial control, cost optimization, production planning, analysis of customer profiles, profitability. That is how data mining is used to generate Business Intelligence.

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For example, the potential benefits of Business Intelligence programs include accelerating and improving decision making; optimizing internal business processes; increasing operational efficiency; driving new revenues; and gaining competitive advantages over business rivals. BI systems can also help companies identify market trends and spot business problems that need to be addressed.

Data mining and Business Intelligence have made possible that various industries, such as sales and marketing, healthcare organization or financial institutions, could have a quick analysis of data and thereby, improving the quality of decision-making process in their industries. In addition, data mining technologies have bright future in business applications, making possible new opportunities by automated prediction of trends and behaviors in these businesses. So, how data mining is used to generate Business Intelligence is a concept that we will hear a lot during these years: it is the future. (Blog Geographica, 2019)

Sisense

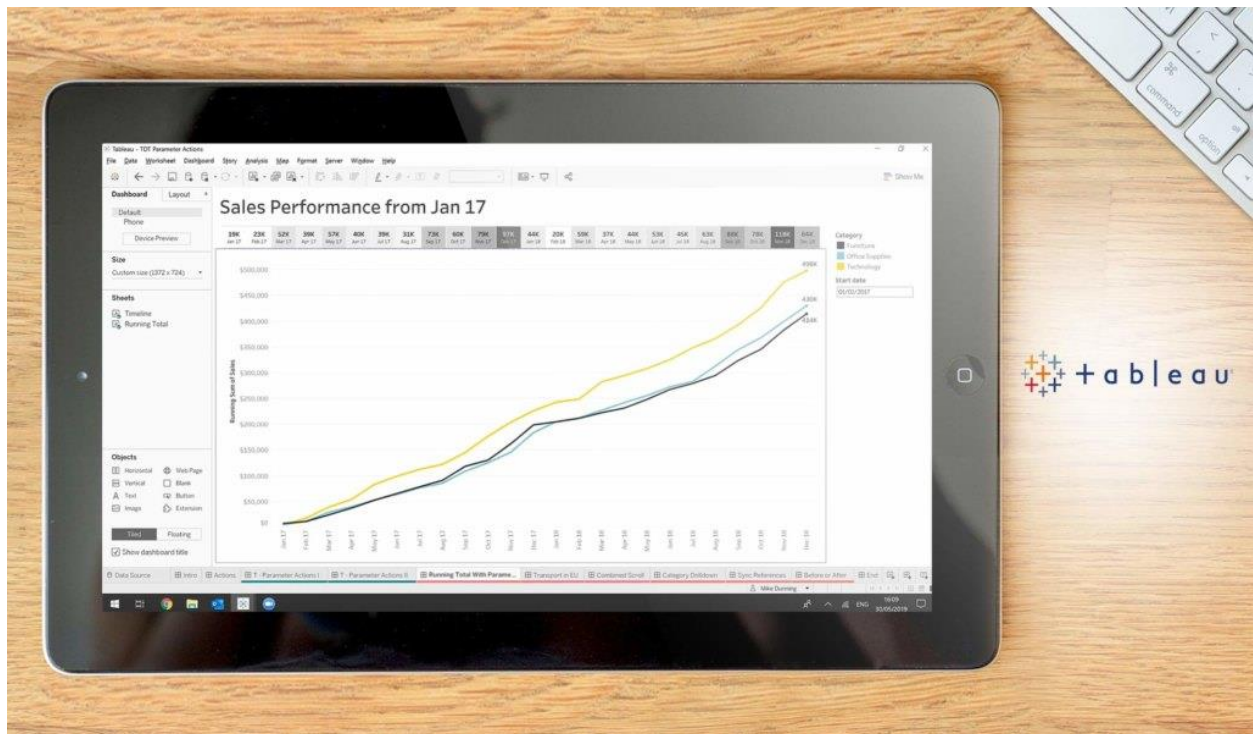


Sisense is one of the best BI software which enables businesses to collate, analyze and view data, which can be used in making sound business decisions and to come up with strategic plans. The tool aggregates all needed information into a singular dashboard with its drag-and-drop

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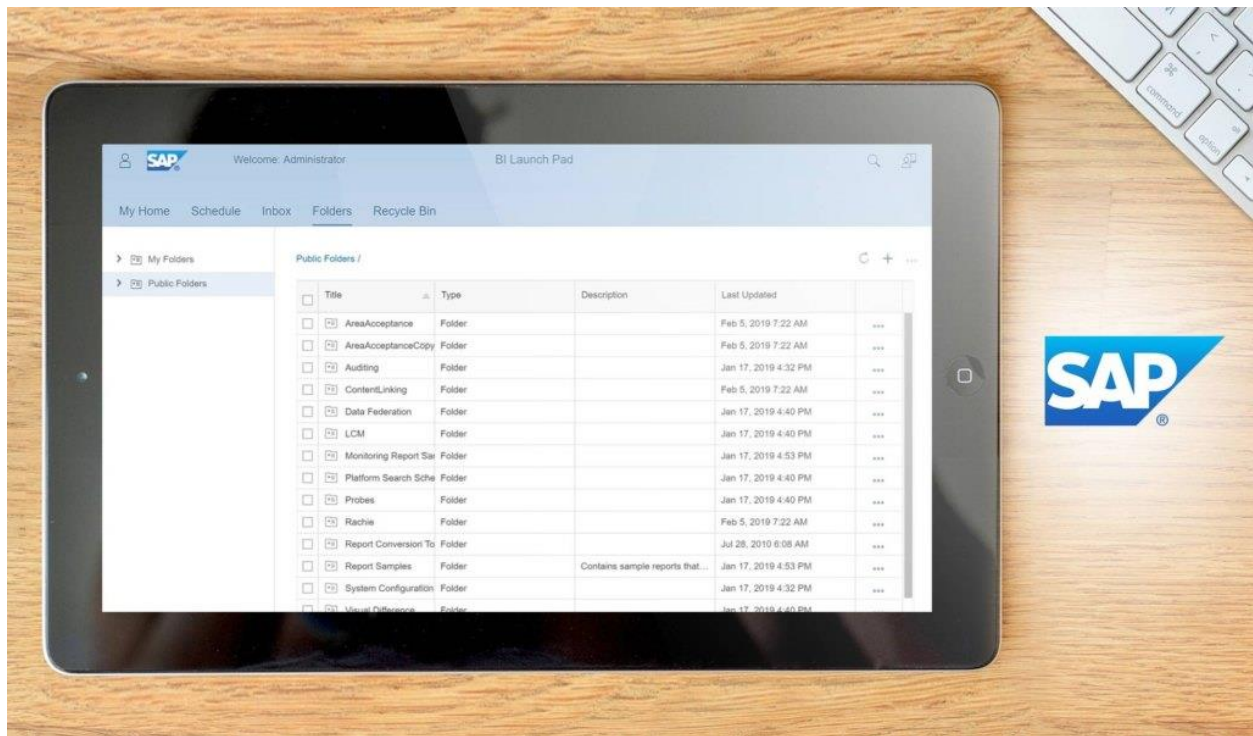
functionality and provides you with a granular view of your data. Users can come up with reliable analysis using visual reports as a basis, making the process far easier and hassle-free. The platform's interface is easy to use, allowing users to learn system navigation quickly and easily. Sisense includes various unique features such as in-chip engine and proprietary technology, single-stack architecture, optimal use of computational resources, consolidation of charts from multiple sources and minimal TOC. (Financesonline.com, 2019)

Tableau



In business intelligence Tableau aids businesses in visualizing and making sense of data. It enables organizations to connect, visualize and share data through PC or iPad. Users can easily create dashboards, publish and even share them with colleagues, partners, and customers without the need for programming knowledge. Apart from that the different types of data sources which tableau support in business filed are MS Excel, My SQL, Salesforces, Oracle, etc. Tableau Desktop (for everyone), Tableau Server (analytics for organizations) and Tableau Online (hosted analytics for organizations) are the three types of product that are offered by Tableau software. Tableau includes several unique features like a pioneer of drag-and-drop analytics, dashboard-to-dashboard interactions, SAML authentication, mobile web authoring, various runtime versions available etc.

SAP Business Intelligence

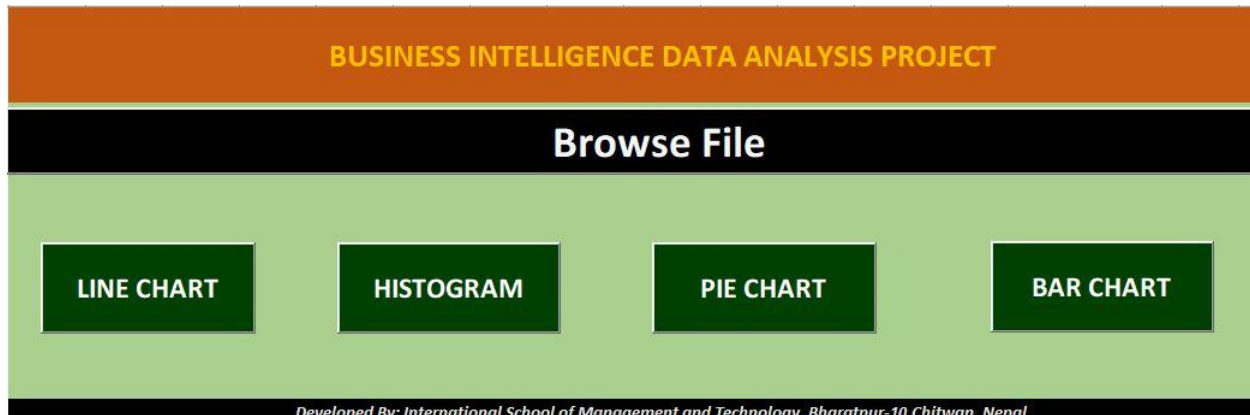


SAP Business Intelligence is a business Intelligence tool which is use for the purpose of reporting and analytics of data for the business person. With the help of SAP Business Intelligence, a business user can create reports and perform processes for data analysis. Reporting and Analysis, data visualization and Analytics Applications, office integration and mobile analytics are the different types of platform provided by SAP Business Intelligence for users. In addition, SAP Business Intelligence is equipped with open API features, making it a highly configurable platform that can adapt to the specific needs of any business. SAP business intelligence includes some most useful features like robust analytics, role-based dashboards, large scale analytics, easy report sharing, seamless integrations with Microsoft office, etc.

Design a business intelligence tool, application or interface that can perform a specific task to support problem solving or decision-making at an advanced level.

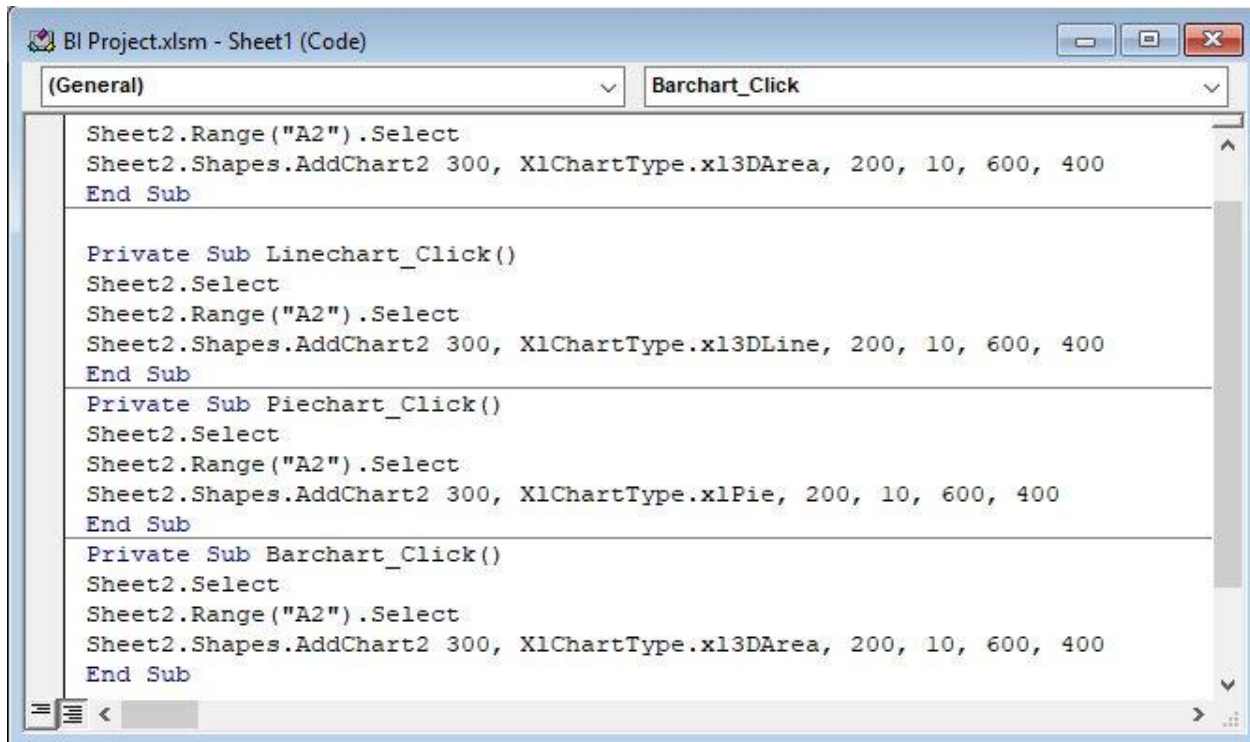
Business intelligence is known for its intelligence in analyzing, solving and understanding the problem in a business and takes the business to higher level. Tools such as Tableau, Looker, Micro strategy, etc. are used in business filed and as per the requirement of the task I have designed an interface, so that I can perform problem solving task or decision-making at an advance level.

Designed Interface



With the use of MS-excel, I have created an interface based on scenario which is for the data analysis of IT Company. In this interface I have used different types of button to create menu, to represent them as Line Chart, Histogram, Pie Chart, Bar Chart and each of these buttons are linked with data, on clicking on these button we can get result as per we have chosen.

Visual Basic Code

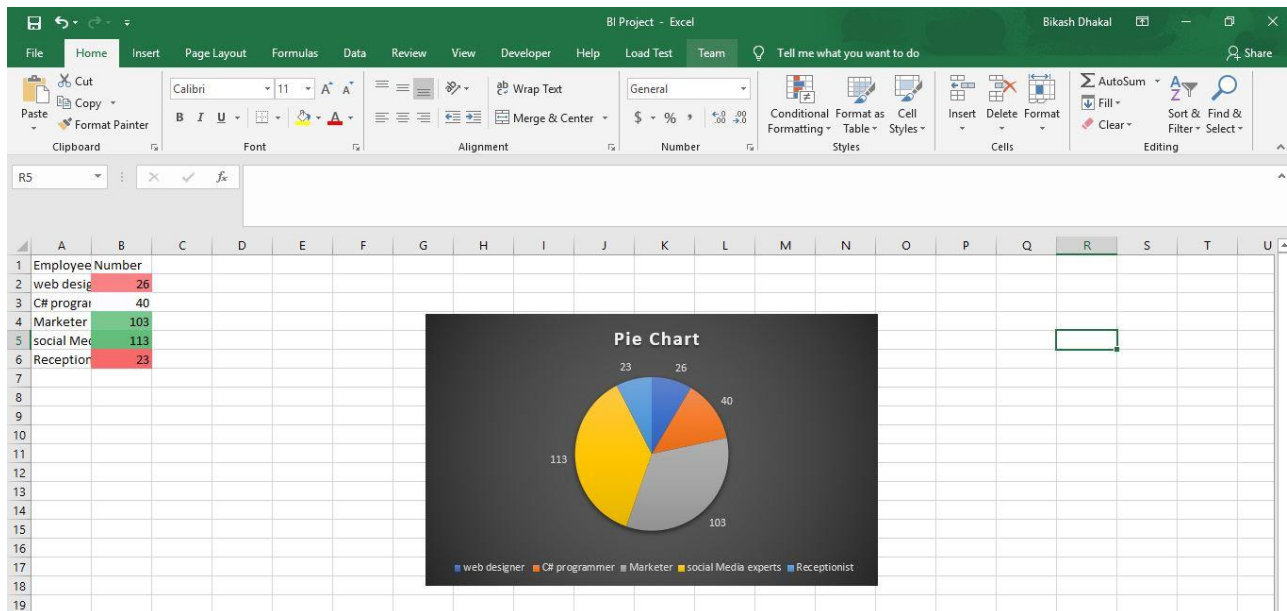
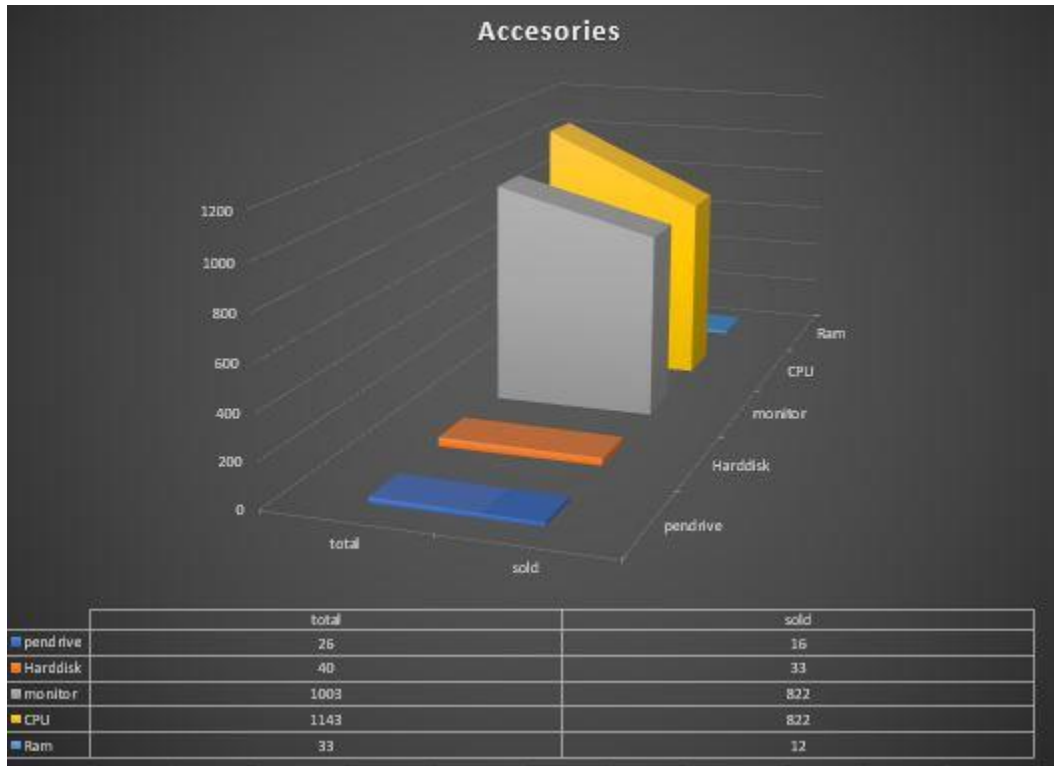


As seen on the above screenshot where I have done some coding which are necessary for the working of interface and to carry out activities there. I have different sheets for the input and output

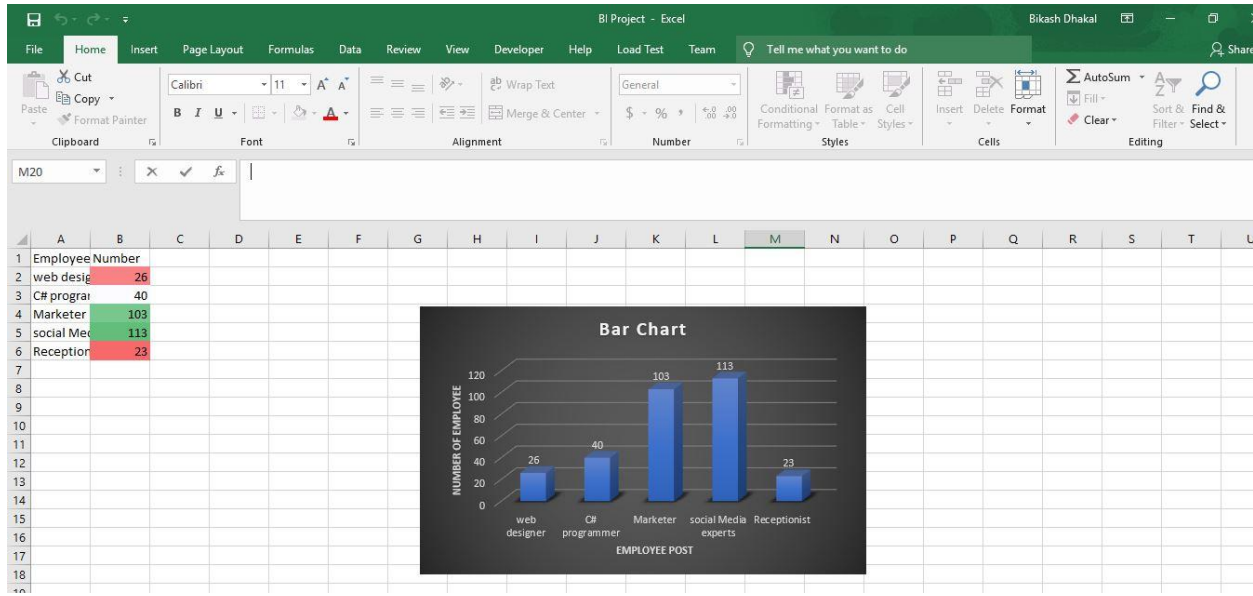
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of data. After that I have linked data with each and every button of interface as per required so that activities can be performed.

Different Charts



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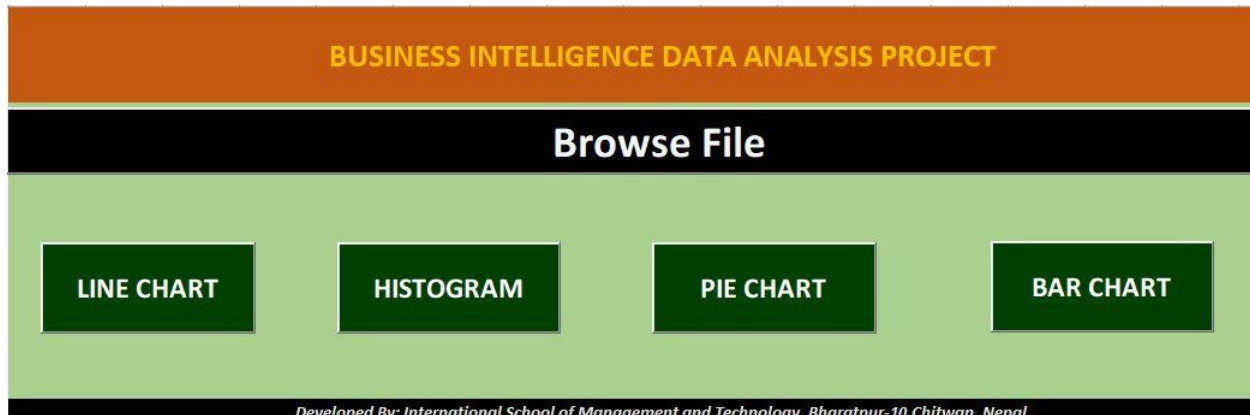


In above I have presented the Screenshots of business intelligence tool, application or interface that can perform a specific task to support problem-solving or decision-making at an advanced level. In order to develop these tools, I have used excel. Using the developer function available in excel I have designed this application. With the help of this application one can easily make the decision according to his/her need and can uplift their business status. This application is much more user friendly. It is easy to do. And the output from this tool will be hundred percent effective. With the use of these tools it will be easy for company to analysis and visualize their data and data can be managed properly. Apart from that they can make effective plan with proper decision making so that development of business can be done easily.

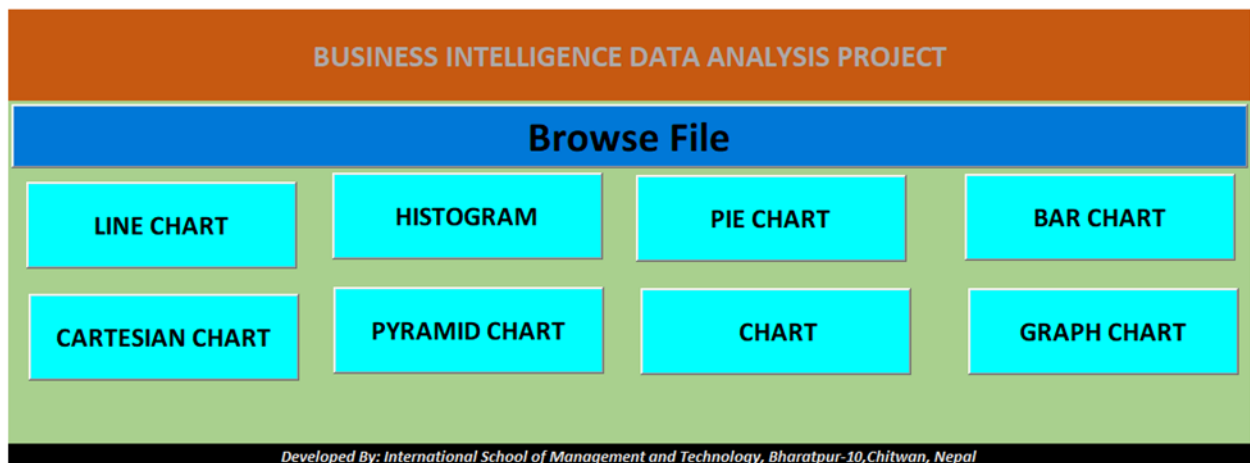
Customize the design to ensure that it is user-friendly and has a functional interface.

Here, I am going to present my initial design and then customized design which includes more functionalities so that user can easily use this tool. Apart from that they can modify interface as per their need and only little coding have to be done due to which they even, person having little knowledge on coding can easily do that. Also, they can provide their own company name on the interface. They can also analyze any types of data which helps them to make better plan and policies regarding to their organization and they can also this type of interface with other employee of an organization to save their time.

Initial Design



Customized Design



In the above customized design there are lot more functionality like: Line chart, Histogram, Pie chart, bar chart, cartesian chart, pyramid chart are presents, these functionalities can help an organization in decision making but in the initial design only few functionalities are presents so customized design is much simple than the initial design. Since more functionalities are present in customized design as well as all the tools and options are easily located in the customized tools. The presence of necessary tools will make sense to the average users and require minimal explanation for how to use the customized design. The customized design doesn't require internet access to operate so, there will less probability of malfunction. Since, customized design has all the features of user friendly and has a functional interface. So, it can be ensuring that customized design is user-friendly and has a functional interface. As we can see that the button of the interface is working properly as when I clicked on each and every button of the interface one by one which

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I have created, it directly sends me to another sheet of MS-excel where we can edit and use data as per our need to make any types of data analysis chart.

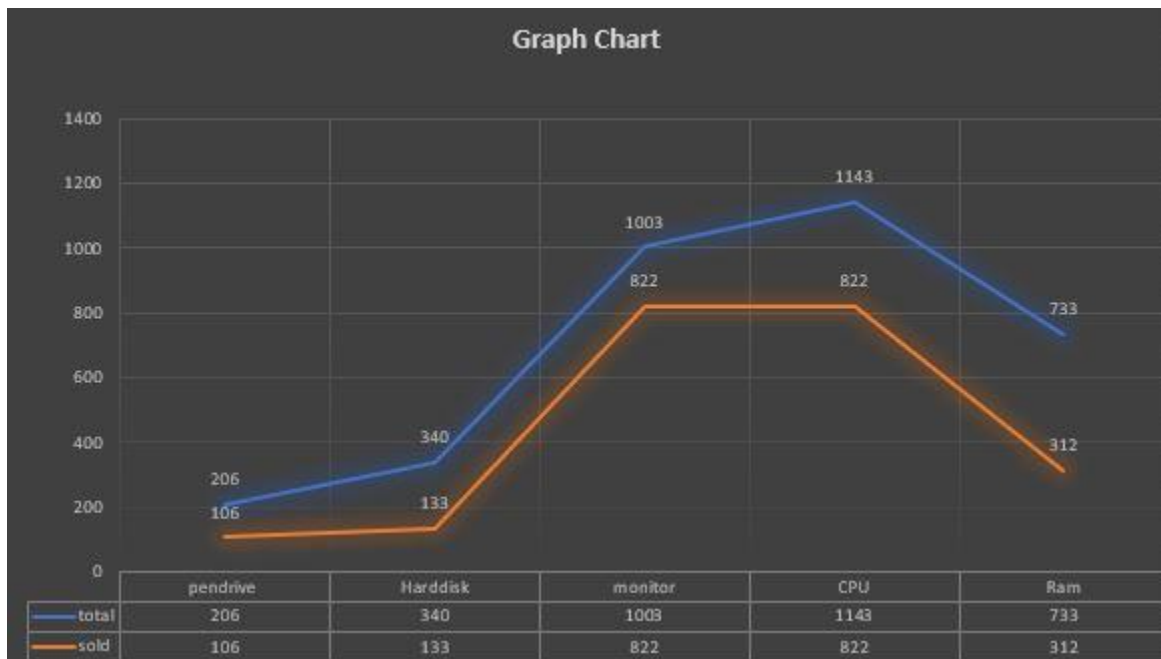
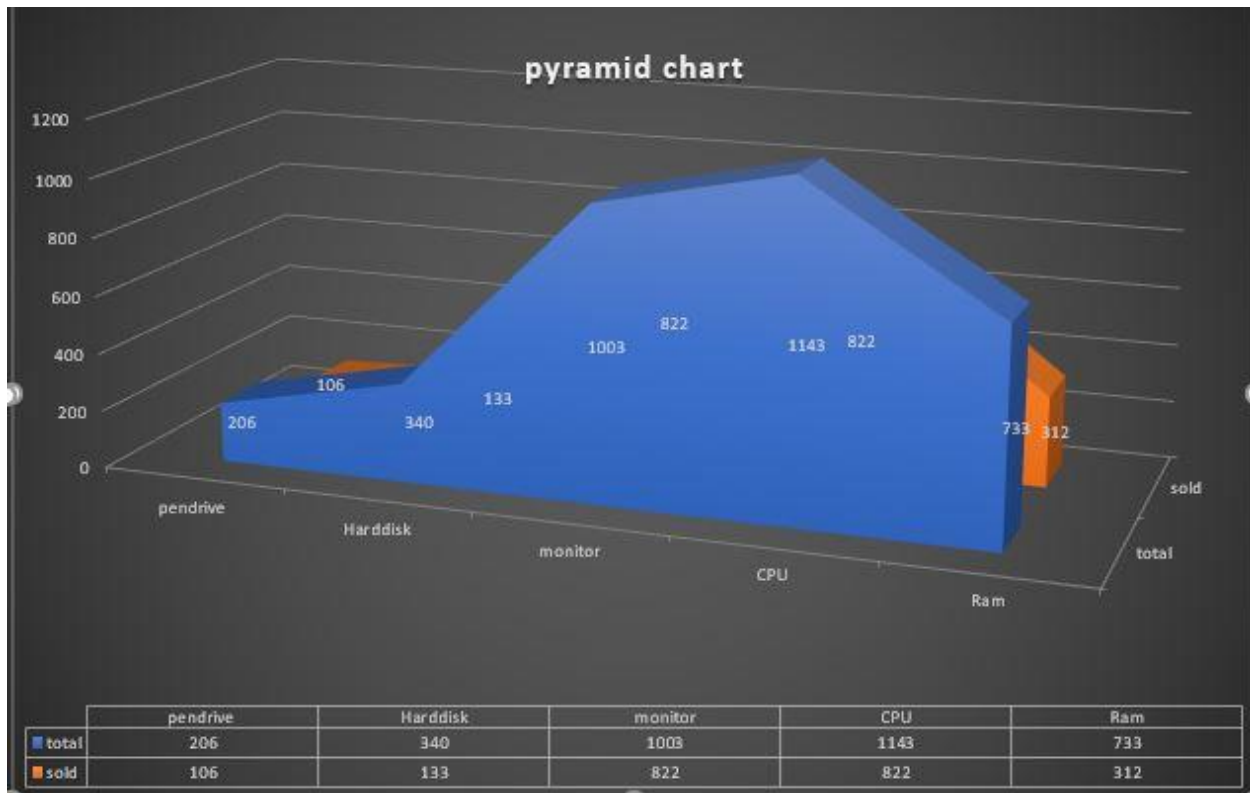
In order to be user friendly, the interface should contain the following kinds of the features:

- Simple: A user-friendly interface is not overly complex, but instead is straightforward, providing quick access to common features or commands.
- Clean: A good user interface is well-organized, making it easy to locate different tools and options.
- Intuitive: In order to be user-friendly, an interface must be making sense to the average user and should require minimal explanation for how to use it.
- Reliable: An unreliable product is not user-friendly, since it will cause undue frustration for the user. A user-friendly product is reliable and does not malfunction or crash.

Below are some of the types of chart that I have made with the use of data of IT company in order to check whether they were working or not. After doing all the test it is clear that the interface is working properly and we can use it for better decision making by simply analyzing the chart and plan can be made according to them for solving different types of problem of Company.

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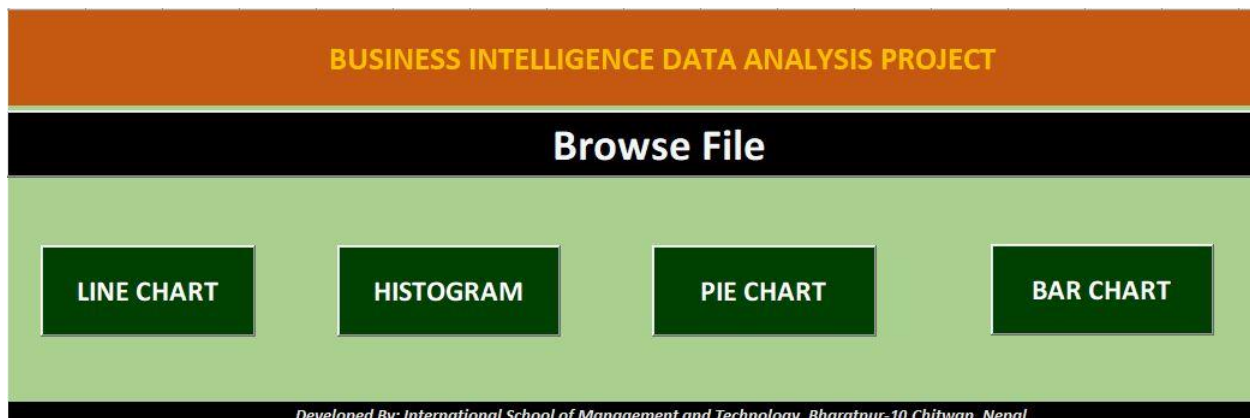
Screenshots of Customized functionality



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Provide a critical review of the design in terms of how it meets a specific user or business requirement and identify what customization has been integrated into the design.

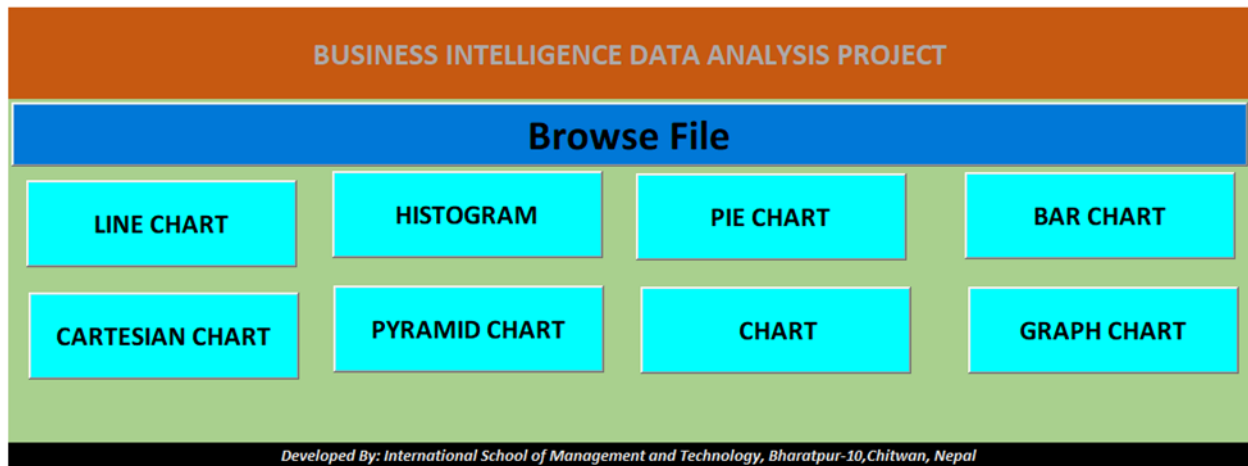
Business Intelligence can be defined as a technologies and strategies used for collection and analysis of raw data, then converting it to meaningful information for business actions. The main purpose of business intelligence is to support better decision making in business. Decision making is a very important and complex process. In order to aid decision makers, make the right choice, quantitative techniques are used that improve the overall quality of decision making. Also, decision making refers to making choices among alternative courses of action which may also include inaction. While it can be argued that management is decision making, half of the decisions made by managers within organizations ultimately fail. Therefore, increasing effectiveness in decision making is an important part of maximizing the effectiveness at work. For that purpose, I have designed the decision-making software with the help of the excel.



In above picture, I have created an interface based on scenario which is for the data analysis of IT Company. In this interface I have used different types of button to create menu, to represent them as Line Chart, Histogram, Pie Chart, Bar Chart and each of these buttons are linked with data, on clicking on these buttons we can get result as per we have chosen. With the use of this interface it helps user to make different types of chart such as Line Chart, Histogram, Pie Chart, Bar Chart, from which they can easily analyze and visualize their organizational data, so that better plan and policies can be made for the production and development of their organization. Also, it helps to find out and solve problem by of cost needed to buy different types of analyzing software and anyone can easily operate this interface due to which expert person is not needed. Apart from that

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they can make effective plan with proper decision making so that development of business can be done easily.



In above picture I have done some customization on interface. There I have added more button where we can make additional type of chart for better analysis of data. Apart from that I have make it more colorful. For the user's we have done some coding stuff and if they need any types of changes then they can do it or they can simplify do coding themselves if they need to modify the interface by adding some of the button for addition types of chart or any types of data analyzing method. However, these interfaces can only run on MS-excel so user must have that application on their device to run it. Customer can easily use these interface as they will help them to convert organizational data into graphical form which is easier to analysis. The main advantages of using this system is that: it is time saving, it enhances the effectiveness, it improves interpersonal communication, cost reduction, competitive advantage, increase decision maker satisfaction, etc. but there are few drawbacks of this software they are: it is only available for desktop users, information overload, overemphasis on Decision Making, devaluation of subjectivity, etc.

Hence, the decision-making software helps for the betterment of the organization, with the help of this software any task can be performed easily and the organization can move toward the path of success.

Discuss how business intelligence tools can contribute to effective decision-making.

Business Intelligence can be defined as a technologies and strategies used for collection and analysis of raw data, then converting it to meaningful information for business actions. The main purpose of business intelligence is to support better decision making in business. Business intelligence can provide a company with rich data resources that can help it achieve its business goals and targets by guiding timely strategic decisions. Interactions with customers through phone calls, email, online chat, etc; can be thoroughly analyzed by business intelligence gathering teams with the aim of getting vital insights that can be efficiently leveraged to provide immense value of the business in the long term.

Being in business ultimately means being in the business of decision making. Decisions play vital role in any kind of business, right decision made at right time and implemented in the right manner make all differences. This surely has become difficult. Things change very quickly, we are far more connected, and we need to act fast while grappling with far more complexity. There always seem to be too many things to keep tab on, and too few ways to make sense of it all. Studies show that the highest performing businesses leverage data effectively for decision making. (Advaiya, 2019)

Let's talk on the basis of particular scenario, as for the marketing department, it helps them grow the top line. It helps them analyze the results of their campaign and promotional yields. And it helps them fine-tune their spending to get better ROI. In the sales department, business intelligence helps them find the best path and best practices, the cost and length of customer acquisition, process improvement, and year-by-year analysis of turnover and sales. Business intelligence helps the human resource department track and manage things like employee turnover, attrition rate, recruitment process, and so on. Aside these, every other department within a company will benefit directly or indirectly from business intelligence. Correct usage of this strategy has shown excellent results across all sectors; be it e-commerce, media, non-profit organizations, healthcare, telecommunication, financial services, energy, and so on.

Business intelligence helps in decision making due to the multiple powerful elements it entails. These include interactivity, data visualization, database connection, mobile business intelligence,

predictive analytics, application integration, and ad hoc reporting. Now, let's take a closer look at each of these elements.

Decision-making tools use in business intelligence

Some of the effective decision that Business Intelligence tools helps to make are:

1. Interactivity

There should be a high level of interactivity between the dashboard and the difference report. For example, if a person is seeing and analyzing the total sales report, some interaction should be involved. This will help the person dig further into the report to figure out region wise sales, product wise sales, time period wise sales, and so on. The more the level of interaction, the more the volume of vital information that will be retrieved; and the better the decisions that will be made.

2. Data visualization

Having data visualized in a correct format is very important, as this facilitates better understanding of the data. For example, month-on-month sales could be represented in the form of a line graph rather than just words or verbal communication. Similarly, a component wise contribution could be best represented with a pie chart. Only when data is represented in the correct format can any useful insight be extracted from it.

3. Connection to databases

During a business intelligence procedure, the analysts in charge should be able to fetch information by connecting to different databases and web services, so that they will get access to the right information irrespective of its source. With the right information, helpful recommendations can be made that will help a company grow.

4. Predictive analytics

With the aid of historical data and high-end algorithms, certain predictions can be made, such as the likelihood of customers coming back for repeat business, expected revenue, expected region wise sales, machine failure, and so on. This can help a company to be proactive.

5. Application integration

A business intelligence tool should be easily integrated with your existing application or software regardless of whether it is developed in Java, C, Ruby, PHP, or any other platform.

6. Mobile business intelligence

With more and more workforce going mobile and handling tasks on the move, they need to have the right information on their mobile devices, such as smartphones and tablets. So, all reports dashboards and graphs should be compatible with mobile devices. (Profitableventure.com, 2019)

This is not limited to just a few roles in the organization. At all levels, people need to make decisions be accountable and confident. And if organizations can enable its employees with right tools chances are that they will get it right. Informed decision making relies on current and comprehensive information. Relevant information often resides in a multitude of sources—a plethora of databases, documents, spreadsheets, social networks, or web. Access to data models which bring together these sources in a meaningful manner allow decision makers to be equipped with timely information and be not blindsided. There can be too much information, though. Only through right visualization and summarization, we can understand and analyze it well generating insights as we draw conclusions. This happens when we are able to visualize information as relevant to the business model. Insightful tools can identify patterns, allow us to analyze scenarios, and plan better. These insights influence decisions in a powerful manner.

Hence, Powerful decision making is about being able to be confident and accountable. Decisiveness that works comes from being informed, insightful and impactful. The confidence that arises from comprehensive information, deep understanding and ability to implement, leads to results.

Explore the legal issues involved in the secure exploitation of business intelligence tools.

The business intelligence tools that are used for the effective decision making for a business can have some legal issues as well. As everything is digital, the tools used are also some sort of software. So, the software that are used should be used the authorized person so that one can make the use of the analyzed data. As these things are critical and are supposed to be kept safe. The privacy and security is also a legal issue. The privacy of the data should be maintained and the security should be great enough to protect the data. For this various tools and techniques are available. The tools are supposed to be used correctly and for the benefit of the business and not for personal use.

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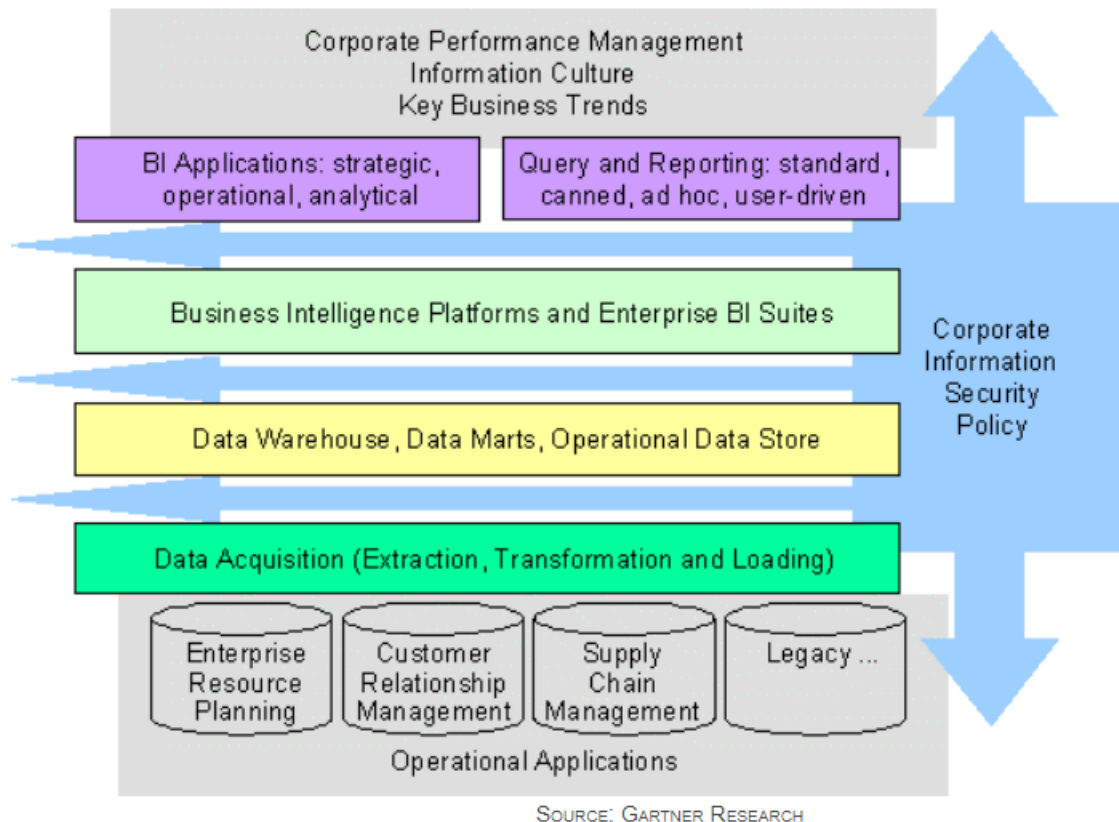


Figure 1: Security and the BI framework

Cyber security management:

(Forbes.com. 2019) Cybersecurity management can be described as everything an organization does to protect its information systems and computer networks from cyber-attacks, intrusions, malware and various types of data breaches. All businesses and government agencies are vulnerable to cyber-attacks that are growing in sophistication, as well as in number. Keeping networks running smoothly and protecting sensitive data takes constant monitoring and proper cybersecurity management. Business intelligence strategy has ushered in a new era for organizations the world over. A strong focus on data analysis has business leaders enjoying reduced costs, increased efficiency, and allaround better decision-making. When previously unheard-of ROI is touted in headlines regularly, it sparks more businesses to follow suit and jump on the BI movement. However, many do so without considering the full implications of business intelligence on data security.

Basically, the BI tools are used for the organizational, personal and legal/regulatory context to store the valuable data. For the organization like our IT company, we use the BI tools to store the data that we have obtain from the research and to analyze the data that we have stored. By doing this we can give competition to the many organization like ours. In one line it can be said that in most of the context BI tools are used to store and to protect the data.

Discovering BI Security Risk:

The mere act of producing, receiving, or housing data always poses a danger if left unsecured. Those incorporating BI strategy into their operations are at least more aware of their data, of what it is and where it is housed. But knowledge doesn't equate to security. The insights drawn from BI and data analysis are no longer unstructured 1s and 0s, but highly-sensitive easily understandable information, making it even more valuable to a hacker. If they can steal data that has already been analyzed, then they are in effect stealing the very keys to your success. Liken it to a car thief. Instead of just robbing a garage for a few spare parts, they're boosting Ferraris right off the dealership lot.

Methods to protect the Risk:

In every context there are different kinds of risk related to the BI and BI tools. The best methods to protect those risk for the organizational, personal and legal/regulatory context are as:

Encrypting and Segmenting Data Insights:

Given that BI insights are of extreme value to hackers, it's especially important to secure data once it's unraveled. Many base-level essential security practices must be adapted to business intelligence. Before insights are stored or sent to someone else, they must be encrypted. At the very least, this practice will drastically slow down a hacker from making sense of our private data. Today, it's possible to encrypt massive amounts of information quickly, proven by the IBM Z machine which can process 12 billion encrypted transactions per day. Neglecting encryption is a mistake, and one that may have contributed to the enormous Equifax breach. Additionally, thinking strategically about segmenting both our network and data storage. Siloed raw data is inefficient for analysis, but siloed data insights can be a safe practice. This way, should a hacker gain access to one section of our network, they won't have automatic access to every insight we have. It's the difference between mining for gold nuggets and strolling into a vault at Fort Knox.

Determining Access and Permissions:

BI insights are powerful, and power in the hands of the wrong user can be dangerous. While we may trust all our employees, it's not safe to give them all unlimited access to these insights. While employees should certainly see data results and trends that are applicable to their jobs, many of these items can be distributed to them from a supervisor or management. At the inception of a BI strategy, it's necessary to scrutinize every employee's role to determine the necessity of their access to BI tools and data. Even if we're certain a disgruntled worker won't try to wreak havoc and corrupt our data, if they don't truly need access to certain BI tools then they may neglect basic security measures (like updating their password) and serve as an unknowing invitation to a hacker.

Applying BI to Data Security:

Many business leaders understand that data can be used to learn significant insights about their companies, but the fact BI can be used to address security is often neglected. Data analysis can discover backdoors, network inconsistencies, or technological issues that hackers can take advantage of. With real time results, BI security strategy can monitor data as it enters or leaves your organization to discover any questionable activities immediately.

Policy Enforcement

In order to ensure the integrity of data, stakeholders should consider appointing a corporate czar to oversee data input. Low-quality data on the front end is not congruent with actionable BI.

Leadership Competencies

Leadership Competencies can be defined as a skills and behavior which helps in better performance in work. By using different types of business Intelligence tools in an organization, a person can make better business decision by analyzing current situation as well as increase leadership skills with which it helps better productivity of goods. Apart from that by choosing skilled leadership with the help of Business Intelligence tools an organization can set vision and strategy with which they can make better policies and risk in an organization can be solved with an ease. Also, if any types of modification, changes and monitoring of devices in an organization can be done without any types of problem.

Training and Support.

(Forbes.com. 2019) A strong BI platform will likely produce data sets that are far larger than those clients are used to examining. Law departments should expect their solution providers to help identify and develop analytics that are process-specific. This requires a thorough knowledge of the industry in order to put process into context. When it comes to understanding process-driven data, certain industries—and law is not one of them—are much better than others. Consider the world of finance, where financial institutions stay in business precisely because of data accuracy. Think of customer deposits, portfolio summaries, and earning reports, for example. Or public companies whose financial statements have to meet accounting standards in highly regulated industries. A solution provider familiar with the legal industry should also make sure not only that law departments get the information they are looking for, but also that they know what they want to accomplish with that information. The two are hardly the same, and solution providers play an important role as teachers and long-term strategic partners in this regard.

Conduct research to identify specific examples of organizations that have used business intelligence tools to enhance or improve operations.

For the research purpose I have used the sites visit as my source to identify specific examples of organization's that have used business intelligence tools to enhance or improve operations. The examples are as follows:

BD Technology centralized digital marketing reporting to increase conversions:

Company: BD Technology

Problem: Digital marketing reporting was time-intensive, manual, and inefficient.

Solution: For company BD technology, a centralized business intelligence solution saved the marketing analytics team 8-20 working hours per day by automating reporting processes. It also empowered the larger marketing team to craft regional, individualized digital marketing campaigns.

Based on aggregate analyses of customer behavior, HelloFresh created three buyer personas to guide their efforts. Being able to see and track real-time data means the team can react to customer

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behaviors and optimize marketing campaigns. As a result, they saw increased conversion rates and improved customer retention.

Coca-Cola operational efficiency Bottling Company maximized:

Company: Coca-Cola Bottling Company (CCBC), Coca Cola's largest independent bottling partner

Problem: Manual reporting processes restricted access to real-time sales and operations data.

Solution: Coca-Cola's business intelligence team handles reporting for all sales and delivery operations at the company. With their BI platform, the team automated manual reporting processes, saving over 260 hours a year—more than six 40-hour work weeks. Report automation and other enterprise system integrations put customer relationship management (CRM) data back into the hands of sales teams in the field through mobile dashboards that provide timely, actionable information and a distinct competitive advantage.

A self-service BI implementation fosters more effective collaborations between IT and business users that maximize the expertise of participants. Analysts and IT can focus on big-picture strategy and long-term innovations such as enterprise data governance rather than manual research and reporting tasks.

Baisnav created a unified view of restaurant operations:

Company: Baisnav

Problem: Disparate data sources hindered teams from seeing a unified view of restaurants.

Solution: Baisnav is a Nepalese restaurant chain with more than 5 locations in Nepal. Baisnav retired their traditional BI solution for a modern, self-service BI platform. This allowed them to create a centralized view of operations so they can track restaurant operational effectiveness at a national scale.

Now that staff have more access to data, the speed of report delivery for strategic projects has tripled from quarterly to monthly and saved thousands of hours. “This was the ticket to take all metrics and understanding to that next level,” explained Bikash Dhakal, Director of Business Intelligence.

New Capital public Schools identifies and helps at-risk students:

Organization: New Capital Public Schools

Problem: Manual Excel reporting meant administrators couldn't see up-to-date data like attendance, preventing timely intervention.

Solution: New Capital Public Schools (NCPS) used advanced analytics to improve dropout intervention rates and better understand the impact of various teaching methods on individual student outcomes.

The NCPS Research and Data Management team used a multiple linear regression model nicknamed the dropout coefficient—to weigh student indicators to predict which students might be at risk of dropping out of school. They used a business intelligence platform to leverage the model. Data visualization made it easy for staff to identify individual, at-risk students and get those students the attention they need.

Dashboards set up by the Research and Data Management Team delivered real-time analytics to 1,00 NCPS teachers and staff so they could adapt and intervene sooner, dramatically improving the intervention success rates. The real-time analytics were supported by five years of historical data. This meant that staff could dig into historical data on the spot to validate insights on current students.

Justification

From the above research it is clear that BI tools are much more necessary to make a profitable business. In above five different examples of the particular organization they were facing the five different types of problems. Those problems were finally solved with the help of the BI tools. The use of BI tools is not only to store data but to compare the data and helps the organization in the better decision making. In my organization also for different purposes I am recommending my employee to use the different BI tools. For storing and making the decision I am recommending my employee to use the excel because it is much easier to store the data in excel and it is much easier to analyze the different kinds of the data for the decision making. Initially in my company we were facing the different problems like: storing data, comparing data, as well as in decision making but after using the BI tools like excel it has become much easier for us to do those things which we used to feel impossible at early period. For doing any kinds of the things that are related

to business we are using BI tools. With the help of the BI tools we can make the Business process easier as well as profitable

Evaluate how organizations could use business intelligence to extend their target audience and make them more competitive within the market, taking security legislation into consideration.

Business intelligence is a technology-driven process for analyzing data and presenting actionable information to help executives, managers and other corporate end users make informed business decisions. The main motive of using business intelligence is for faster and more accurate business reporting, to make better business decision, to provide satisfaction to their user, to increase business productivity, etc. The following points or benefits of business intelligence can help to extend their target audiences.

Swift Decision Making

(LiveAdmins. 2019) One of the key benefits of using Business Intelligence systems include accelerated and enhanced decision making. Through Business Intelligence, businesses can have a centralized database management system, where a user can login at any time to investigate any data, and extract the information required. With access to information from the past, decision making automatically becomes simpler for managers, where they can take action based on numbers.

Timely Recognition of Trends

Business intelligence allows managers to quickly identify trends that directly impact business operations. The results derived from business intelligence can help with better and accurate planning and forecasting. It can help in devising customer support strategies that work well and remove those which have a negative outcome. Essentially, the recognition of trends is simpler in theory as well as in practice with the usage of data, statistical inference, and intelligent analysis of that data. BI tools enable businesses to easily spot patterns, which can help them invest in the right direction.

To Power Up Productivity

(Maximizer CRM Software. 2019) For the better and to be a successful organization, product is one that determines. So, using Business Intelligence an organization can implement better devices

and skilled manpower with which fine product can be achieved. Apart from that they can also analyze their business trade and with the proper monitoring each activities an organization can produce fine and more demanded product with which they can fulfill the needs of their customer and can be benefited. Also, use of BI in an organization helps to improve efficiency by improving business decision faster and easier helping businesses deploy their workforces more efficiently.

Business competition is a contest between firms to win revenue. It is a fundamental economic force that benefits customers as firms are under pressure to constantly improve products and offer attractive prices. Sooner or later, competition becomes a part of doing business. In order to remain in the game, a business must carefully analyze its competition and try to come up with a strategy based on the information. The main motive of using business intelligence is for faster and more accurate business reporting, to make better business decision, to provide satisfaction to their user, to increase business productivity, etc.

Between social media, focus groups, impartial surveys and sales figures, it's hard to really tell which data matters the most when it comes to beating our competition. Here's a guide to know what it all really means.

To Beat the Competition, Know the Competition:

Trying to determine the best type of data to analyze for gaining an advantage over our competition can be tricky unless we know the level of competition we're facing. When we are establishing ourselves in a new market, assess the competitive landscape and the type of competition we'll have.

Once we have created a list of competitors, both indirect and direct, as well as understood the business environment, we can figure out the best medium for the analysis of data relevant to beating the competition. For instance, if our competitor is heavily marketing itself on social media, we should be sure to evaluate their approach to determine how it's working for them and the best way to overcoming any challenges they, or we, may face.

To gain the upper hand in the world of social media, we should consider using customer relationship management software. These services can help us extract highly useful information.

We'll get an idea of the tone and overall interests exhibited online by the people you talk to. All of this can help us devise approaches to help us form tighter bonds with potential customers.

The Overall Best Source of Data

There is no best source of data when it comes to evaluating the market and competitors. Each source of data is important in its own unique way. A successful organization will try to exploit the advantages while minimizing the potential risks due to misleading data and unreliable sources. Social media can tell us a lot about our competitors and indicate their level of success, what clients think of them, as well as other relevant metrics. However, any one source of data may lack authenticity and could potentially be misleading. Focus groups help an organization understand its target audience. However, because peoples' opinions and perceptions vary, focus groups often do not provide credible enough data, unless done extensively. Impartial surveys can be a convenient way to get a rough look at things, but the information is often not reliable enough. Sales figures, while useful when it comes to making better critical decisions, shouldn't necessarily be used as an indicator of future trends. We must truly examine a variety of data to get a clearer picture.

Steps for effectively analyzing our Competition:

Analyzing involves gathering data, which can include extensive research, fact finding, collecting valuable info and questioning. The first step is to take into account everything we offer better than our competitors, such as product features, strengths and value-added services.

We should use social media, focus groups and other data gathering sources to learn more about the popularity of our products. Then, compare them. Each comparison will likely differ based on who is surveyed, customers' priorities, who competitors are and other relevant factors. Thorough analysis will be required to develop effective strategies for our products. We should use the data to identify the strengths and weaknesses of our business and take this into account when coming up with strategy. How we use the data is often more important than the quality or source of data we have. Following these steps is a good way to determine the type of data that best suits our needs and may possibly produce the best chances of beating our competition and attracting the customer.

Higher Customer Satisfaction

(LiveAdmins. 2019) Business intelligence tools help businesses quickly measure how happy their customers are with their services, by gaining an insight into their behavior. The tools allow businesses to perform market and customer analysis, leading to the identification of issues such as slow customer response time, extra time taken to resolve issues, key areas where customers are facing problems in a specific geographical area etc. Businesses can work on resolving such issues

through the use of tools such as chat software, which provides live help on websites. The analysis of data pertaining to customer support, can not only aid the organization in streamlining their customer service process, it can also help them in coming up with more innovative and effective marketing and promotional strategies, leading to highly focused customer service which will eventually result in higher customer satisfaction levels.

Conclusion

Business intelligence doesn't have to be scary there are a variety of resources to educate and empower buyers. There are plenty of types of different BI tools out there to explore and experiment with. The more educated the user base becomes, the more comprehensive and powerful the options will become. BI is a versatile and powerful resource, and can be useful to almost every industry. In this report I have discussed and determined, what business intelligence is and the tools and techniques associated with it including the examples, as well as I had designed a business intelligence tool, application or interface that can perform a specific task to support problem-solving or decision-making at an advanced level also I had customized the design to ensure that it is user-friendly and has a functional interface and finally I had provided a critical review of the design in terms of how it meets a specific user or business requirement and identified what customization has been integrated into the design. Also I have described and illustrate how a specific business intelligence tools going to help each and every aspects of an organization in order to make a better business decision making. Then, I have explored what are the legal issues involved with the proper use of business intelligence tools for an organization such as the sector it is going to help and the benefits, they can get from each sector such as increase in productivity, Data privacy and security, for statistical analysis, etc. Here, I have conducted a research program to identify whether a particular organization uses or not a business intelligence tools in order to analyze, visualize and report their organizational data for the better productivity and enhancement of their product. Apart from that if they do not use then how they are able to manage their business of an organization and any types of methods they use.

And lastly, I have done evaluation on how these business intelligence tools going to help a specific organization to target their audience and for that what they should do. Apart from that how a specific organization can make their product better so that they can make more competition within

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the market and for the better development of their organization, taking security legislation into consideration.



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