

Unit IX: Implementation of Information System - Management Information System

Change Management:

Change management is the process, tools and techniques to manage the people side of change to achieve the required business outcome. Change management incorporates the organizational tools that can be utilized to help individuals make successful personal transitions resulting in the adoption and realization of change.



It is important to note what change management is and what change management is not, as defined by the majority of research participants.

1. Change management is not a stand-alone process for designing a business solution but it is the process, tool and technique for managing the people side of change.
2. Change management is not a process improvement method but it is a method for reducing and managing resistance to change when implementing process, technology or organizational change.
3. Change management is not a stand-alone technique for improving organizational performance but it is a necessary component for any organizational performance improvement process to succeed including programs like: Six Sigma, Business Process Re-engineering, Total Quality Management, Organizational Development, Restructuring and Continuous Process Improvement.

Change Management Process:

The change management process is the sequence of steps or activities that a change management team or project leader follow to apply change management to a change in

order to drive individual transitions and ensure the project meets its intended outcomes. The below elements have been identified from research as key elements of a successful change management process.



Fig: Change Management Process

These elements are incorporated into Prosci's 3-Phase Process:

Phase 1: Preparing For Change:



Fig: Preparing for Change

The first phase in Prosci's methodology helps change and project teams prepare for designing their change management plans. It answers these questions:

- "How much change management does this project need?"
- "Who is impacted by this initiative and in what ways?"
- "Who are the sponsors we need to be involved to make this initiative successful?"

The first phase provides the situational awareness that is critical for creating effective change management plans.

Phase 2: Managing Change:

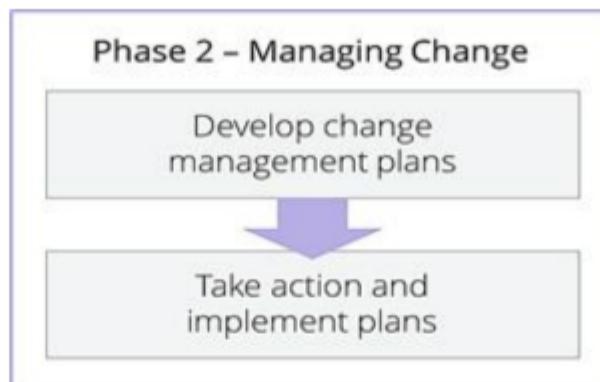


Fig: Managing Change

The second phase focuses on creating plans that will integrate with the project plan. These change management plans articulate the steps that we can take to support the individual people being impacted by the project.

This is what people typically think of when they talk about change management. Based on Prosci's research, there are five plans that support help individuals moving through the ADKAR Model:

- a. Awareness of the need for change
- b. Desire to participate in and support the change
- c. Knowledge about how to change
- d. Ability to implement change and behaviors
- e. Reinforcement to sustain the change.

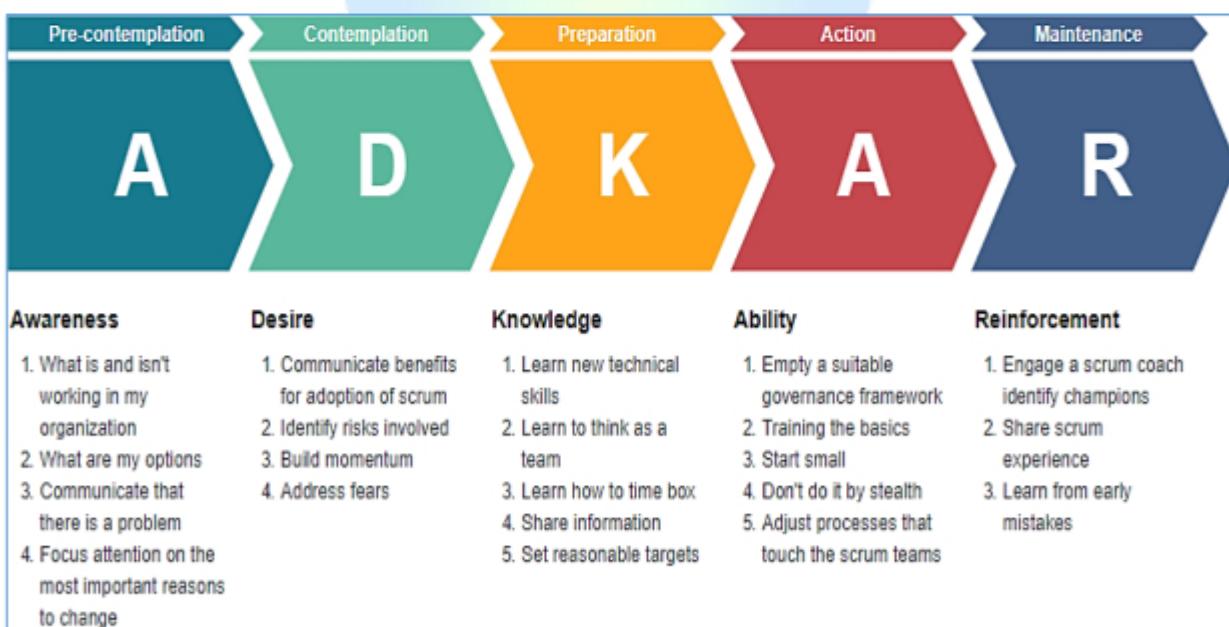


Fig: ADKAR Change Management

Phase 3: Reinforcing Change:



Fig: Reinforcing Change

Equally critical but most often overlooked, the third phase helps us create specific action plans for ensuring that the change is sustained. In this phase, project and change teams develop measures and mechanisms to measure how well the change is taking hold, to see if employees are actually doing their jobs the new way, to identify and correct gaps and to celebrate success.

Critical Success Factors:

Critical Success Factors, or CSFs, are indicators for opportunities, activities or conditions required to achieve an objective within a project or mission. Critical Success Factors (CSF) differ per organization and reflect current and future objectives.



Fig: Critical Success Factors

Whether it concerns a bar, an insurance agency or contractor, it's essential that the course of action is coordinated with those aspects that help the organization fulfil its mission.

These key variables often have a huge impact on the degree to which a company is successful and effective in reaching strategic goals within the mission and are crucial in gaining a competitive advantage.

Critical Success Factors (CSF) are therefore of vital importance for the success of an organization. They can be created for a specific department within the organization, for the organization as a whole, but they are always directly linked to the company's strategy and are created by higher management.

The concept of Critical Success Factors (CSF) was developed and introduced by D. Ronald Daniel, on behalf of McKinsey & Co, in 1961. A decade later, John F. Rockart refined and popularized the concept. Ever since then, the concept has been widely applied to guide organizations in developing and implementing strategies and projects.

Sources of Critical Success Factors (CSF)

Critical Success Factors (CSF) arise from five important sources or areas that influence an organization. These areas differ from each other, given that different situations lead to different Critical Success Factors (CSF). **Rockart and Bullen** have written about the following five most important sources of CSF:

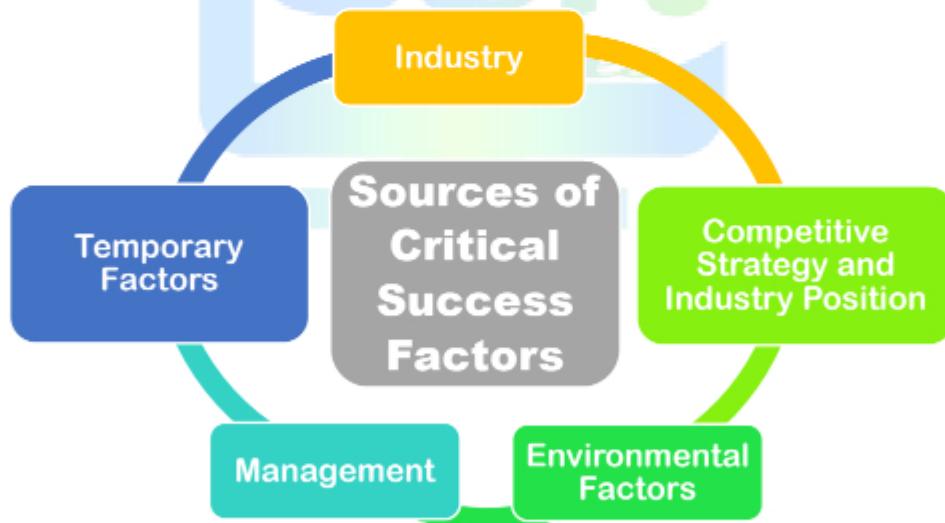


Fig: Sources of Critical Success Factors (CSF)

1. Industry Critical Success Factors:

These factors are dependent upon the specific industry characteristics. It's important that the organization continues to monitor these factors to be able to compete in the market. For instance, a chemical company demands specific technology and a clothing producer

absolutely requires cotton. These Critical Success Factors (CSF) may influence all competitors within a specific industry, but could also affect individual organizations.

2. Competitive Strategy and Industry Position:

Not all companies in a specific industry have the same Critical Success Factors (CSF). The current position and development phase impact which Critical Success Factors (CSF) are created, as well as the available means and capacities. In addition to an organization's total value, the demographic and other factors, each management will create different Critical Success Factors (CSF).

3. Environmental Factors Critical Success Factors:

The external environment of an organization largely determines the design of the Critical Success Factors (CSF). A PEST analysis can be used to analyses this external environment. These political, economic, social and technological factors create CSFs for every company.

The organization isn't always able to influence these macro-environmental factors, but these must certainly be considered. Managers who work in production, for instance, must be able to guarantee quality and keep sufficient stock.

4. Management Critical Success Factors:

Individual or relatively small aspects within organizations may also lead to new CSFs. When certain responsibilities within a management position are considered to be crucial for an organization's performance as a whole, this must be closely monitored and measured.

5. Temporary Factors Critical Success Factors:

Temporary factors are linked to short-term situations. Although these factors can be important, they are usually not long-lasting. Temporary or one-time factors are often the result of a certain event. When an organization expands into a new market, for instance on another continent, the CSF may concern expanding and recruiting new capable management.

Advanced Balanced Scorecard:

The Balanced Scorecard is a strategic planning and management system that is used extensively in business and industry, government, and non-profit organizations worldwide. It is used to align business activities to the vision and strategy of the

organization, improve internal and external communications, and monitor organization performance against strategic goals. Moreover, it transforms the organization's strategic plan to action plans, linking and aligning organizational to individual action plans.

The Balanced Scorecard provides feedback around both the internal business processes and external outcomes in order to continuously improve strategic performance and results.

Advanced Strategic Foundations Development:

Origin and subsequent foundation development of the balanced scorecard can be explained by using the following points:

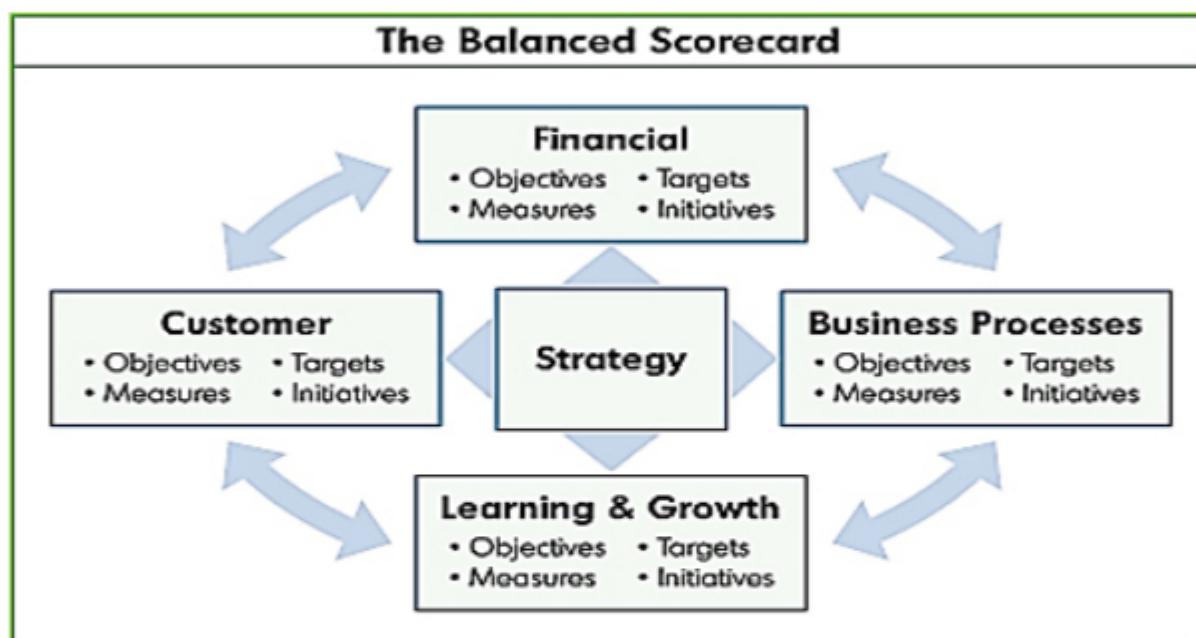


Fig: Balanced Scorecard

1. Financial:

It encourages the identification of a few relevant high-level financial measures. In particular, designers were encouraged to choose measures that helped inform the answer to the question "How do we look to shareholders?" Examples: cash flow, sales growth, operating income, return on equity.

2. Customer:

It encourages the identification of measures that answer the question "What is important to our customers and stakeholders?" Examples: percent of sales from new products, on-time delivery, share of important customers' purchases, ranking by important customers.

3. Internal Business Processes:

It encourages the identification of measures that answer the question "What must we excel at?" Examples: cycle time, unit cost, yield, new product introductions.

4. Learning and Growth:

It encourages the identification of measures that answer the question "How can we continue to improve, create value and innovate?" Examples: time to develop new generation of products, life cycle to product maturity, time to market versus competition.

The idea was that managers used these perspective headings to prompt the selection of a small number of measures that informed on that aspect of the organization's strategic performance.

Advanced Objective and Strategy Map Development:

1. Strategic Objectives:

The next step in creating a balanced scorecard is choosing several strategic objectives for each perspective. Up until now, we've dealt with large, vague concepts. This is where things get concrete. Some example strategic objectives might be:

- a. Reduce Injuries
- b. Improve Call Times
- c. Increase Profits

Choosing our strategic objectives is definitely more art than science. It's also one of those things that we can't just outsource to a consultant to figure out on their own. The people who know the intimate details of our organization are very important here, so get them involved early.

Fortunately, we have some helpful guidelines. Every organization will have different strategic objectives, but all good strategic objectives are alike in several ways.

2. Strategy Map:

If we already know a little about the balanced scorecard, that graphic showing our strategic objectives on top of the four perspectives may look familiar. It's the start of something called a strategy map, and it's a common way to show an organization's strategy at a glance.

The final step in creating a strategy map is to draw arrows between our strategic objectives that show the cause and effect chain.

We can read our balanced scorecard's strategic flow by starting at the bottom and following the paths to the top. Our strategy map tells the story of our organization's strategy.

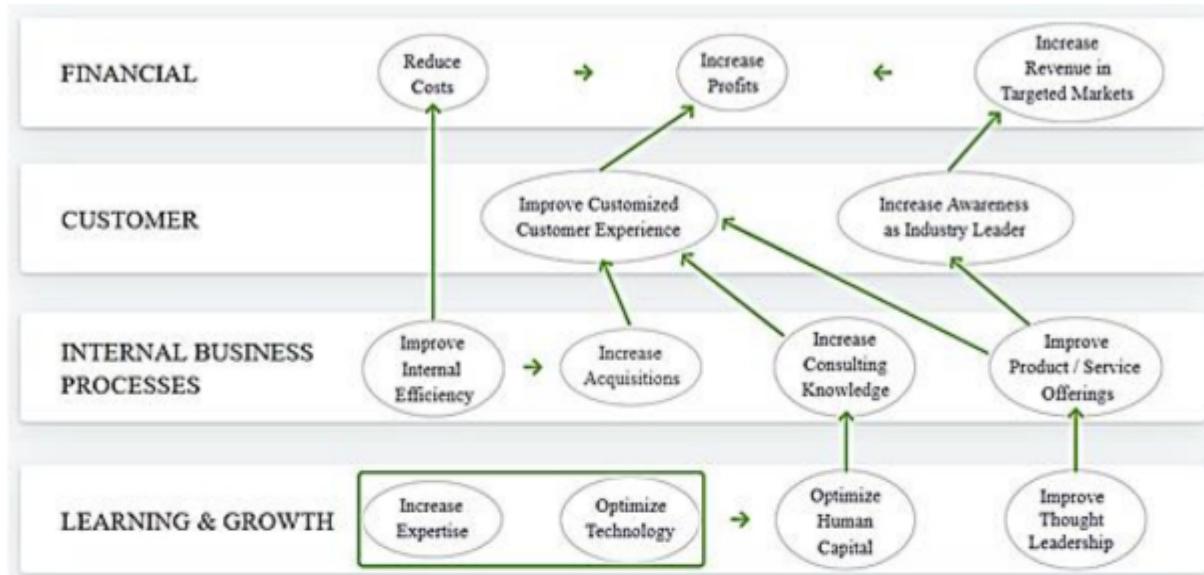


Fig: Strategy Map

Advanced Performance Measurement:

The final building blocks of a balanced scorecard are measures. Every strategic objective should have one or two things that we measure to determine how it's performing. These measures need goals and should be measured on a regular schedule.

For example, if a strategic objective were "Increase Acquisitions," a good measure might be "Number of New Acquisitions." If the strategic objective were "Increase Employee Expertise," a good measure might be "Total Departmental Training Hours."

It's important to choose a very small number of measures to track. By limiting each strategic objective to one or two measures, we're able to focus on the things that matter most. Tracking too many measures often means that nothing improves.

Finally, notice how we waited until the very end of building our balanced scorecard to choose measures. That's because it's very important to figure out our overall strategy first. If we choose measures earlier in the process, we'll almost certainly end up measuring the wrong things.

Implementation and Visualization:

A scorecard can be seen as a model representing business strategy, where the columns represent different levels of abstraction of the strategy. A scorecard view can be visualized and implemented in a few different ways.

1. Nodes:

If the foundation of “EMS” is the scorecard, the nodes can be seen as its content. The term node is a generalization of an object of any type within the scorecard tree structure. Each node has a name, which is its main distinguisher, and in most cases a set of properties to display in a view.

It has a person or a set of persons, who is responsible for it and can contain some metadata fields such as description as well as other keywords used to distinguish it from other nodes. All these fields and descriptors can be dynamically set up per scorecard column, and differ among different implementation of the system.

2. Text Nodes:

This is the simplest type of node, and contain the information recently mentioned only, with no extra features. This is common to use for the more general strategy, to the left in the scorecard. As it cannot keep any information about current performance, it is often used to represent columns such as perspective, comprehensive target, success factors, etc.

3. Key Performance Indicators:

Key Performance Indicators or KPIs are the measures of the system. This is what the performance monitoring of the organization is based on. It contains all the properties earlier mentioned about nodes in general, but have some extra mathematical features. These measures are configurable regarding formulas and variables, but a common implementation of a measure is to have one result field and one target field for data input.

4. Activities:

The last type of node is the activity, which represents a concrete action or task that has to be performed in order to fulfil the goal it is linked to. When a goal has been more and more concertized, eventually the level of abstraction is going to take the form of a doable action.

This is what the activities represent. An activity can have, on top of the basic node properties mentioned above, a status telling if the activity has started, ended is paused is delayed or is currently ongoing.

5. Node Colors:

Key performance indicators and activities in EMS are two node type that contains information regarding the current level of performance. In order to enhance perception

of these nodes in the scorecard, the performance level can be (and is in most implementation) rendered as a color that is attached to the node.

6. Periodicity:

As data and measures change over time, EMS needs to support that as well. The value of a specific measurement has a certain value at one point in time, but that value is subject to change as time elapses. Historical data values are very useful, in some cases even required to make the data meaningful.

7. Dimensionality:

EMS is a multi-dimensional application in the sense that its variables are shifting in different dimensions. The above-mentioned periodicity is one of these variables, department, organization and planning version are others.

Entities in EMS are changing over (and are in some cases unique for) these variables. The state and value of an object and its attributes are influenced by these dimensions and can be different for each unique combination of those.

Strategic Initiative Prioritization and Management:

Scorecards have several types of management control systems that managers use to motivate, monitor, and manage their strategies. The control systems included belief systems (mission, vision and values), boundary systems, internal control systems, diagnostic systems and interactive systems.

The development of the strategy management system transformed the balanced scorecard from being an extended diagnostic system to an interactive system.

Interactive system has the following characteristics:

1. Information generated by the system is an important and recurring agenda addressed by the highest levels of management.
2. The interactive control system demands frequent and regular attention from operating managers at all levels of the organization.
3. Data generated by the systems are interpreted and discussed in face to face meetings of superiors, subordinates and peers.
4. The system is a catalyst for the continual challenge and debated of underlying data, assumptions and actions plans.

Key points for prioritization and management are as give below:

- a. Mobilize change through executive leadership
- b. Translate the strategy
- c. Align the organization to the strategy
- d. Motivate employees to make strategy their everyday job
- e. Govern to make strategy a continual process

Advanced Scorecard Alignment and Cascading:

There are three broad approaches to alignment and cascading are as below:

1. The Shared Framework:

When an organization consists of several operating units that operate with some autonomy and leadership needs to track the individual performance of the units, they can use the shared framework approach and mandate that each must use the same enterprise measures to track and report on their performance.

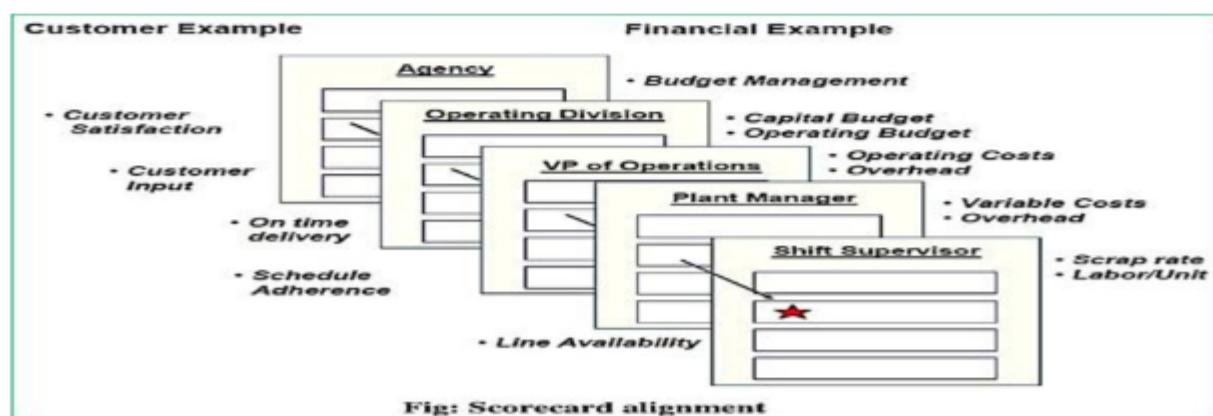
2. The Contributory Framework:

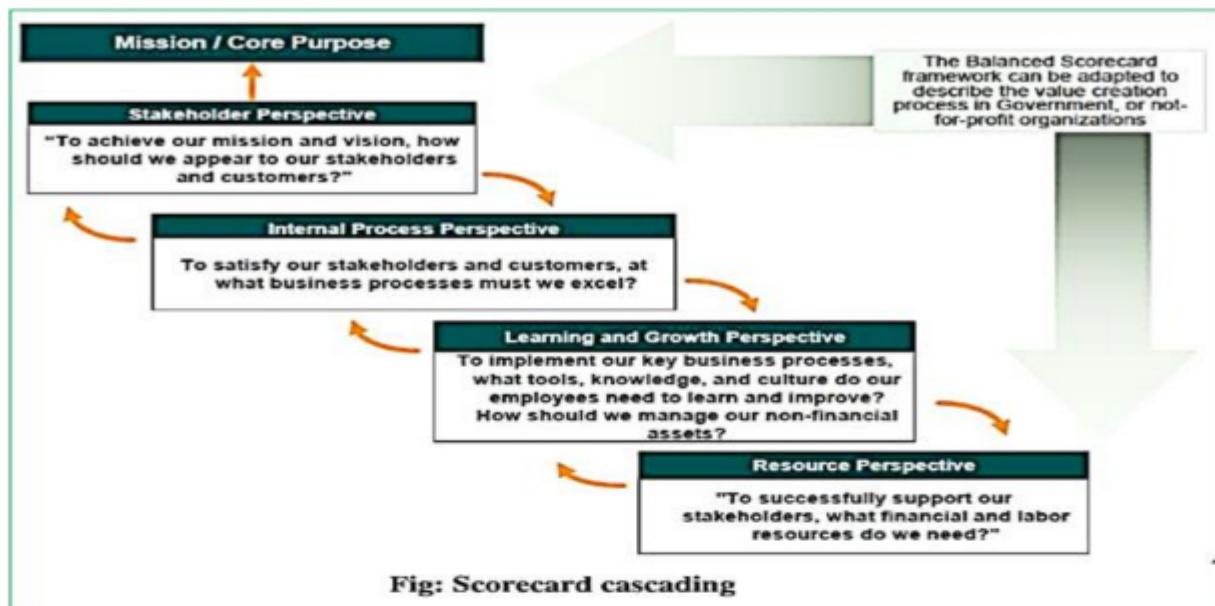
The contributory framework is best for situations where each department executes only a portion of the overall organizational strategy not necessarily common activities requiring them to report unique measures to leadership.

3. The Hybrid Framework:

In the hybrid framework, leadership mandates the use of some enterprise measures (maybe 50% of the top-level scorecard) but then allows each unit/department to adopt additional measures that apply to their unique service or location.

This is a blend or hybrid of the shared framework and contributory framework approaches with some shared responsibility but also flexibility to measure and act on those unique aspects at each location.





Dashboard:

In information technology, a dashboard is a user interface that, somewhat resembling an automobile's dashboard, organizes and presents information in a way that is easy to read. To some extent, most graphical user interface resemble a dashboard.

However, some product developers consciously employ this metaphor (and sometimes the term) so that the user instantly recognizes the similarity.

In information systems, a dashboard is an easy to read, often single page, real-time user interface, showing a graphical presentation of the current status and historical trends of an organization's or computer appliances key performance indicators to enable instantaneous and informed decisions to be made at a glance.

In real-world terms, dashboard is another name for "progress report" or "report". Often, the dashboard is displayed on a web page that is linked to a database which allows the report to be constantly updated.

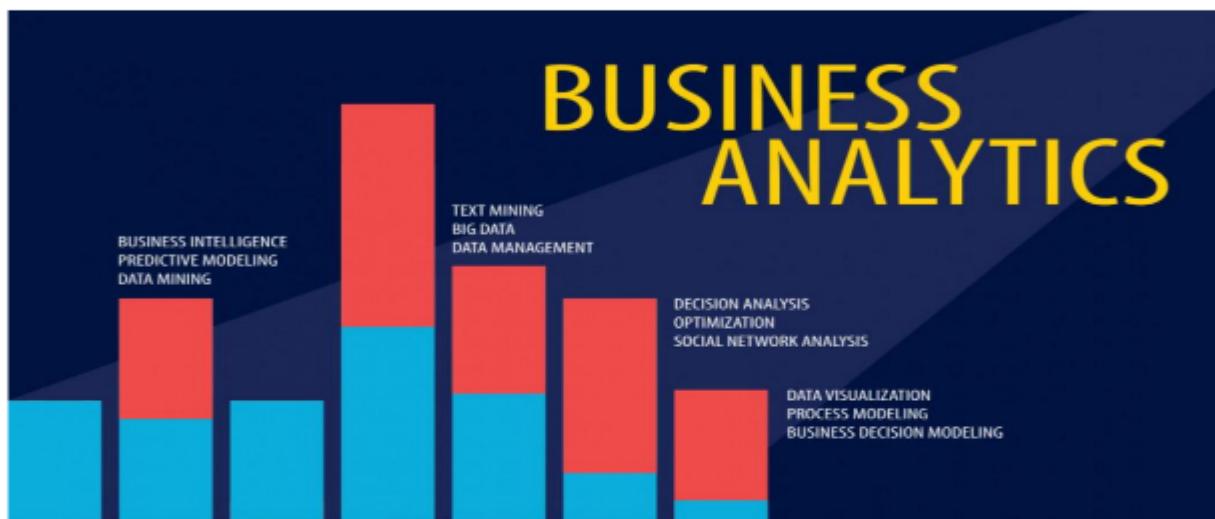
Benefits of using digital dashboards in advanced balanced scorecard include:

- Visual presentation of performance measures
- Ability to identify and correct negative trends
- Measure efficiencies or inefficiencies
- Ability to generate detailed reports showing new trends
- Ability to make more informed decisions based on collected business intelligence
- Align strategies and organizational goals
- Saves time compared to running multiple reports
- Gain total visibility of all systems instantly
- Quick identification of data outliers and correlations

Business Analytics:

Business Analytics is the study of data through statistical and operations analysis, the formation of predictive models, application of optimization techniques and the communication of these results to customers, business partners and colleagues executives. It is the intersection of business and data science.

Business analytics is the practice of interactive, methodical exploration of an organization's data with emphasis on statistical analysis. Business analytics is used by companies committed to data-driven decision making.



Business Analytics is used to gain insights that inform business decisions and can be used to automate and optimize business processes. Data-driven companies treat their data as a corporate asset and leverage it for competitive advantage.

Successful business analytics depends on data quality, skilled analysts who understand the technologies and the business and an organizational commitment to data-driven decision making.

Examples Of Business Analytics Uses Include:

- a. Exploring data to find new patterns and relationships (data mining)
- b. Explaining why a certain result occurred (statistical analysis, quantitative analysis)
- c. Experimenting to test previous decisions (A/B testing, multivariate testing)
- d. Forecasting future results (predictive modelling, predictive analytics)

Business analytics refers to the skills, technologies, practices for continuous iterative exploration and investigation of past business performance to gain insight and drive business planning.

Business analytics focuses on developing new insights and understanding of business performance based on data and statistical methods. In contrast, business intelligence traditionally focuses on using a consistent set of metrics to both measures past

performance and guide business planning which is also based on data and statistical methods.

Components of Business Analytics:

The components of business dashboards include:

1. Data Aggregation

Before data can be analyzed, it must be collected, centralized, and cleaned to avoid duplication, and filtered to remove inaccurate, incomplete, and unusable data.

Data can be aggregated from:

- a. **Transactional Records:** Records that are part of a large dataset shared by an organization or by an authorized third party (banking records, sales records, and shipping records).
- b. **Volunteered Data:** Data supplied via a paper or digital form that is shared by the consumer directly or by an authorized third party (usually personal information).

2. Data Mining

In the search to reveal and identify previously unrecognized trends and patterns, models can be created by mining through vast amounts of data. Data mining employs several statistical techniques to achieve clarification, including:

- a. **Classification:** Used when variables such as demographics are known and can be used to sort and group data.
- b. **Regression:** A function used to predict continuous numeric values, based on extrapolating historical patterns.
- c. **Clustering:** Used when factors used to classify data are unavailable, meaning patterns must be identified to determine what variables exist.

3. Association and Sequence Identification:

In many cases, consumers perform similar actions at the same time or perform predictable actions sequentially. This data can reveal patterns such as:

- a. **Association:** For example, two different items frequently being purchased in the same transaction, such as multiple books in a series or a toothbrush and toothpaste.
- b. **Sequencing:** For example, a consumer requesting a credit report followed by asking for a loan or booking an airline ticket, followed by booking a hotel room or reserving a car.

4. Text Mining:

Companies can also collect textual information from social media sites, blog comments, and call center scripts to extract meaningful relationship indicators. This data can be used to:

- a. Develop in-demand new products
- b. Improve customer service and experience
- c. Review competitor performance

5. Forecasting:

A forecast of future events or behaviors based on historical data can be created by analyzing processes that occur during a specific period or season. For example:

- a. Energy demands for a city with a static population in any given month or quarter.
- b. Retail sales for holiday merchandise, including biggest sales days for both physical and digital stores.
- c. Spikes in internet searches related to a specific recurring event, such as the Super Bowl or the Olympics.

6. Predictive Analytics:

Companies can create, deploy, and manage predictive scoring models, proactively addressing events such as:

- a. Customer churn with specificity narrowed down to customer age bracket, income level, lifetime of existing account, and availability of promotions.
- b. Equipment failure, especially in anticipated times of heavy use or if subject to extraordinary temperature/humidity-related stressors.
- c. Market trends including those taking place entirely online, as well as patterns which may be seasonal or event-related.

7. Optimization:

Companies can identify best-case scenarios and next best actions by developing and engaging simulation techniques, including:

- a. Peak sales pricing and using demand spikes to scale production and maintain a steady revenue flow.
- b. Inventory stocking and shipping options that optimize delivery schedules and customer satisfaction without sacrificing warehouse space.
- c. Prime opportunity windows for sales, promotions, new products, and spin-offs to maximize profits and pave the way for future opportunities.

8. Data Visualization:

Information and insights drawn from data can be presented with highly interactive graphics to show:

- a. Exploratory data analysis
- b. Modeling output
- c. Statistical predictions

